FCC TEST REPORT

For

Azlan Logistics Limited TC-HDMIWM Test Model: TC-HDMIWM Additional Model No.: N/A

Prepared for	:	Azlan Logistics Limited
Address	:	Redwood2, Chineham Business Park, Crockford Lane, Basingstoke,
		Hampshire,RG248WQ,UnitedKingdom
Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an
		District, Shenzhen, Guangdong, China
Tel	:	(+86)755-82591330
Fax	:	(+86)755-82591332
Web	:	www.LCS-cert.com
Mail	:	webmaster@LCS-cert.com
Date of receipt of test sample	:	January 01, 2018
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	January 01, 2018~ January 17, 2018

: January 17, 2018

Date of Report

	FCC TEST REPORT
FCC	CFR 47 PART 15 E(15.407): 2017
Report Reference No: :	LCS180105014AEA
Date of Issue:	Jan 17, 2018
Testing Laboratory Name :	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address :	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'ar District, Shenzhen, Guangdong, China
Testing Location/ Procedure :	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name: :	Azlan Logistics Limited
	Redwood2, Chineham Business Park, Crockford Lane, Basingstoke, Hampshire, RG248WQ, United Kingdom
Test Specification	
Standard::	FCC CFR 47 PART 15 E(15.407):2017 / ANSI C63.10: 2013
Test Report Form No: :	LCSEMC-1.0
TRF Originator: :	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF :	Dated 2011-03
This publication may be reproduced i Shenzhen LCS Compliance Testing I material. Shenzhen LCS Compliance	g Laboratory Ltd. All rights reserved. n whole or in part for non-commercial purposes as long as the aboratory Ltd. is acknowledged as copyright owner and source of the Testing Laboratory Ltd. takes no responsibility for and will not assume e reader's interpretation of the reproduced material due to its placemen
Test Item Description :	TC-HDMIWM
Trade Mark:	VISION
Test Model :	TC-HDMIWM
Ratings:	DC 5V by adapter
Result:	Positive
Compiled by:	Supervised by: Approved by:
Peter Xsar	Pick Su Gravins Ling

Peter Xiao / Administrators

Dick Su/ Technique principal

Gavin Liang/ Manager

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 2 of 78

FCC -- TEST REPORT

	Test Report No. :	LCS180105014AEA	
--	-------------------	-----------------	--

Г

Jan 17, 2018 Date of issue

Test Model	: TC-HDMIWM
EUT	: TC-HDMIWM
Applicant	- Azlan Logistics Limited
Address	: Redwood2, Chineham Business Park, Crockford Lane, Basingstoke,
	Hampshire, RG248WQ, United Kingdom
Telephone	:/
Fax	: /
Manufacturer	: Azlan Logistics Limited
Address	: Redwood2, Chineham Business Park, Crockford Lane, Basingstoke,
	Hampshire,RG248WQ,UnitedKingdom
Telephone	: /
Fax	:/
Factory	: Azlan Logistics Limited
Address	· Dadward Chingham Dusings Dark Creakford Lang Desingstales
Audiess	: Redwood2, Chineham Business Park, Crockford Lane, Basingstoke,
	Hampshire,RG248WQ,UnitedKingdom
Telephone	: /
Fax	: /

Test Result

Positive

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
000	Jan 17, 2018	Initial Issue	Gavin Liang

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 4 of 78

TABLE OF CONTENTS

1. GENERAL INFORMATION	6
1.1. DESCRIPTION OF DEVICE (EUT)	
1.2. SUPPORT EQUIPMENT LIST	
1.3. External I/O 1.4. Description of Test Facility	
1.5. STATEMENT OF THE MEASUREMENT UNCERTAINTY	/ 7
1.6. MEASUREMENT UNCERTAINTY	
1.7. DESCRIPTION OF TEST MODES	8
1.8. LIST OF MEASURING EQUIPMENT	9
2. TEST METHODOLOGY	10
2.1. EUT CONFIGURATION	10
2.2. EUT EXERCISE	
2.3. GENERAL TEST PROCEDURES	10
3. SYSTEM TEST CONFIGURATION	11
3.1. JUSTIFICATION	11
3.2. EUT EXERCISE SOFTWARE	
3.3. SPECIAL ACCESSORIES	
3.4. BLOCK DIAGRAM/SCHEMATICS	11
3.5. EQUIPMENT MODIFICATIONS	
4. SUMMARY OF TEST RESULTS	
5. TEST RESULT	
5.1. ON TIME AND DUTY CYCLE	13
5.2. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT	
5.3. Power Spectral Density Measurement 5.4. 99% and 26dB Occupied Bandwidth Measurement	20
5.4. 99% AND 26DB OCCUPIED BANDWIDTH MEASUREMENT	30
5.6. RADIATED EMISSIONS MEASUREMENT.	
5.7. POWER LINE CONDUCTED EMISSIONS	54
5.8 UNDESIRABLE EMISSIONS MEASUREMENT	
5.9. ANTENNA REQUIREMENTS	
6. TEST SETUP PHOTOGRAPHS OF EUT	69
7. EXTERIOR PHOTOGRAPHS OF THE EUT	71
8. INTERIOR PHOTOGRAPHS OF THE EUT	75

1. GENERAL INFORMATION

1.1. Description of Device (EUT)				
EUT	: TC-HDMIWM			
Test Model	: TC-HDMIWM			
Additional M/N	: /			
Model Declaration	: /			
Power Supply	: DC 5V by adapter			
Hardware Version	: V1.0			
Software Version	: V1.0			
WIFI(5G Band)	:			
Frequency Range	: 5180-5240MHz, 5745-5825MHz			
Channel Number	9 Channels for 802.11a/n20/ac VHT20 : 4 Channels for 802.11n40/ac VHT40 2 Channels for 802.11ac VHT80			
Modulation Type	: 802.11a/n20/n40/ac VHT20/ac VHT40/ac VHT80: OFDM			
Antenna Description	: External Antenna, 5dBi(Max.)			

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 6 of 78

1.2. Support Equipment List

Manufacturer	Description	Model	Serial Number	Certificate
SHENZHEN FU JIA	Adamtan	EL CW1260502000DN		VOC
APPLIANCE CO., LTD.	Adapter	FJ-SW1260502000DN		VOC

1.3. External I/O

I/O Port Description	Quantity	Cable
DC IN Port	1	N/A
IR IN Port	1	N/A
HDMI Port	1	N/A
RS232		N/A

1.4. Description of Test Facility

FCC Registration Number. is 254912.

Industry Canada Registration Number. is 9642A-1.

ESMD Registration Number. is ARCB0108.

UL Registration Number. is 100571-492.

TUV SUD Registration Number. is SCN1081.

TUV RH Registration Number. is UA 50296516-001

NVLAP Registration Code is 600167-0

There is one 3m semi-anechoic chamber and one line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4: 2014, CISPR 32/EN 55032 and CISPR16-1-4 SVSWR requirements.

1.5. Statement of The Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the LCS quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Test Item		Frequency Range	Uncertainty	Note
		9KHz~30MHz	3.10dB	(1)
Radiation Uncertainty	ſ	30MHz~200MHz	2.96dB	(1)
	:	200MHz~1000MHz	3.10dB	(1)
		1GHz~26.5GHz	3.80dB	(1)
		26.5GHz~40GHz	3.90dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	1.63dB	(1)
Power disturbance	:	30MHz~300MHz	1.60dB	(1)

1.6. Measurement Uncertainty

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 7 of 78

1.7. Description of Test Modes

The EUT has been tested under operating condition.

The EUT was set to transmit at 100% duty cycle. This test was performed with EUT in X, Y, Z position and the worst case was found when EUT in Y position.

For pre-testing, when performed power line conducted emission measurement, the input Voltage/Frequency AC 120V/60Hz and AC 240V/50Hz were used. Only recorded the worst case in this report.

Worst-case mode and channel used for 150 KHz-30 MHz power line conducted emissions was determined to be IEEE 802.11a mode (High Channel, 5180-5240MHz Band).

Worst-case mode and channel used for 9 KHz-1000 MHz radiated emissions was determined to be IEEE 802.11a mode (High Channel, 5180-5240MHz Band).

Worst-Case data rates were utilized from preliminary testing of the Chipset, worst-case data rates used during the testing are as follows:

IEEE 802.11a Mode: 6 Mbps, OFDM.

IEEE 802.11n HT20 Mode: MCS0, OFDM.

IEEE 802.11n HT40 Mode: MCS0, OFDM.

IEEE 802.11ac VHT20 Mode: MCS0, OFDM.

IEEE 802.11ac VHT40 Mode: MCS0, OFDM.

IEEE 802.11ac VHT80 Mode: MCS0, OFDM.

Support Bandwidth For 5G WIFI Part:

Bandwidth Mode	20MHz	40MHz	80MHz
IEEE 802.11a	\square		
IEEE 802.11n HT20	\square		
IEEE 802.11n HT40		\square	
IEEE 802.11ac VHT20	\square		
IEEE 802.11ac VHT40		\square	
IEEE 802.11ac VHT80			$\overline{\mathbf{A}}$

Channel & Frequency:

Frequency Band	Channel No.	Frequency(MHz)	Channel No.	Frequency(MHz)			
	36	5180	44	5220			
5180~5240MHz	38	5190	46	5230			
5100~5240IVII 12	40	5200	48	5240			
	42	5210	/	/			
		T20, Channel 36, 40		ted.			
For IEEE 802.11n HT40/ac VHT40, Channel 38 and 46 were tested.							
For IEEE 802.11a	For IEEE 802.11ac VHT80, Channel 42 was tested.						
	5785						
5745~5825MHz	151	5755	159	5795			
J745~502510112	153	5765	161	5805			
155 5775 165 5825							
For 802.11a/n(HT20)/ac(VHT20), Channel 149, 157 and 165 were tested.							
For 802.11n(HT40)/ac(VHT40), Channel 151 and 159 were tested.							
For 802.11ac(VHT80), Channel 155 was tested.							

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 8 of 78

1.8. List Of Measuring Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Power Meter	R & S	NRVS	100444	2017-06-17	2018-06-16
2	Power Sensor	R&S	NRV-Z81	100458	2017-06-17	2018-06-16
3	Power Sensor	R&S	NRV-Z32	10057	2017-06-17	2018-06-16
4	EPM Series Power Meter	Agilent	E4419B	MY45104493	2017-06-17	2018-06-16
5	E-SERIES AVG POWER SENSOR	Agilent	E9301H	MY41495234	2017-06-17	2018-06-16
6	ESA-E SERIES SPECTRUM ANALYZER	Agilent	E4407B	MY41440754	2017-11-18	2018-11-17
7	MXA Signal Analyzer	Agilent	N9020A	MY49100040	2017-06-17	2018-06-16
8	SPECTRUM ANALYZER	R&S	FSP	100503	2017-06-17	2018-06-16
9	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY		2018-06-16
10	0	MF	MF-7082	/	2017-06-17	2018-06-16
11	EMI Test Software	AUDIX	E3	N/A	2017-06-17	2018-06-16
12	EMI Test Receiver	R & S	ESR 7	101181	2017-06-17	2018-06-16
13	AMPLIFIER	QuieTek	QTK-A2525G	CHM10809065	2017-11-18	2018-11-17
14	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2017-06-23	2018-06-22
15	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2017-05-02	2018-05-01
16	Horn Antenna	EMCO	3115	6741	2017-06-23	2018-06-22
17	RF Cable-R03m	Jye Bao	RG142	CB021	2017-06-17	2018-06-16
18	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2017-06-17	2018-06-16
19	TEST RECEIVER	R&S	ESCI	101142	2017-06-17	2018-06-16
20	RF Cable-CON	UTIFLEX	3102-26886-4	CB049	2017-06-17	2018-06-16
21	10dB Attenuator	SCHWARZBECK	MTS-IMP136	261115-001-00 32	2017-06-17	2018-06-16
22	Artificial Mains	R&S	ENV216	101288	2017-06-17	2018-06-16
23	X-series USB Peak and Average Power Sensor Aglient	Agilent	U2021XA	MY54080022	2017-10-27	2018-10-26
24	4 CH. Simultaneous Sampling 14 Bits 2MS/s	Agilent	U2531A	MY54080016	2017-10-27	2018-10-26
25	Test Software	Ascentest	AT890-SW	20160630	N/A	N/A
26	RF Control Unit	Ascentest	AT890-RFB	N/A	2017-06-17	2018-06-16
27	Universal Radio Communication Tester	R&S	CMU 200	105788	2017-06-17	2018-06-16
28	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW 500	103818	2017-06-17	2018-06-16
29	RF Control Unit	Tonscend	JS0806-1	N/A	2017-06-17	2018-06-16
30	DC Power Supply	Agilent	E3642A	N/A	2017-11-18	2018-11-17
31	LTE Test Software	Tonscend	JS1120-1	N/A	N/A	N/A

2. TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.10: 2013, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

The radiated testing was performed at an antenna-to-EUT distance of 3 meters. All radiated and conducted emissions measurement was performed at Shenzhen LCS Compliance Testing Laboratory Ltd.

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to FCC's request, Test Procedure KDB 789033 D02 General UNII Test Procedures New Rules v01 is required to be used for this kind of FCC 15.407 UII device.

According to its specifications, the EUT must comply with the requirements of the Section 15.203, 15.205, 15.207, 15.209 and 15.407 under the FCC Rules Part 15 Subpart E.

2.3. General Test Procedures

2.3.1 Conducted Emissions

According to the requirements in Section 6.2 of ANSI C63.10: 2013, AC power-line conducted emissions shall be measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

2.3.2 Radiated Emissions

The EUT is placed on a turn table and the turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 6.3 of ANSI C63.10: 2013.

3. SYSTEM TEST CONFIGURATION

3.1. Justification

The system was configured for testing in a continuous transmit condition.

3.2. EUT Exercise Software

The sample will be controlled by RFTest tool to enter RF test mode to control sample change channel, modulation and so on;

3.3. Special Accessories

No.	Equipment	Manufacturer	Model No.	Serial No.	Length	shielded/ unshielded	Notes
1	PC	Lenovo	Ideapad	A131101550	/	/	DOC
2	Power adapter	Lenovo	CPA-A090	36200414	1.00m	unshielded	DOC

3.4. Block Diagram/Schematics

Please refer to the related document

3.5. Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

3.6. Test Setup

Please refer to the test setup photo.

4. SUMMARY OF TEST RESULTS

	Applied Standard: FCC Part 15 Subpart E			
FCC Rules	Description of Test	Result		
§15.407(a)	Maximum Conducted Output Power	Compliant		
§15.407(a)	Power Spectral Density	Compliant		
§15.407(a)	26dB Bandwidth	Compliant		
§15.407(a)	99% Occupied Bandwidth	Compliant		
§15.407(e)	6dB Bandwidth	Compliant		
§15.407(b)	Radiated Emissions	Compliant		
§15.407(b)	Band edge Emissions	Compliant		
§15.205	Emissions at Restricted Band	Compliant		
§15.407(g)	Frequency Stability	N/A		
§15.207(a)	Line Conducted Emissions	Compliant		
§15.203	3 Antenna Requirements Compliant			
§2.1093	§2.1093 RF Exposure Compliant			

Note: The customer declared frequency stability is better than 20ppm which ensures that the signal remains in the allocated bands under all operational conditions stated in the user manual.

5. TEST RESULT

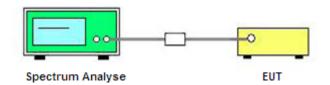
- 5.1. On Time and Duty Cycle
- 5.1.1. Standard Applicable

None; for reporting purpose only.

5.1.2. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of the spectrum analyzer.

- 5.1.3. Test Procedures
- 1). Set the Centre frequency of the spectrum analyzer to the transmitting frequency;
- 2). Set the span=0MHz, RBW=8MHz, VBW=50MHz, Sweep time=5ms;
- 3). Detector = peak;
- 4). Trace mode = Single hold.
- 5.1.4. Test Setup Layout



5.1.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.1.6. Test result

5.1.6.1 Band 1

Mode	On Time B (ms)	Period (ms)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW(KHz)
IEEE 802.11a	5.0	5.0	1	100%	0	0.01
IEEE 802.11n HT20	5.0	5.0	1	100%	0	0.01
IEEE 802.11n HT40	5.0	5.0	1	100%	0	0.01
IEEE 802.11ac VHT20	5.0	5.0	1	100%	0	0.01
IEEE 802.11ac VHT40	5.0	5.0	1	100%	0	0.01
IEEE 802.11ac VHT80	5.0	5.0	1	100%	0	0.01
Note: Duty Cycle Correct	ction Factor=	10log(1/Du	ity cycle)			

SHENZHEN LCS COMPLIANCE TESTING LABORATORY LTD. FCC ID:2AF6CTC-HDMIWM Report No.: LCS180105014AEA On Time and Duty Cycle-band 1 Materia Sustaina Su

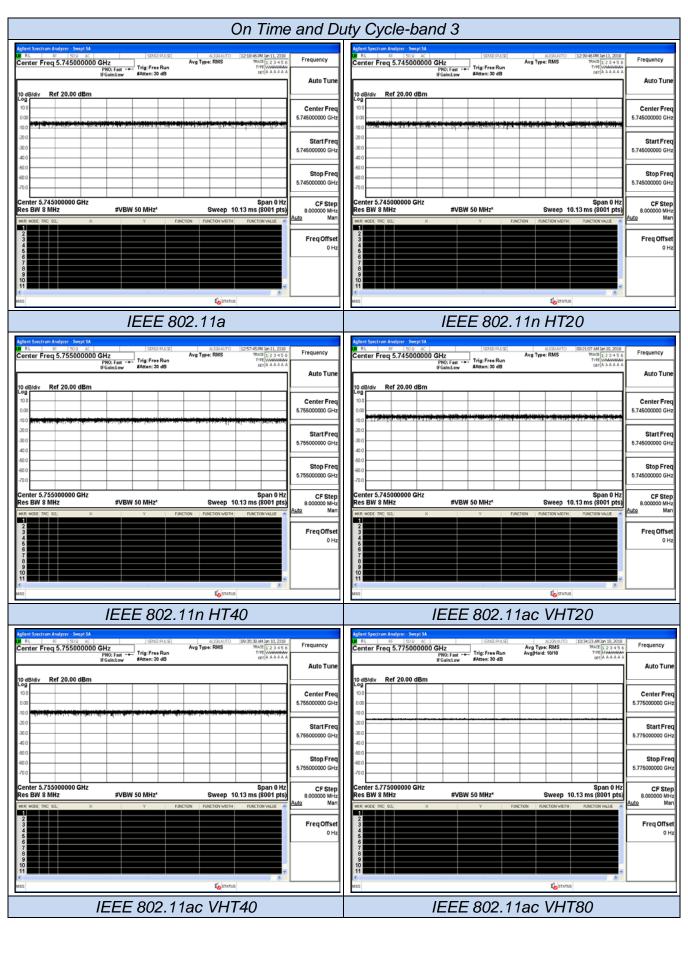


This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 14 of 78

5.1.6.2 Band 3

Mode	On Time B (ms)	Period (ms)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW(KHz)
IEEE 802.11a	5.0	5.0	1	100%	0	0.01
IEEE 802.11n HT20	5.0	5.0	1	100%	0	0.01
IEEE 802.11n HT40	5.0	5.0	1	100%	0	0.01
IEEE 802.11ac VHT20	5.0	5.0	1	100%	0	0.01
IEEE 802.11ac VHT40	5.0	5.0	1	100%	0	0.01
IEEE 802.11ac VHT80	5.0	5.0	1	100%	0	0.01
Note: Duty Cycle Correct	ction Factor=	10log(1/Du	ity cycle)			

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 15 of 78



This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 16 of 78

5.2. Maximum Conducted Output Power Measurement

5.2.1. Standard Applicable

(1) For the band 5.15~5.25GHz

- (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
- (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
- (iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- 5.2.2. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of the power meter.

5.2.3. Test Procedures

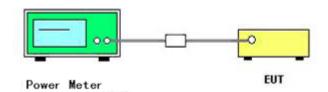
The transmitter output (antenna port) was connected to the power meter.

According to KDB 789033 D02 Section 3 (a) Method PM (Measurement using an RF average power meter):

- (i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied.
 - The EUT is configured to transmit continuously or to transmit with a constant duty cycle.
 - At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
 - The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
- (ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section II.B.
- (iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
- (iv) Adjust the measurement in dBm by adding 10 log (1/x) where x is the duty cycle (e.g., 10 log (1/0.25) if the duty cycle is 25%).

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 17 of 78

5.2.4. Test Setup Layout



5.1.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.2.6. Test Result of Maximum Conducted Output Power

5.2.6.1 Band 1

Test Mode	Channel	Frequency (MHz)	AVG Conducted Power (dBm)	Duty Cycle Factor (dB)	Report Conducted Power (dBm)	Maximum Limit (dBm)	Result
	36	5180	10.98	0.00	10.98		
IEEE 802.11a	40	5200	11.66	0.00	11.66	24	Complies
	48	5240	12.59	0.00	12.59		
	36	5180	11.52	0.00	11.52		
IEEE 802.11n HT20	40	5200	11.82	0.00	11.82	24	Complies
	48	5240	12.52	0.00	12.52		
IEEE 802.11n HT40	38	5190	11.87	0.00	11.87	24	Complies
ILLE 802.11111140	46	5230	12.28	0.00	12.28	24	Complies
IEEE 802.11ac	36	5180	12.71	0.00	12.71		
VHT20	40	5200	12.18	0.00	12.18	24	Complies
VIIIZO	48	5240	12.59	0.00	12.59		
IEEE 802.11ac	38	5190	12.15	0.00	12.15	24	Complies
VHT40	46	5230	12.47	0.00	12.47	24	Complies
IEEE 802.11ac VHT80	42	5210	9.58	0.00	9.58	24	Complies

Remark:

- 1. Measured output power at difference data rate for each mode and recorded worst case for each mode.
- 2. Test results including cable loss;
- 3. Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11ac VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80;
- 4. Report conducted power = Measured conducted average power + Duty Cycle factor;

Test Mode	Channel	Frequency (MHz)	AVG Conducted Power (dBm)	Duty Cycle Factor (dB)	Report Conducted Power (dBm)	Maximum Limit (dBm)	Result
	149	5745	11.91	0.00	11.91		
IEEE 802.11a	157	5785	11.79	0.00	11.79	30	Complies
	165	5825	11.61	0.00	11.61		
IEEE 802.11n	149	5745	11.46	0.00	11.46		
HT20	157	5785	11.15	0.00	11.15	30	Complies
11120	165	5825	11.28	0.00	11.28		
IEEE 802.11n	151	5755	12.20	0.00	12.20	30	Complies
HT40	159	5795	11.97	0.00	11.97		Complies
IEEE 802.11ac	149	5745	11.37	0.00	11.37		
VHT20	157	5785	12.10	0.00	12.10	30	Complies
VIII20	165	5825	11.94	0.00	11.94		-
IEEE 802.11ac	151	5755	12.45	0.00	12.45	30	Complies
VHT40	159	5795	11.81	0.00	11.81		Complies
IEEE 802.11ac VHT80	155	5775	4.92	0.00	4.92	30	Complies

Remark:

1. Measured output power at difference data rate for each mode and recorded worst case for each mode.

2. Test results including cable loss;

3. Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11ac VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80;

4. Report conducted power = Measured conducted average power + Duty Cycle factor;

5.3. Power Spectral Density Measurement

5.3.1. Standard Applicable

For 5.15~5.25GHz

- (i) For an outdoor access point operating in the band 5.15 5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band.note1
- (ii) For an indoor access point operating in the band 5.15 5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band.note1
- (iii) For fixed point-to-point access points operating in the band 5.15 5.25 GHz, transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.
- (iv) For mobile and portable client devices in the 5.15 5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 MHz band. note1
- Note1: If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For 5725~5850MHz

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

5.3.2. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of Spectrum Analyzer.

5.3.3. Test Procedures

5.3.3.1 UNII Band 1

1). The transmitter was connected directly to a Spectrum Analyzer through a directional couple.

2). The power was monitored at the coupler port with a Spectrum Analyzer. The power level was set to the maximum level.

- 3). Set the RBW = 1MHz.
- 4). Set the VBW ≥ 3MHz
- 5). Span=Encompass the entire emissions bandwidth (EBW) of the signal (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- 6). Number of points in sweep ≥ 2 × span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
- 7). Manually set sweep time ≥ 10 × (number of points in sweep) × (total on/off period of the transmitted signal).
- 8). Set detector = power averaging (rms).
- 9). Sweep time = auto couple.
- 10). Trace mode = max hold.
- 11). Allow trace to fully stabilize.
- 12). Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, levels (in power units) at 1 MHz intervals extending across the EBW (or,

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 20 of 78

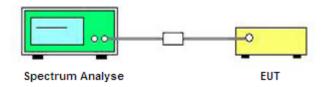
alternatively.

- 13). Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add 10 log (1/0.25) = 6 dB if the duty cycle is 25%.
- 14). Use the peak marker function to determine the maximum power level in any 1MHz band segment within the fundamental EBW.

5.3.3.2 UNII Band 3

- 1). The transmitter was connected directly to a Spectrum Analyzer through a directional couple.
- 2). The power was monitored at the coupler port with a Spectrum Analyzer. The power level was set to the maximum level.
- 3). Set the RBW = 300 kHz
- 4). Set the VBW ≥ 3*RBW
- 5). Span=Encompass the entire emissions bandwidth (EBW) of the signal
- 6). Detector = RMS.
- 7). Sweep time = auto couple.
- 8). Trace mode = max hold.
- 9). Allow trace to fully stabilize.
- 10). If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the measured result, whereas RBW (<500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- 11). If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10 log (1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- 12). Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

5.3.4. Test Setup Layout



5.3.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.3.6. Test Result of Power Spectral Density

					.		
Test Mode	Channel	Frequency (MHz)	Power Density (dBm/MHz)	Duty cycle factor (dB)	Report conducted PSD (dBm/MHz)	Max. Limit (dBm/MHz)	Result
	36	5180	-0.39	0.00	-0.39		
IEEE 802.11a	40	5200	0.03	0.00	0.03	11.00	Complies
	48	5240	1.13	0.00	1.13		
IEEE 802.11n	36	5180	0.04	0.00	0.04		
HT20	40	5200	0.23	0.00	0.23	11.00	Complies
11120	48	5240	0.92	0.00	0.92		
IEEE 802.11n	38	5190	-1.78	0.00	-1.78	11.00	Complies
HT40	46	5230	-1.21	0.00	-1.21	11.00	Complies
IEEE 802.11ac	36	5180	1.18	0.00	1.18		
VHT20	40	5200	1.58	0.00	1.58	11.00	Complies
VIIIZO	48	5240	2.13	0.00	2.13		-
IEEE 802.11ac	38	5190	-0.50	0.00	-0.50	11.00	Complian
VHT40	46	5230	-1.22	0.00	-1.22	11.00	Complies
IEEE 802.11ac VHT80	42	5210	-0.83	0.00	-0.83	11.00	Complies

5.3.6.1 UNII Band 1

Remark:

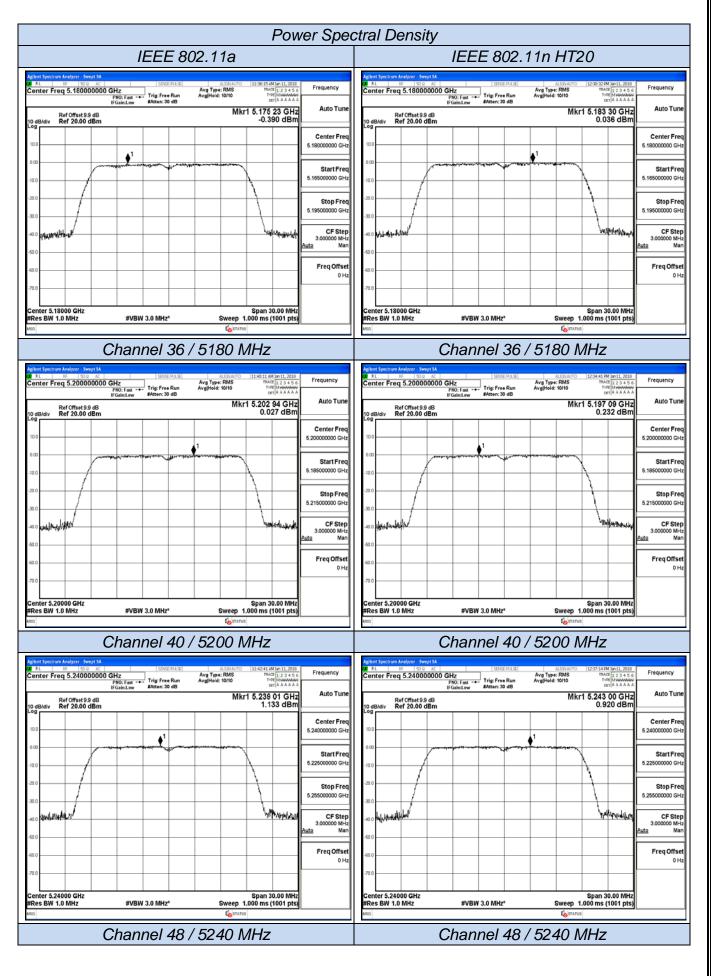
1. Measured power spectrum density at difference data rate for each mode and recorded worst case for each mode.

2. Test results including cable loss;

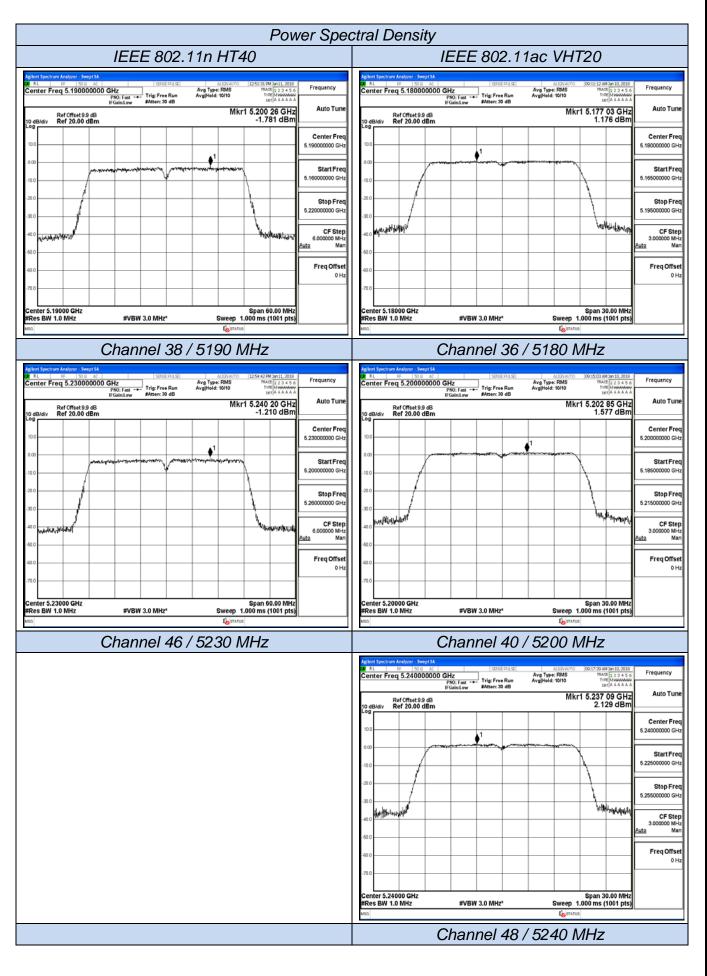
3. Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11ac VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80;

4. Report conducted PSD = Measured conducted average power + Duty Cycle factor;

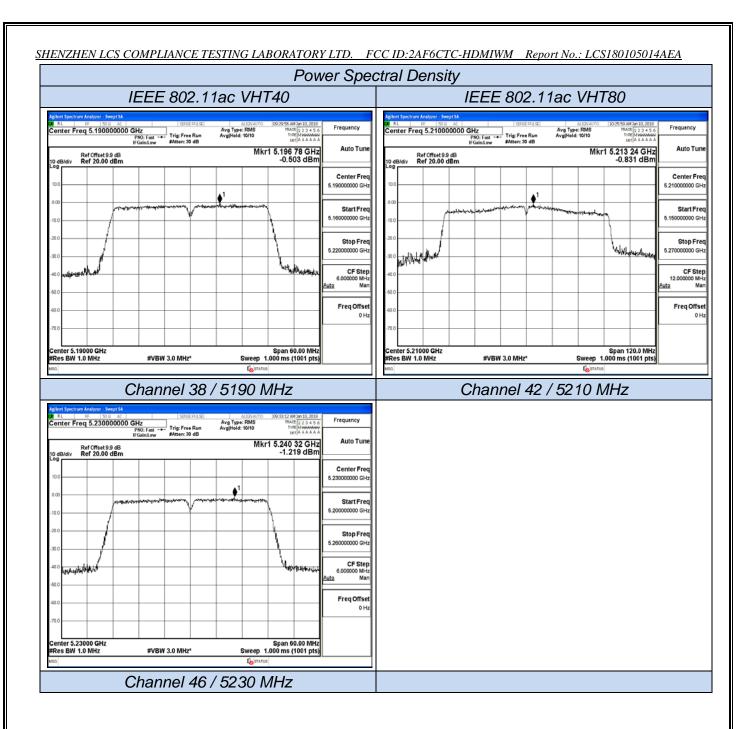
5. Please refer to following test plots;



This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 23 of 78



This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 24 of 78



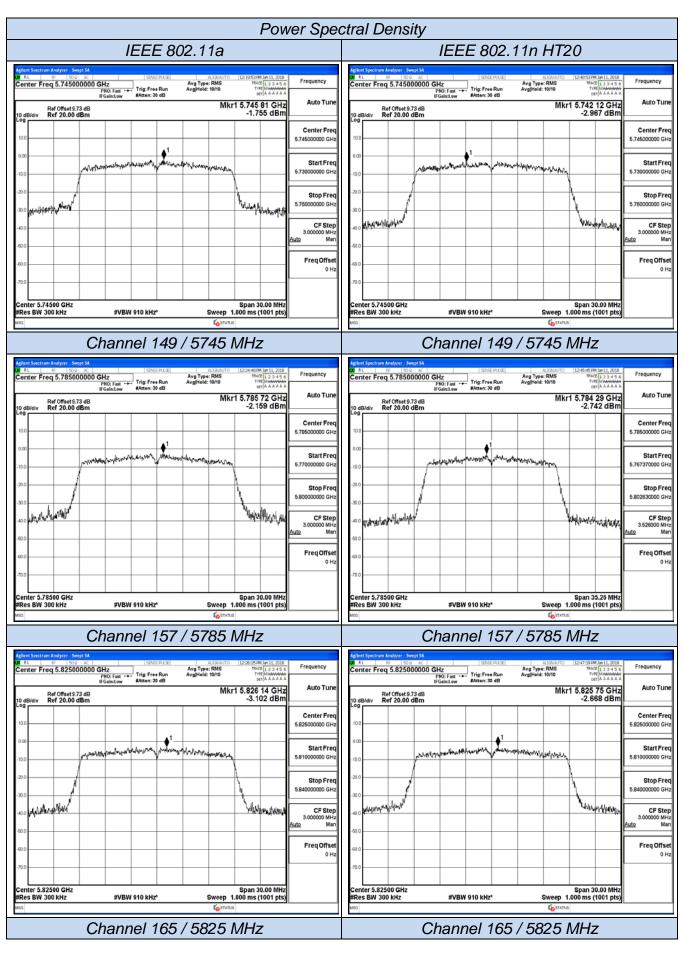
			_	-		Report		
Test Mode	Channel	Frequency (MHz)	Power Density (dBm/ 300KHz)	Duty cycle factor (dB)	RBW factor (dB)	conducted PSD dBm/ 500KHz)	Maximum Limit (dBm/ 500KHz)	Result
	149	5745	-1.76	0.00	2.22	0.46		
IEEE 802.11a	157	5785	-2.16	0.00	2.22	0.06	30	Complies
	165	5825	-3.10	0.00	2.22	-0.88		
IEEE 802.11n	149	5745	-2.97	0.00	2.22	-0.75		
HT20	157	5785	-2.74	0.00	2.22	-0.52	30	Complies
11120	165	5825	-2.67	0.00	2.22	-0.45		
IEEE 802.11n	151	5755	-5.32	0.00	2.22	-3.10	30	Complies
HT40	159	5795	-5.78	0.00	2.22	-3.56	50	Complies
IEEE 802.11ac	149	5745	-3.08	0.00	2.22	-0.86		
VHT20	157	5785	-1.95	0.00	2.22	0.27	30	Complies
VIIIZO	165	5825	-2.38	0.00	2.22	-0.16		
IEEE 802.11ac	151	5755	-4.48	0.00	2.22	-2.26	30	Complies
VHT40	159	5795	-5.65	0.00	2.22	-3.43	30	Complies
IEEE 802.11ac VHT80	155	5775	-15.72	0.00	2.22	-13.5	30	Complies

5.3.6.2 UNII Band 3

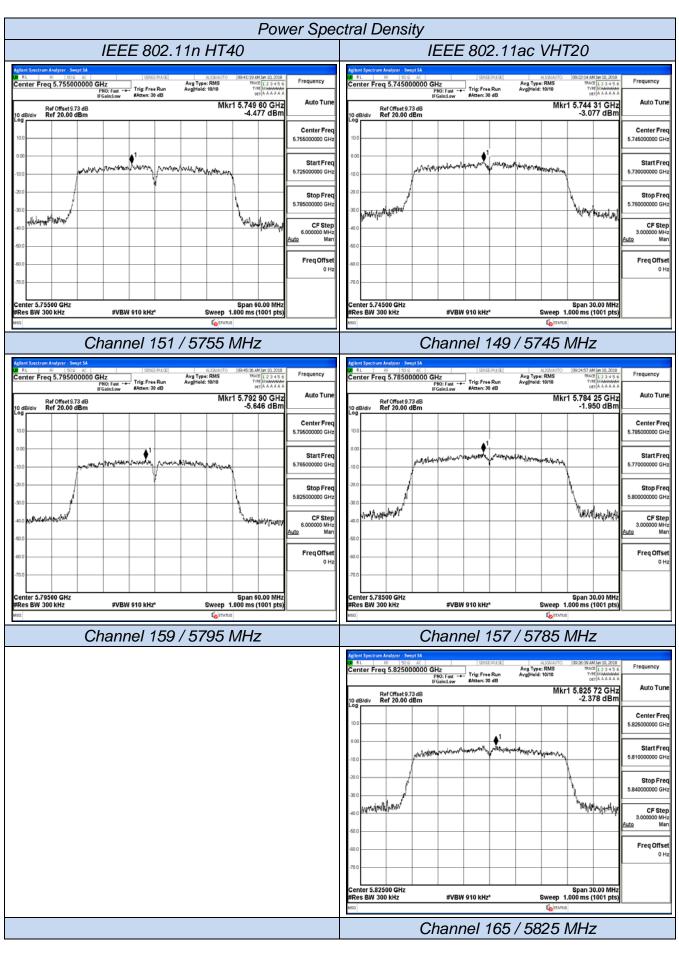
Remark:

1. Measured power spectrum density at difference data rate for each mode and recorded worst case for each mode.

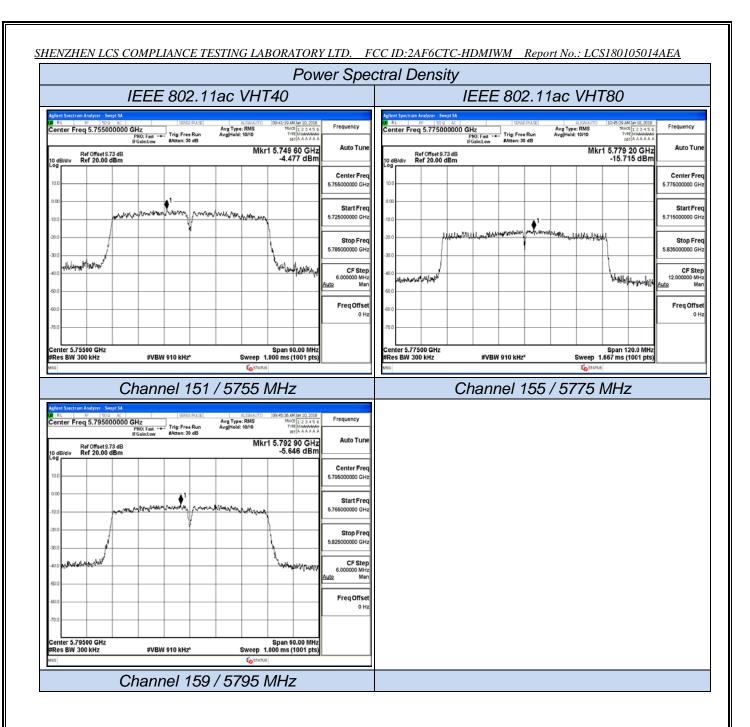
- 2. Test results including cable loss;
- 3. Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11ac VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80;
- 4. Report conducted PSD = measured conducted PSD + Duty Cycle factor + RBW factor;
- 5. RBW factor = 10 log (500 KHz / 300 KHz) = 2.218 dB;
- 6. Please refer to following test plots;



This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 27 of 78



This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 28 of 78



5.4. 99% and 26dB Occupied Bandwidth Measurement

5.4.1. Standard Applicable

No restriction limits. But resolution bandwidth within band edge measurement is 1% of the 99% occupied bandwidth.

99% and 26dB occupied bandwidth not applicable for UNII Band 3;

5.4.2. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of the Spectrum Analyzer.

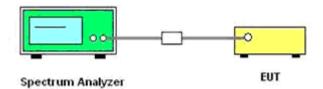
Spectrum Parameter	Setting
Attenuation	Auto
Span	> 26dB Bandwidth
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.

- 2. The RBW = 1% 3% of occupied bandwidth, VBW = 3*RBW;
- 3. Measured the spectrum width with power higher than 26dB below carrier.

5.4.4. Test Setup Layout



5.4.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.4.6. Test Result of 99% and 26dB Occupied Bandwidth

Test Mode	Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limits (MHz)	Verdict
	36	5180	19.99	17.729		
IEEE 802.11a	40	5200	19.94	17.739	No Limit	PASS
	48	5240	19.91	17.729		
IEEE 802.11n	36	5180	19.98	17.728		
HT20	40	5200	19.93	17.737	No Limit	PASS
11120	48	5240	19.96	17.737		
IEEE 802.11n	38	5190	39.79	36.181	No Limit	PASS
HT40	46	5230	40.00	36.147		FA35
IEEE 802.11ac	36	5180	19.95	17.741		
VHT20	40	5200	19.98	17.743	No Limit	PASS
V11120	48	5240	19.97	17.727		
IEEE 802.11ac	38	5190	40.01	36.199	No Limit	PASS
VHT40	46	5230	39.85	36.151		FA33
IEEE 802.11ac VHT80	42	5210	80.57	75.454	No Limit	PASS

5.4.6.1 UNII Band 1

Remark:

1. Measured 99% and 26dB bandwidth at difference data rate for each mode and recorded worst case for each mode.

- 2. Test results including cable loss;
- 3. Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11ac VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80;
- 4. Please refer to following test plots;

99% and 26dB	Occupied Bandwidth
IEEE 802.11a	IEEE 802.11n HT20
Agilent Spectrum Analyzer - Occupied BW	Aglient Spectrum Analyzer - Occupied BW
0 *L 19 100 4C 100450 AU Center Freq 5.180000000 GHz Frequency #WFGateLow # Radio State None #WFGateLow # Radio State None #WFGateLow # Radio State None	M K Iso (Sign Ac) I
Ref Offset 9.9 dB	Ref Offset 9.9 dB
10 dB/div Ref 20.00 dBm	10 dB/div Ref 20.00 dBm Log
0.00 .100 charman man man for the second	
-20.0	
	100
600 Martin Martin	100 minute with the second sec
-70.0	70.0
Center 5.18 GHz Span 40 MHz CF 5 #Res BW 200 kHz #VBW 620 kHz Sweep 1 ms 4.00000	
	Man Occupied Bandwidth Total Power 12.7 dBm Auto Man
17.729 MHz Freq Of	
	OHz Transmit Freq Error 40.940 kHz OBW Power 99.00 % 0 Hz u dB Parabailth 40.08 MHz u dB 26.00 dB 0 0
x dB Bandwidth 19.99 MHz x dB -26.00 dB	x dB Bandwidth 19.98 MHz x dB -26.00 dB
MSG Contraction of the second s	NS3 Karaus
Channel 36 / 5180 MHz	Channel 36 / 5180 MHz
Agitest Spectrum Andres - Occupied DW IN 150-06 150-06 110-06-06 110-06-06 All/ONAUTO 111-06-06 All/ONAUTO All/ONAUTO 111-06-06 All/ONAUTO Al	Agitest Spectrum Andyzer - Occupied DW State End Activity Automation L220:15FM 3n11, 2018 Frequency Will RL 65 500 AC State End Activity Automation 12:20:15FM 3n11, 2018 Frequency Center Freq 5.200000000 GHz Center Freq 5.200000000 GHz Rade Std: None Frequency
Center Freq 5.20000000 GHz Trig: Free Run Avg Fold: 1/1 #IF Gain:Low Atten: 30 dB Radio Device: BTS	Center Freq 5.20000000 GHz Center Freq: 52000000 GHz Radio Std: None Prequency If Galincian #Value Center Freq: 52000000 GHz Radio Std: None Prequency #IF Galincian #Receive Center Freq: 52000000 GHz Radio Device: BTS
Ref Offset 9.9 dB 10 dB/div Ref 20.00 dBm	Ref Offset 9.9 dB 10 dB/div Ref 20.00 dBm
0.00 5.200000000 5.200000000	
-20.0	-100
-00	
and another and the second and the s	600 manuari hilan manuari
40.0 -70.0	60.0 70.0
Center 5.2 GHz Span 40 MHz CF 5 #Res BW 200 kHz Sweep 1 ms	tep #Res BW 200 kHz #VBW 620 kHz Sweep 1 ms
4.00000	MHz Man Occupied Bandwidth Total Power 13.0 dBm
17.739 MHz Freq Of	17 727 MU7
Transmit Freq Error 34.552 kHz OBW Power 99.00 %	0 Hz Transmit Freq Error 36.592 kHz OBW Power 99.00 %
x dB Bandwidth 19.94 MHz x dB -26.00 dB	x dB Bandwidth 19.93 MHz x dB -26.00 dB
MSG	
Channel 40 / 5200 MHz	Channel 40 / 5200 MHz
Agitent Spectrum Analyzer - Occupied DW 0 RL 05 S00 AC STREEPOLISE ALSOLATIO 1114136 AM Int 12.018	Agitest Spectrum Analyzer - Occupied IW ID RL 59 500 AC SEISE PALSE ALIONAUTO 12:25:48 PM 3m11.2018
Center Freq 5.240000000 GHz Center Freq 5.240000000 GHz Freq 5.240000000 GHz Freq 5.240000000 GHz Frequency #FGatatut.ww B States: State States: State States: State States:	Center Freq 5.24000000 GHz Center Freq 5.24000000 GHz Rade Std: None Frequency
Ref Offset 93 dB 10 dB/div Ref 20.00 dBm	Ref Offset 93 dB 10 dB/div Ref 20.00 dBm
100 Center P	
000 5.24000000 5.24000000	GHZ 100 524000000 GHZ
300	
100 000 000 000 000 000 000 000 000 000	400 martine and the second and the s
600	600
Center 5.24 GHz Span 40 MHz CF 5 #Res BW 200 kHz #VBW 620 kHz Sweep 1 ms 4.00000	MHz #YES BY 200 KH2 #YENY 020 KH2 SWEEP THIS 4.000000 MHz
Occupied Bandwidth Total Power 13.7 dBm	Man Occupied Bandwidth Total Power 13.6 dBm
17.729 MHz Freq Of	
Transmit Freq Error 25.959 kHz OBW Power 99.00 % x dB Bandwidth 19.91 MHz x dB -26.00 dB	DHz Transmit Freq Error 25.196 kHz OBW Power 99.00 % 0 Hz x dB Bandwidth 19.96 MHz x dB -26.00 dB 0 Hz
Channel 48 / 5240 MHz	Channel 48 / 5240 MHz

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 32 of 78

99% and 26dB O	ccupied Bandwidth
IEEE 802.11n HT40	IEEE 802.11ac VHT20
Aginet Spectrum Analyzer / Occupied Int Conter Freq 5.190000000 GHz ALD/AUTO 12:202:2144 Juli, 2019 Frequency Center Freq 5.190000000 GHz Center Freq 5.19000000 GHz Rade Std: Noce Rade Davice: BTS Biddy Ref Office:0.9 dB Center Freq 5.19000000 GHz Rade Davice: BTS Frequency Center Freq 5.19000000 GHz Ref Office:0.9 dB Center Freq 5.19000000 GHz Rade Davice: BTS Frequency Center Freq 5.19000000 GHz Ref Office:0.9 dB Center Freq 5.19000000 GHz Center Freq 5.190000000 GHz Frequency Center Freq 5.19 GHz Frequency Frequency Center 5.19 GHz Span 80 MHz Sveep 1 ms Occupied Bandwidth Total Power 13.5 dBm Mar Auto Mar	Aptent Spectram Analyzer - Occupied BW Spectram Analyzer - Occupied BW Spectram Analyzer - Occupied Bandwidth Total Power Spectram Analyzer - Occupied Bandwidth Frequency
36.181 MHz Freq Offset Transmit Freq Error 134.44 kHz OBW Power 99.00 % 0 Hz x dB Bandwidth 39.79 MHz x dB -26.00 dB 0 Hz	17.741 MHz Freq Offset Transmit Freq Error 35.734 kHz OBW Power 99.00 % 0 Hz x dB Bandwidth 19.95 MHz x dB -26.00 dB 0 Hz
Channel 38 / 5190 MHz	Channel 36 / 5180 MHz
Aglent Spectrum Andycer / Occupied HW R t FF 500 AC Center Freq 5.230000000 GHz Center Freq 5.230000000 GHz Freq 5.23000000 GHz Freq 5.230000000 GHZ Freq 5.2300000000 GHZ Freq 5.2300000000 GHZ Freq 5.2300000000 GHZ Freq 5.2300000000 GHZ Freq 5.2300000000 GHZ Freq 5.2300000000 GHZ Freq 5.23000000000 GHZ Freq 5.23000000000 GHZ Freq 5.23000000000 GHZ Freq 5.23000000000 GHZ Freq 5.23000000000 GHZ Freq 5.2300000000 GHZ Freq 5.2300000000 GHZ Freq 5.2300000000 GHZ Freq 5.2300000000 GHZ Freq 5.2300000000 GHZ Freq 5.23000000000 GHZ Freq 5.2300000000 GHZ Freq 5.23000000000 GHZ Freq 5.23000000000 GHZ Freq 5.2300000000 GHZ Freq 5.23000000000 GHZ Freq 5.230000000 GHZ Freq 5.2300000000 GHZ Freq 5.2300000000 GHZ Freq 5.230	Agitent Spectrum Analyzer - Occupied IW R R 55 50 A C Sector Alignment of the Spectrum Analyzer - Occupied IW Center Freq 5.200000000 GHz Center Freq 5.200000000 GHz Rade Stel: Neee R Guinte W Analyzer - Trig: Free Run Avgibiold: 1/1 R Guinte W Analyzer - Occupied IV R Guinte W Analyzer - Occupied IV R Guinte V - Spectrum Analyzer - Occ
10 Bloke Ref 20.00 dBm Log Center Freq 100	10 dB/dir Log 10 d 10
Center 5.23 GHz Span 80 MHz Span 80 MHz #Res BW 390 kHz #VBW 1.2 MHz Sweep 1 ms Occupied Bandwidth Total Power 13.9 dBm 36.147 MHz Freq Offset Transmit Freq Error 99.102 kHz OBW Power x dB Bandwidth 40.00 MHz x dB	Center 5.2 GHz Span 40 MHz Span 40 MHz CF Step 4.00000 MHz #Res BW 200 kHz #VBW 620 kHz Sweep 1 ms CF Step 4.00000 MHz Occupied Bandwidth Total Power 14.3 dBm Auto Man 17.743 MHz Freq Offset 0 Hz VIII 0 Hz x dB Bandwidth 19.98 MHz x dB -26.00 dB 0 Hz
MSG GATATUE	MSG Contracts
Channel 46 / 5230 MHz	Channel 40 / 5200 MHz
	Agitest Syscerum Analyzer - Occupied BW ISPACE/LXEI ALIZAMITO IOD (613) AM 301 10,2018 Frequency Øf #L IF ISO AC IOD (613) AM 301 10,2018 Frequency Center Freq 5.240000000 GHz Center Freq 5.240000000 GHz Rade Std: None Frequency Will All All All All All All All All All
	100 Center Freq 000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	Center 5.24 GHz Span 40 MHz CF Step 4.00000 MHz #Res BW 200 kHz #VBW 620 kHz Sweep 1 ms 4.000000 MHz Occupied Bandwidth Total Power 14.7 dBm 4uto Man 17.727 MHz Freq Offset 0 Hz 9.00 % 0 Hz x dB Bandwidth 19.97 MHz x dB -26.00 dB 0 Hz
	Channel 48 / 5240 MHz

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 33 of 78

SHENZHEN LCS COMPLIANCE TESTING LABORATORY LTD.	FCC ID·24F6CTC_HDMIWM	Ro	port No · I CS1801050144FA
SHENZHEN LCS COMILIANCE LESTING LADORATORI LID.	TCCID.2ATOCIC-IIDMIWM	Ne	DOM NO LUSIO0103014ALA

99% and 26dB (Occupied Bandwidth
IEEE 802.11ac VHT40	, IEEE 802.11ac VHT80
Applend Synctrum Analyser - Occupied DW IDENSIDATIOn IDENSIDATION <td></td>	
Center 5.19 CHz Span 80 MHz CF 51 #Res BW 390 kHz #VBW 1.2 MHz Sweep 1 ms	ep ep #Res BW 820 kHz #VBW 2.4 MHz Sweep 1 ms 16.00000 MHz
Occupied Bandwidth Total Power 14.7 dBm Auto M 36.199 MHz Freq Offs Transmit Freq Error 126.74 kHz OBW Power 99.00 % 0 x dB Bandwidth 40.01 MHz x dB -26.00 dB 0	Occupied Bandwidth Total Power 11.6 dBm
маа	MSG Granus
Channel 38 / 5190 MHz	Channel 42 / 5210 MHz
Occupied Bandwidth Total Power 14.0 dBm 36.151 MHz Freq Offs Transmit Freq Error 111.12 kHz OBW Power 99.00 % x dB Bandwidth 39.85 MHz x dB -26.00 dB	
	<u>_</u>
Channel 46 / 5230 MHz	

5.5. 6dB Occupied Bandwidth Measurement

5.5.1. Standard Applicable

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

5.5.2. Measuring Instruments and Setting

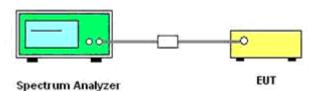
Please refer to equipment list in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span	> 26dB Bandwidth
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.5.3. Test Procedures

- 1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
- 2. The resolution bandwidth of 100 KHz and the video bandwidth of 300 KHz were used.
- 3. Measured the spectrum width with power higher than 6dB below carrier.

5.5.4. Test Setup Layout



5.5.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.5.6. Test Result of 6dB Occupied Bandwidth

5.5.6.1 UNII Band 3

Test Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limits (MHz)	Verdict
	149	5745	17.63		
IEEE 802.11a	157	5785	17.63	≥0.500	Complies
	163	5825	17.63		
	149	5745	17.63		
IEEE 802.11n HT20	157	5785	17.63	≥0.500	Complies
	163	5825	17.63		-
IEEE 802.11n HT40	151	5755	36.40	≥0.500	Complies
IEEE 002.1111 H140	159	5795	36.38	20.500	Complies
	149	5745	17.63		
IEEE 802.11ac VHT20	157	5785	17.62	≥0.500	Complies
	165	5825	17.62		-
IEEE 802.11ac VHT40	151	5755	36.39	≥0.500	Complias
	159	5795	36.36	20.500	Complies
IEEE 802.11ac VHT80	155	5775	75.93	≥0.500	Complies

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 35 of 78

- 1. Measured 6dB bandwidth at difference data rate for each mode and recorded worst case for each mode.
- 2. Test results including cable loss;
- 3. Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11ac VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80;
- 4. Please refer to following test plots;

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 36 of 78

6dB Occu	pied Bandwidth
IEEE 802.11a	IEEE 802.11n HT20
Agilent Spectrum Analyzer - Occupied DW	Aglient Spectrum Analyzer - Occupied BW
UI RL 57 50 4C SEERAGE ALSO ALCONTRACTION DEPORTMENT, 2018 Center Freq 5.745000000 GHz Center Freq 5.74500000 GHz Rade Std: New #IFGanLow Atten: 30 B Rade Device: 315	Off R1 IF ISO & AC ISO E PACE AUXPAINTO Izo 2007 Min 12, 2008 Frequency Center Freq 5.745000000 GHz Center Freq 5.74500000 GHz Center Freq 5.7450000 GHz Radio Stat None Frequency ##Calmut.ve ##Eraint.ve Trig: Free Run Avg Hold: 1/1 Radio Stat None
Ref Offset 9.73 dB	Ref Offset 9.73 dB
10 dB/div Ref 20.00 dBm	10 dB/div Ref 20.00 dBm Log Freq 100 Center Freq
0.00 5.74500000 5.74500000	GHZ 100 5.74500000 GHZ
200 300 minutes for which the for	
Contraction of the Contraction o	400 Windowskie Windowski
40.0	60.0
Center 5.745 GHz Span 40 MHz CF #Res BW 100 kHz #VBW 300 kHz Sweep 3.857 ms	Step Center 5.745 GHz Span 40 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 3.867 ms
Occupied Bandwidth Total Power 13.1 dBm	MHz HVEV BW 100 kHz Sweep 3.607 His Man Occupied Bandwidth Total Power 12.6 dBm
17.698 MHz FreqO	rfset 17.584 MHz Freq Offset
Transmit Freq Error -4.215 kHz OBW Power 99.00 % x dB Bandwidth 17.63 MHz x dB -6.00 dB	0 Hz Transmit Freq Error 4.200 kHz OBW Power 99.00 % 0 Hz x dB Bandwidth 17.63 MHz x dB -6.00 dB
um A	usa fikirana
Channel 149 / 5745 MHz	Channel 149 / 5745 MHz
Agilent Spectrum Analyzer - Occupied DW	Agilent Spectrum Analyzer - Occupied BW
0 #L 19 000 #C 199650483 AU2010 122259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049301.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259049401.12259040000000000000000000000000000000000	Center Freq 5.78500000 GHz
Ref Offset 9.73 dB	Ref Offset 9.73 dB
10 dB/div Ref 20.00 dBm	10 dB/div Ref 20.00 dBm Log Treg Treg
0.00 .100 5.78500000	
100 monormal and the second	100 WANNAMA WINNING WANNAMA WANNA WANNAMA
600	
Center 5.785 GHz Span 40 MHz	Center 5.785 GHz Span 40 MHz CF Step
#Res BW 100 kHz #VBW 300 kHz Sweep 3.867 ms 4.000000 Occupied Bandwidth Total Power 12.8 dBm Auto Aut	Marz #WRBW 100 kHz Sweep 3.857 ms Cr Step 4 Man Occupied Bandwidth Total Power 12.3 dBm Auto Man
17.589 MHz	17 592 MHz
Transmit Freq Error 6.870 kHz OBW Power 99.00 % x dB Bandwidth 17.63 MHz x dB -6.00 dB	0 Hz Transmit Freq Error 4.009 kHz OBW Power 99.00 % 0 Hz x dB Bandwidth 17.63 MHz x dB -6.00 dB
Channel 157 / 5785 MHz	Channel 157 / 5785 MHz
Aplete System Andrez, Docopid 097 151057 0.1 4.05214070 1226504983 0.11,2018 # Rt 51 50 6.4 Senter Freq. 5.825000000 Genter Freq. 5.825000000 Frequence Center Freq 5.825000000 GHz Center Freq. 5.825000000 Genter Freq. 5.8250000000 Frequence	
#IFGaint.tow #Atten: 30 dB Radio Device: BTS	#FGaintLow #Atten: 30 dB Radio Device: BTS
Ref Offset 973 dB 10 dB/div Ref 20.00 dBm Log	10 dBldiv Ref 20.00 dBm
10.0 Center 0.00 5.82500000	GHz 0.00 5.825000000 GHz
300 400 Monumental Management	30.0
	000 000 000 000 000 000 000 000 000 00
Occupied Bandwidth Total Power 12.7 dBm	Occupied Bandwidth Total Power 12.5 dBm
Transmit Freq Error 5.563 kHz OBW Power 99.00 %	Iffset Freq Offset Freq Offset 0 Hz Transmit Freq Error 6.832 kHz OBW Power 99.00 % 0 Hz
x dB Bandwidth 17.63 MHz x dB -6.00 dB	x dB Bandwidth 17.63 MHz x dB -6.00 dB
ма	ма
Channel 165 / 5825 MHz	Channel 165 / 5825 MHz

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 37 of 78

6dB Occupie	ed Bandwidth
IEEE 802.11n HT40	IEEE 802.11ac VHT20
Agilent Spectrum Analyzer - Occupied BW	Agilent Spectrum Analyzer - Occupied IW
0 ALL 159 000 ALC AUDADIO 129907 043 bit 1,2010 Frequency Center Freq 5.75500000 GHz Center Freq 15,75500000 GHz Rado Std: None Rado Std: None Frequency ##FGaint.ow ##fGaint.ow ##faten: 30 dB Rado Device: BTS Ref Offset 923 dB Rado Device: BTS Rado Device: BTS	# Image: Center Freq. 5,745000000 GHz Image: Center Freq. 5,745000000 GHz Radio Std: Nene ##E Gaint.ow ##Freq. 8,7400000 GHz Radio Std: Nene ##E Gaint.ow ##freq. 8,7400000 GHz Radio Std: Nene ##F Gaint.ow ##freq. 8,7400000 GHz Radio Std: Nene ##F Gaint.ow #Atten: 30 dB Radio Device: BTS
10 dB/dv Ref 20.00 dBm Log Log 00 00 00 00 00 00 00 00 00 0	10 dB/w/ Ref 20.00 dBm Center Freq 100
Center 5.755 GHz Span 80 MHz CF Step 800000 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 7.657 ms 6400 MHz	Center 5.745 GHz Span 40 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 3.867 ms 4.00000 MHz kuto Man
Occupied Bandwidth Total Power 13.5 dBm 36.204 MHz Freq Offset Transmit Freq Error -50.584 kHz x dB Bandwidth 36.40 MHz x dB -6.00 dB	Occupied Bandwidth Total Power 12.6 dBm 17.652 MHz Freq Offset Transmit Freq Error -2.586 kHz X dB Bandwidth 17.63 MHz x dB -6.00 dB
Channel 151 / 5755 MHz	Channel 149 / 5745 MHz
Alpter System Analyzer Okcepited tw All tot \$1 \$100 exc State All 2014/010 D13/2/53 PM 3m11, 2018 Frequency Center Freq 5.795000000 GHz Center Freq 5.795000000 GHz Center Freq 5.795000000 GHz Ref 0 State 100 GHz Frequency #EFCalinLow #EfCalinLow Auglibidit: 1/1 Ref 0 Device: BTS Frequency 0 dB/dit Ref 00 dB m GHZ GHZ Frequency Frequency	Algiter Spectram Analyzer, Decoping BW # kL # SD & AC ISDOE PALKE ALUXIANTO ID02H0X.AM.3m 102.2018. Frequency Center Freq 5.785000000 GHz Center Freq 5.785000000 GHz Radio Stat. None Frequency ## L ## Figure Act Trig:Freq 8.00 Avg Hold: 1/1 Radio Device: BTS Frequency ## College: BY 30 dB #Atten: 30 dB Radio Device: BTS Freq 20.00 dBm
Log min for 2000 cm 103 100 100 100 100 100 100 100	Log own
Web Span 80 MHz Span 80 MHz Center 5.795 GHz #VBW 300 kHz Sweep 7.657 ms #Res BW 100 kHz #VBW 300 kHz Sweep 7.657 ms 0ccupied Bandwidth Total Power 13.2 dBm	Center 5.785 GHz Span 40 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 3.867 ms Occupied Bandwidth Total Power 13.2 dBm
35.942 MHz Freq Offset Transmit Freq Error -21.827 kHz OBW Power 99.00 % 0 Hz x dB Bandwidth 36.38 MHz x dB -6.00 dB 0 Hz	Transmit Freq Error 5.277 kHz OBW Power 99.00 % OHz x dB Bandwidth 17.62 MHz x dB -6.00 dB -6.00 dB
M6G	N92
Channel 159 / 5795 MHz	Channel 157 / 5785 MHz
	Aligner Oxcepted BV B It is 100 acrit (0000000 GHz) B It is 100 acrit (000000 GHz) Center Freq 5.825000000 GHz Center Freq 5.825000000 GHz Frequency #If Gree Run Altorno (00000 GHz) Frequency #If Gree Run #Atten::30 dB Ref Offset 9.73 dB
	10 dB/dir Ref 20.00 dBm Log Center Freq 00
	400
	Image: Star Job Kn2 Image: Star Job Kn2
	M82 Gararus
	Channel 165 / 5825 MHz

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 38 of 78

6dB (Occupied Bandwidth
IEEE 802.11ac VHT40	IEEE 802.11ac VHT80
Applied System Analyzer : Occupied BW Center Freq 5.755000000 GHz Center Freq 5.755000000 GHz Rado Std: None Center Freq 5.755000000 GHz Center Freq 5.755000000 GHz Rado Std: None Rado Std: None ## Gain:Low ## Gain:Low Adten: 30 dB Rado Device: BTS Ref Offset 9.73 dB Ref 20.00 dBm Center Freq 5.755000000 GHz Ref 20.00 dBm	Aglent System Andrer: Occupied BW Frequency 81 55 50 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
10 Bloker Ref 20.00 dBm	Center Freq Center Freq
Center 5.755 GHz Span 80 MHz Span 80 MHz #Res BW 100 kHz Sweep 7.697 ms Occupied Bandwidth Total Power 13.8 dBm 36.223 MHz Transmit Freq Error -44.582 kHz OBW Power 99.00 % x dB Bandwidth 36.39 MHz x dB -6.00 dB	CF Step 8.00000 MHz 2uto Span 160 MHz Man Span 160 MHz Sweep 15.33 ms CF Step 16.00000 MHz Man Freq Offset 0 Hz 0 Hz #VBW 300 kHz Sweep 15.33 ms CF Step 16.00000 MHz Man Freq Offset 0 Hz 0 Hz Transmit Freq Error -18.121 kHz OBW Power 99.00 % 0 Hz X dB Bandwidth 75.93 MHz x dB -6.00 dB 0 Hz
MSG	Miss Contraction
Channel 151 / 5755 MHz	Channel 155 / 5775 MHz
Applied Spectrum Analyzer / Occupied Int IDDE COST REDUCTION IDDE COST IDDE COST	Center Freq 5.79500000 GHz
Channel 159 / 5795 MHz	

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 39 of 78

5.6. Radiated Emissions Measurement

5.6.1. Standard Applicable

15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
\1\ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293.	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(\2\)
13.36-13.41			

\1\ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. \2\ Above 38.6

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz (68.2dBuV/m at 3m).

For transmitters operating in the 5.725-5.85 GHz band:

All emissions shall be limited to a level of -27 dBm/MHz(68.2 dBuV/m at 3m) at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz(105.2 dBuV/m at 3m) 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(110.8 dBuV/m at 3m) 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(122.2 dBuV/m at 3m) at the band edge

In addition, In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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

5.6.2. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10 ^m carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP/AVG
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP/AVG
Start ~ Stop Frequency	30MHz~1000MHz / RB 100kHz for QP

5.6.3. Test Procedures

1) Sequence of testing 9 kHz to 30 MHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

- --- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.
- --- If the EUT is a floor standing device, it is placed on the ground.
- --- Auxiliary equipment and cables were positioned to simulate normal operation conditions.
- --- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- --- The measurement distance is 3 meter.
- --- The EUT was set into operation.

Premeasurement:

- --- The turntable rotates from 0° to 315° using 45° steps.
- --- The antenna height is 0.8 meter.

--- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

--- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).

--- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

2) Sequence of testing 30 MHz to 1 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

- --- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- --- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- --- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- --- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- --- The measurement distance is 3 meter.
- --- The EUT was set into operation.

Premeasurement:

- --- The turntable rotates from 0° to 315° using 45° steps.
- --- The antenna is polarized vertical and horizontal.
- --- The antenna height changes from 1 to 3 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (\pm 45°) and antenna movement between 1 and 4 meter.

--- The final measurement will be done with QP detector with an EMI receiver.

--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.