

FCC Test Report

Report No.: AGC02852200605FE06

FCC ID : 2ANKV-FK-MSY5

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION: WIFI/BLUETOOTH SPEAKER

BRAND NAME : LEMEDIAR

MODEL NAME : MSY5, MSY3

APPLICANT : HUIZHOU LEMEDIA TECHNOLOGY CO.,LTD

DATE OF ISSUE : Sep. 07, 2020

STANDARD(S) FCC Part 15.407

TEST PROCEDURE(S) KDB 789033 D02 v02r01

REPORT VERSION : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

AGC



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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Sep. 07, 2020	Valid	Initial Release

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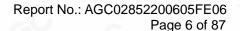
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1. VERIFICATION OF CONFORMITY

Applicant	HUIZHOU LEMEDIA TECHNOLOGY CO.,LTD
Address	No.120 Shuidian Road, Yuanzhou Town, Boluo County, Huizhou City, Guangdong Province, China 516123
Manufacturer	HUIZHOU LEMEDIA TECHNOLOGY CO.,LTD
Address No.120 Shuidian Road, Yuanzhou Town, Boluo County, Huizhou City, Guangdong Province, China 516123	
Factory	HUIZHOU LEMEDIA TECHNOLOGY CO.,LTD
Address	No.120 Shuidian Road, Yuanzhou Town, Boluo County, Huizhou City, Guangdong Province, China 516123
Product Designation	WIFI/BLUETOOTH SPEAKER
Brand Name	LEMEDIA
Test Model	MSY5
Series Model	MSY3
Difference Description	All the series model is same as the test model except for function. The model MSY5 has CD function and the model MSY3 has no CD function.
Date of test	Jun. 26, 2020 to Sep. 07, 2020
Deviation	No any deviation from the test method
Condition of Test Sample	Normal
Test Result	Pass
Report Template	AGCRT-US-BGN/RF

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with requirement of FCC Part 15 Rules requirement.

Prepared By	sky dong	
70 70	Sky Dong (Project Engineer)	Sep. 07, 2020
Reviewed By	Max Zhang	Page Val
	Max Zhang (Reviewer)	Sep. 07, 2020
Approved By	Towasties	
	Forrest Lei (Authorized Officer)	Sep. 07, 2020

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as "WIFI/BLUETOOTH SPEAKER". It is designed by way of utilizing the OFDM technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	requency 5150 MHz~5250MHz; 5725 MHz~5850MHz			
Output Power	IEEE 802.11a20:15.33dBm; IEEE 802.11n(20):15.36dBm; IEEE802.11n(40):15.11dBm			
Modulation	BPSK, QPSK, 16QAM, 64QAM, 128QAM, 256QAM,OFDM			
Number of channels	39			
Hardware Version	V3.118.55-g88a1f9			
Software Version	1A9			
Antenna Designation	Integral Antenna(Comply with requirements of the FCC part 15.203)			
Antenna Gain	2dBi			
Power Supply	DC 12V by adapter			

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2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency	Frequency Band	Channel Number	Frequency
	36	5180 MHz	0	149	5745 MHz
-C	38	5190 MHz	GO CO	151	5755 MHz
100	40	5200 MHz	5725 GHz~ 5850GHz	153	5765 MHz
5150 GHz∼	42	5210 MHz		155	5775MHz
5250GHz	44	5220 MHz		157	5785 MHz
	46	5230 MHz		159	5795 MHz
	48	5240 MHz		161	5805 MHz
			200	165	5825MHz

Note: For 20MHZ bandwidth system use Channel 36,40,44,48,149,153,157,161,165; For 40MHZ bandwidth system use Channel 38,46,151,159.

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2.3. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID**: 2ANKV-FK-MSY5 filing to comply with the FCC Part 15 requirements.

2.4. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

Others testing (listed at item 5.3) was performed according to the procedures in FCC Part 15.407 rules KDB 789033 D02

2.5. SPECIAL ACCESSORIES

Refer to section 5.2.

2.6. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

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3. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in measurement" (GUM) published by CISPR and ANSI.

- Uncertainty of Conducted Emission, Uc = ±3.2 dB
- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB

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4. DESCRIPTION OF TEST MODES

Mode	Available channel	Tested channel	Modulation	Date
				rate(Mbps)
802.11a/n20	36,40,44,48,149,153,157,161,165	36,40,	OFDM	6/6.5
		48,149,157,165	8	(6)
802.11n40	38,46,151,159	38,46, 151,159	OFDM	13.5

Note:

- 1. The EUT has been set to operate continuously on tested channel individually, and the EUT is operating at its maximum duty cycle>or equal 98%
- 2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.
- 3. The customer burns the tested firmware and sets the EUT's work through remote control.

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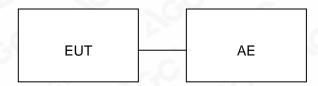


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5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure 1:



5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	WIFI/BLUETOOTH SPEAKER	MSY5	2ANKV-FK-MSY5	EUT
2	Adapter	GQ36-120300-AX	Input:100-240V, 50/60Hz, 1.0 Max Output:12.0V, 3.0A	AE
3	Smart phone	P8	N/A	AE
4.	Earphone	AM116	N/A	AE
5	Load	RX24-50W50 Ω	N/A	AE
6	Remote control	N/A	N/A	AE
7	U-disk	DataTraveler SE9 16G	N/A	AE

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.407	5.407 6dB Bandwidth	
§15.407	Emission Bandwidth	Compliant
§15.407	Maximum conducted output power	Compliant
§15.407	Conducted Spurious Emission	Compliant
§15.407	Maximum Conducted Output Power Density	Compliant
§15.209	5.209 Radiated Emission	
§15.407	Band Edges	Compliant
§15.207 Line Conduction Emission		Compliant

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6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd		
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China		
Designation Number	CN1259		
FCC Test Firm Registration Number	975832		
A2LA Cert. No.	5054.02		
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA		

TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	May 15, 2020	May 14, 2021
LISN	R&S	ESH2-Z5	100086	Aug. 26, 2019	Aug. 25, 2020
LISN	R&S	ESH2-Z5	100086	Jul. 03,2020	Jul. 02,2021
Test software	R&S	ES-K1 (Ver V1.71)	N/A	N/A	N/A

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	May 15, 2020	May 14, 2021
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 12, 2019	Dec. 11, 2020
Power sensor	Aglient	U2021XA	MY54110007	Sep. 10, 2019	Sep. 09, 2020
5GHz Fliter	Micro-tronics	N/A	N/A	Mar. 23, 2020	Mar. 22, 2022
Attenuator	Weinachel Corp	58-30-33	N/A	Sep. 09, 2019	Sep. 08, 2020
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep.21, 2019	Sep. 20, 2021
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	May 22, 2020	May 21, 2022
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May. 17, 2019	May. 16, 2021
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Oct. 15, 2019	Oct. 16, 2020
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep. 20, 2019	Sep. 19, 2021
Test software	FARA	EZ_EMC (Ver.RA-03A)	N/A	N/A	N/A

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7. MAXIMUM CONDUCTED OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

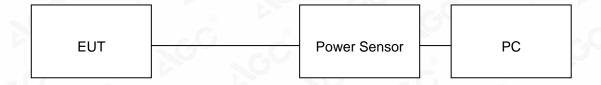
For average power test:

- 1. Connect EUT RF output port to power sensor through an RF attenuator.
- 2. Connect the power sensor to the PC.
- 3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 4. Record the maximum power from the software.

Note: The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

7.2. TEST SET-UP

AVERAGE POWER SETUP



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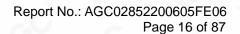
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7.3. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION				
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail	
5180	14.94	24	Pass	
5200	14.22	24	Pass	
5240	15.33	24	Pass	
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail	
5745	5.78	30	Pass	
5785	7.11	30	Pass	
5825	2.00	30	Pass	

LIMITS AND MEASUREMENT RESULT FOR 802.11N20 MODULATION				
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail	
5180	14.39	24	Pass	
5200	14.22	24	Pass	
5240	15.36	24	Pass	
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail	
5745	5.64	30	Pass	
5785	6.66	30	Pass	
5825	2.11	30	Pass	

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Frequency Average Power Applicable Limits				
(MHz)	(dBm)	(dBm)	Pass or Fail	
5190	14.31	24	Pass	
5230	15.11	24	Pass	
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fai	
5755	5.02	30	Pass	
5795	2.91	30	Pass	

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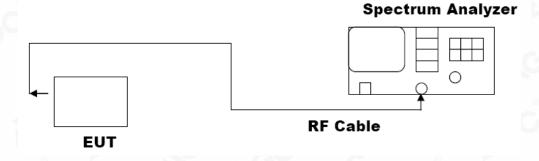
8. 6dB BANDWIDTH

8.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Set the EUT Work on operation frequency individually.
- 3. Set RBW = 100kHz.
- 4. Set the VBW ≥3*RBW. Detector = Peak. Trace mode = max hold.
- 5. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.

Note: The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



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8.3. LIMITS AND MEASUREMENT RESULTS

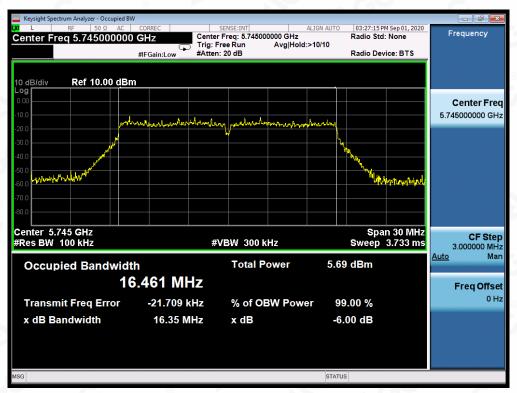
LIMITS	AND MEASUREMENT RES	SULT FOR 802.11A20 MODU	LATION
Applicable Limite		Applicable Limits	
Applicable Limits	Test Da	Criteria	
SOU SOC	5745MHz	16.35	PASS
>500KHZ	5785MHz	16.38	PASS
GC G	5825MHz	16.40	PASS

LIMITS AND MEASUREMENT RESULT FOR 802.11N20/40 MODULATION				
Analiachia Limita		Applicable Limits		
Applicable Limits	Test Dat	a (MHz)	Criteria	
	5745MHz	17.60	PASS	
SO SO	5785MHz	17.32	PASS	
>500KHZ	5825MHz	17.57	PASS	
go e '	5755MHz	35.41	PASS	
	5795MHz	35.72	PASS	

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802.11a20 TEST RESULTTEST PLOT OF BANDWIDTH FOR 5745MHz



TEST PLOT OF BANDWIDTH FOR 5785MHz



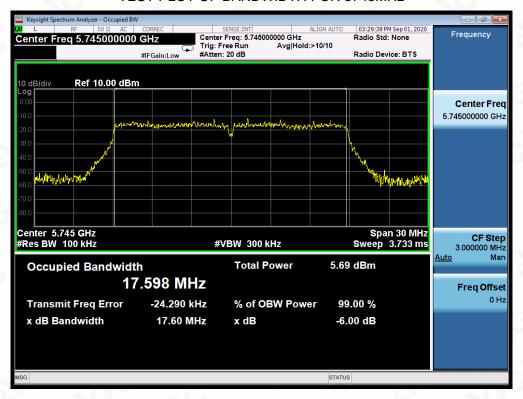
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TEST PLOT OF BANDWIDTH FOR 5825MHz



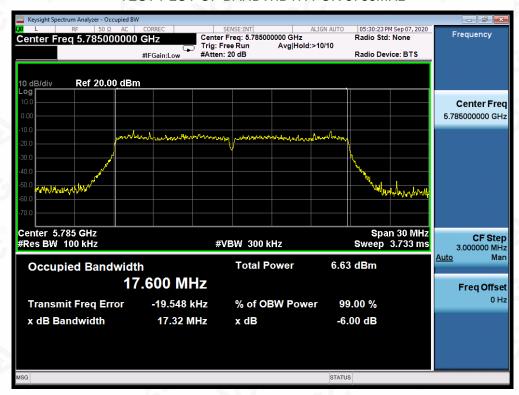
802.11n20 TEST RESULTTEST PLOT OF BANDWIDTH FOR 5745MHz



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TEST PLOT OF BANDWIDTH FOR 5785MHz



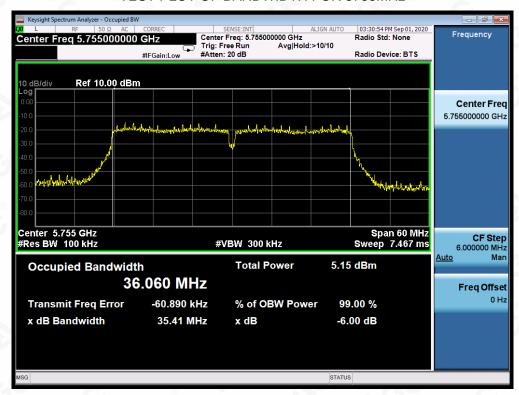
TEST PLOT OF BANDWIDTH FOR 5825MHz



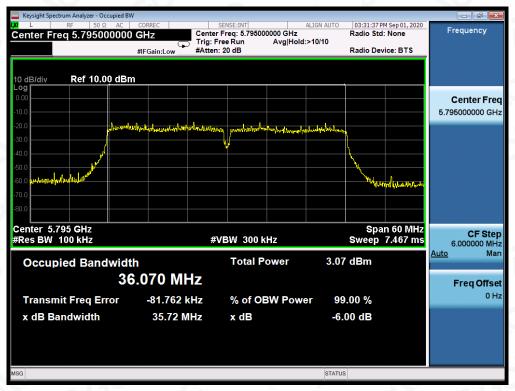
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802.11n40 TEST RESULTTEST PLOT OF BANDWIDTH FOR 5755MHz



TEST PLOT OF BANDWIDTH FOR 5795MHz



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9. EMISSION BANDWIDTH

9.1. MEASUREMENT PROCEDURE

9.1.1. -26dB Bandwidth MEASUREMENT PROCEDURE

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission.

Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

9.1.2. 99.00% Occupied Bandwidth MEASUREMENT PROCEDURE

- a) Connect the antenna port(s) to the spectrum analyzer input.
- b)Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).

Center Frequency = Channel center frequency

Span=2 x emission bandwidth

RBW = 1% to 5% of the emission bandwidth

VBW>3 x RBW

Sweep time= auto couple

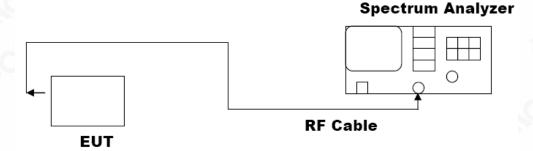
Detector = Peak

Trace mode = max hold

- c)Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter wave form on the spectrum analyzer.
- d) Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is 1% to 5%.

Note: The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



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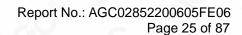
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9.3. LIMITS AND MEASUREMENT RESULTS

LIMITS	AND MEASUREME	NT RESULT FOR	802.11A20 MODULAT	TION
		Арр	licable Limits	
Applicable Limits	Test Data (MHz)			
	Frequency (MHz)	-26dB Bandwidth	99.00% Occupied Bandwidth	Criteria
	5180MHz	19.54	16.568	PASS
Within the Band	5200MHz	19.60	16.584	PASS
	5240MHz	19.53	16.567	PASS

LIMITS	AND MEASUREME	ENT RESULT FOR	802.11N20 MODULAT	ION
		Арр	licable Limits	
Applicable Limits	Test Data (MHz)			
	Frequency (MHz)	-26dB Bandwidth	99.00% Occupied Bandwidth	Criteria
	5180MHz	19.67	19.622	PASS
Within the Band	5200MHz	19.98	17.609	PASS
	5240MHz	19.82	17.621	PASS

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LIMITS	AND MEASUREME	NT RESULT FOR	802.11N40 MODULATI	ON
		Appl	icable Limits	
Applicable Limits	Test Data (MHz)			
	Frequency (MHz)	-26dB Bandwidth	99.00% Occupied Bandwidth	Criteria
Within the Rand	5190MHz	38.65	36.214	PASS
Within the Band	5230MHz	40.16	36.201	PASS

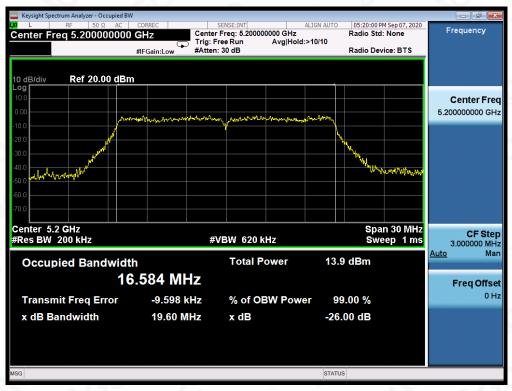
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the Bedicated Restriction Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC, the test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15day after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.



802.11a20 TEST RESULTTEST PLOT OF BANDWIDTH FOR 5180MHz



TEST PLOT OF BANDWIDTH FOR 5200MHz



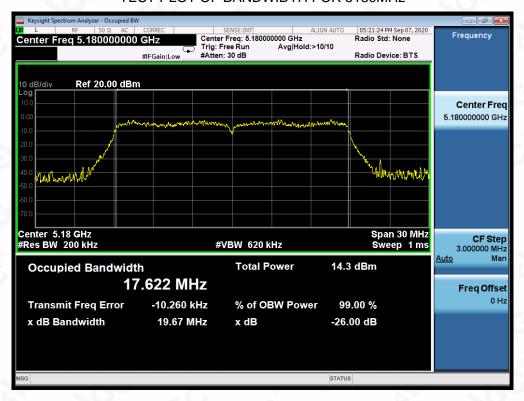
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TEST PLOT OF BANDWIDTH FOR 5240MHz



802.11n20 TEST RESULT TEST PLOT OF BANDWIDTH FOR 5180MHz



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TEST PLOT OF BANDWIDTH FOR 5200MHz



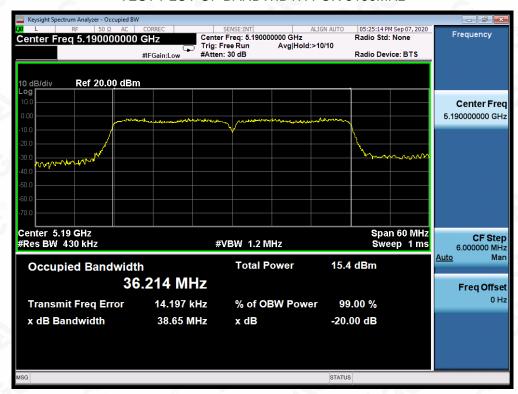
TEST PLOT OF BANDWIDTH FOR 5240MHz



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802.11n40 TEST RESULTTEST PLOT OF BANDWIDTH FOR 5190MHz



TEST PLOT OF BANDWIDTH FOR 5230MHz



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10. MAXIMUM CONDUCTED OUTPUT AVERAGE POWER SPECTRAL DENSITY 10.1 MEASUREMENT PROCEDURE

Refer to KDB 789033 section F

10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer To Section 8.2.

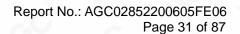
10.3 MEASUREMENT EQUIPMENT USED

Refer To Section 6.

10.4 LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION				
Frequency (MHz)	Power density (dBm/MHz)	Applicable Limits (dBm)	Pass or Fai	
5180	-2.502	11	Pass	
5200	-2.522	11	Pass	
5240	-1.143	11	Pass	
Frequency (MHz)	Power density (dBm/500kHz)	Applicable Limits (dBm)	Pass or Fai	
5745	-13.818	30	Pass	
5785	-12.656	30	Pass	
5825	-16.930	30	Pass	

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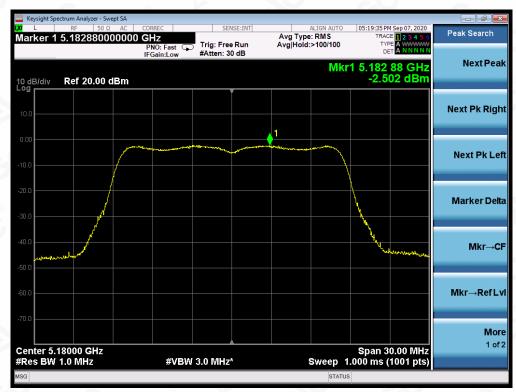
Frequency Power density Applicable Limits				
(MHz)	(dBm/MHz)	(dBm)	Pass or Fail	
5180	-2.437	11 •	Pass	
5200	-2.384	11	Pass	
5240	-1.322	11	Pass	
Frequency (MHz)	Power density (dBm/500kHz)	Applicable Limits (dBm)	Pass or Fai	
5745	-13.155	30	Pass	
5785	-12.802	30	Pass	
5825	-17.583	30	Pass	

Frequency (MHz)	Power density (dBm/MHz)	Applicable Limits (dBm)	Pass or Fail	
5190	-6.361	11	Pass	
5230	-4.162	11	Pass	
Frequency (MHz)	Power density (dBm/500kHz)	Applicable Limits (dBm)	Pass or Fail	
5755	-16.447	30	Pass	
5795	-18.047	30	Pass	

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802.11a20 TEST RESULTTEST PLOT OF SPECTRAL DENSITY FOR 5180MHz



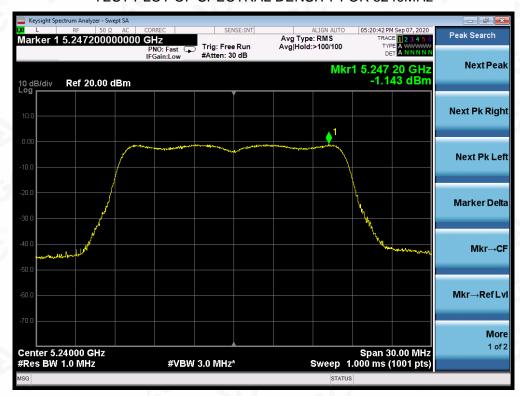
TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz



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TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5745MHz



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TEST PLOT OF SPECTRAL DENSITY FOR 5785MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5825MHz



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802.11n20 TEST RESULTTEST PLOT OF SPECTRAL DENSITY FOR 5180MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz



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TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5745MHz



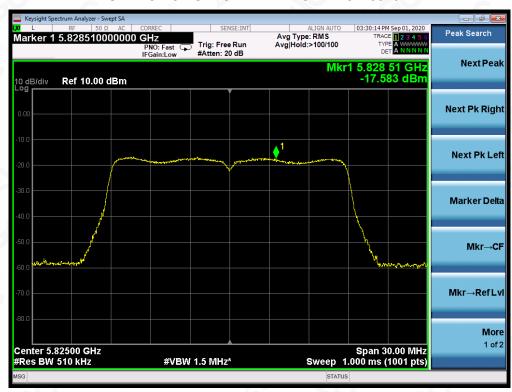
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TEST PLOT OF SPECTRAL DENSITY FOR 5785MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5825MHz



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802.11n40 TEST RESULTTEST PLOT OF SPECTRAL DENSITY FOR 5190MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5230MHz





TEST PLOT OF SPECTRAL DENSITY FOR 5755MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5795MHz



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11. CONDUCTED SPURIOUS EMISSION

11.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

11.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 8.2.

11.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

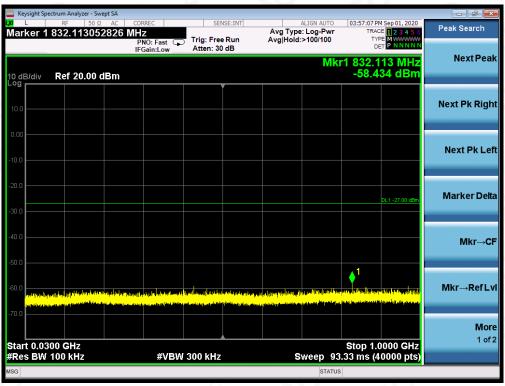
11.4. LIMITS AND MEASUREMENT RESULT

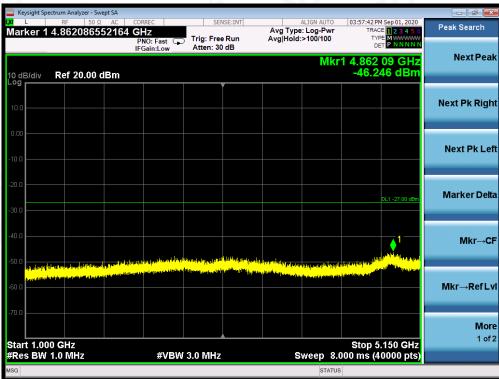
LIMITS AND MEASUREMENT RESULT		
Applicable Limits	Measurement Result	
	Test channel	Criteria
-27dBm/MHz	5150MHz-5250MHz	PASS
All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.	5725MHz-5850MHz	PASS



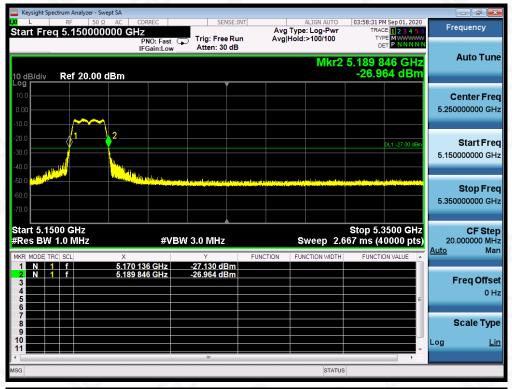
FOR 802.11A20 MODULATION

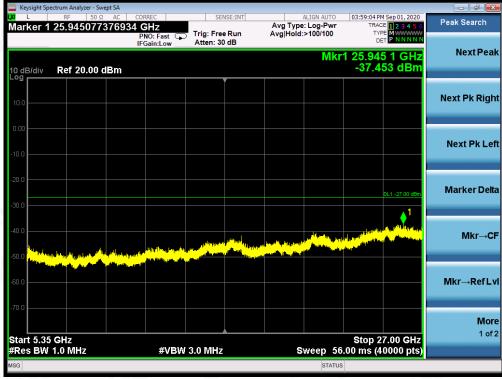
TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5180MHz







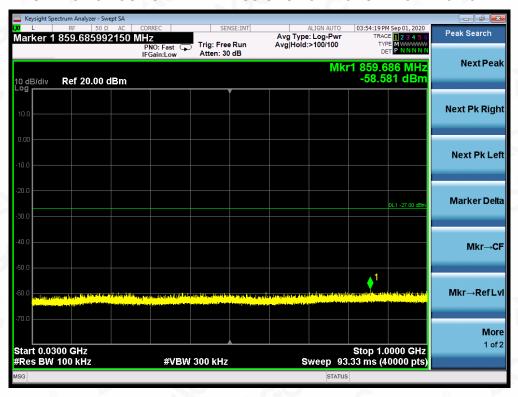






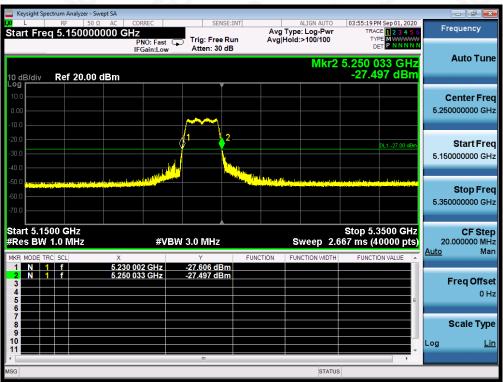


TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5240MHz



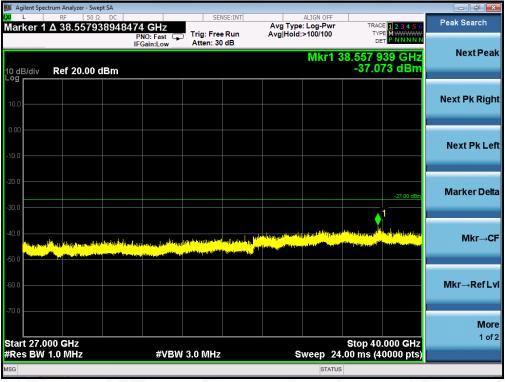












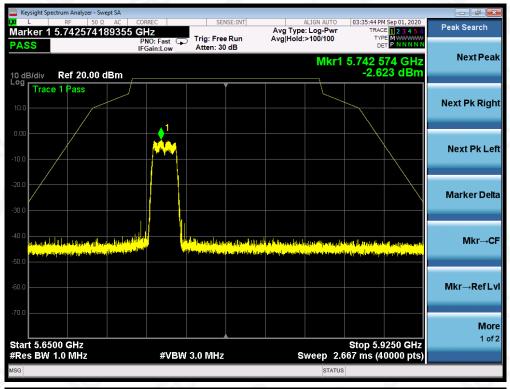


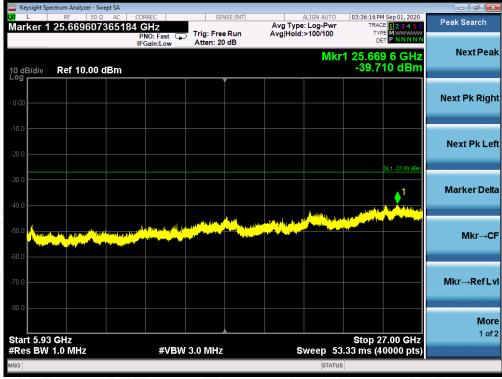
TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5745MHz



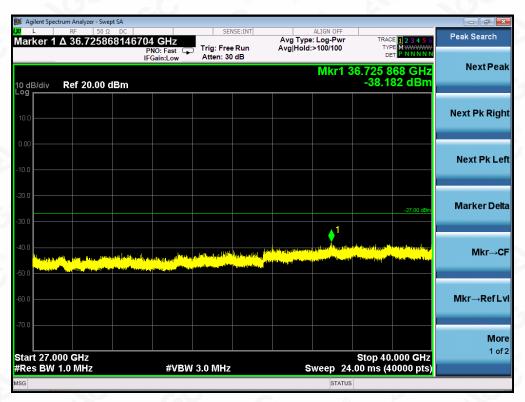












TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5825MHz

