

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 1 of 41

Applicant : Anitoa Biotechnology (Hangzhou) Co.,Ltd.
Address of Applicant : Room 210,2F,Building 2,No.658 binan Road,Changhe Street,Binjiang District,Hangzhou City,Zhejiang Province

Product Name : Real-time Fluorescence Quantitative PCR Instrument
Brand Name : anitoa
Model No. : MQ4164,MQ4041,MQ4042,MQ4043,MQ4044,MQ4081,MQ4082,MQ4083,MQ4084,MQ4161,MQ4162,MQ4163

Sample No. : H22020028-01#01

FCC ID : 2A7M7MQ4

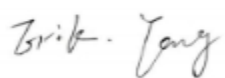
Standards : FCC CFR47 Part 15, Subpart E

Date of Receipt : 2022-05-20
Date of Test : 2022-05-21 ~ 2022-07-07
Date of Issue : 2022-07-08

Remark:

This report details the results of the testing carried out on one sample, the results contained in this report do not relate to other samples of the same product.

Prepared by:



(Erik Yang)

Reviewed by:



(Jennifer Zhou)

Approved by:



(Authorized signatory: Guoyou Chi)

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 2 of 41

Contents

1	GENERAL INFORMATION	3
1.1	TESTING LABORATORY	3
1.2	DETAILS OF APPLICATION	3
1.3	DETAILS OF EUT	3
1.4	TEST METHODOLOGY	5
1.5	TEST SUMMARY	5
2	TEST CONDITION	6
2.1	ENVIRONMENTAL CONDITIONS	6
2.2	EQUIPMENT LIST	6
2.3	MEASUREMENT UNCERTAINTY	7
3	TEST SET-UP AND OPERATION MODES	8
3.1	DETAILS OF TEST MODE	8
3.2	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	9
3.3	SUPPORT SOFTWARE	9
3.4	TEST SETUP DIAGRAM	9
4	TEST RESULTS	11
4.1	TRANSMITTER REQUIREMENT & TEST SUITES	11
4.1.1	<i>Antenna Requirement</i>	11
4.1.2	<i>Maximum Conducted Output Power</i>	12
4.1.3	<i>6dB Bandwidth</i>	16
4.1.4	<i>Maximum Power Spectral Density (PSD)</i>	31
4.1.5	<i>Conducted Spurious Emission</i>	32
4.1.6	<i>Radiated Emission</i>	33
4.1.7	<i>Band Edge (Restricted-band band-edge)</i>	34
4.1.8	<i>Frequency Stability</i>	35
4.2	MAINS EMISSIONS	36
4.2.1	<i>Conducted Emission on AC Mains</i>	36
5	APPENDIXES	39
5.1	PHOTOGRAPHS OF THE SAMPLE	39
5.2	SET-UP FOR CONDUCTED EMISSIONS	40
5.3	SET-UP FOR CONDUCTED RF TEST AT ANTENNA PORT	40
5.4	SET-UP FOR RADIATED EMISSION BELOW 1GHZ	41
5.5	SET-UP FOR RADIATED EMISSION ABOVE 1GHZ	41

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 3 of 41

1 General Information

1.1 Testing Laboratory

Company Name	ICAS Testing Technology Service (Shanghai) Co., Ltd.
Address	No.1298 Pingan Rd, Minhang District, Shanghai, China
Telephone	0086 21-51682999
Fax	0086 21-54711112
Homepage	www.icasiso.com

1.2 Details of Application

Applicant Company Name	Anitoba Biotechnology (Hangzhou) Co.,Ltd.
Address	Room 210,2F,Building 2,No.658 binan Road,Changhe Street,Binjiang District,Hangzhou City,Zhejiang Province
Contact Person	Xu.Bai
Telephone	13616528058
Email	xu.bai@artobio.cn
Manufacturer Company Name	Anitoba Biotechnology (Hangzhou) Co.,Ltd.
Address	Room 210,2F,Building 2,No.658 binan Road,Changhe Street,Binjiang District,Hangzhou City,Zhejiang Province
Factory Company Name	Anitoba Biotechnology (Hangzhou) Co.,Ltd.
Address	Room 210,2F,Building 2,No.658 binan Road,Changhe Street,Binjiang District,Hangzhou City,Zhejiang Province

1.3 Details of EUT

Product Name	Real-time Fluorescence Quantitative PCR Instrument
Brand Name	anitoba
Test Model No.	MQ4164
Series Model No.	MQ4041,MQ4042,MQ4043,MQ4044,MQ4081,MQ4082,MQ4083,MQ4084,MQ4161,MQ4162,MQ4163
Difference Description	All the models are identical with the same schematics, PCB layout, structure, size and components, the difference are only quantities in fluorescence channel and check holes
FCC ID	2A7M7MQ4
Mode of Operation	WLAN 802.11a/n(HT20/40)/ac(HT20/40/80)
Frequency Range	Band IV: 5725 MHz ~ 5850 MHz
Modulation Type	256QAM, 64QAM, 16QAM, BPSK, QPSK
Channel Bandwidth	802.11a: 20MHz 802.11n: 20MHz, 40MHz 802.11ac: 20MHz, 40MHz, 80MHz
Antenna Type	Internal Antenna
Antenna Gain	3dBi

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 4 of 41

Extreme Temperature Range	-20℃~ +55℃
Test Voltage	AC 120V 60Hz by Switching adapter (Model: GST160A15)
Extreme Voltage	Low Voltage: AC 100V by Switching adapter (Model: GST160A15) High Voltage: AC 240V by Switching adapter (Model: GST160A15)
Product Type	Mobile and portable for FCC standard
Hardware version	MQ_05_V10.3
Software version	V1.7.2.2
Test SW Version	BL410_R; BL410_E
RF power setting in TEST SW	Engineer Mode

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 5 of 41

1.4 Test Methodology

47 CFR Part 15, Subpart E	Unlicensed National Information Infrastructure Devices
KDB Publication 789033 D02 v02r01	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E
ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

Note(s): All test items were verified and recorded according to the standards and without any addition/deviation/exclusion during the test

1.5 Test Summary

Test Item	FCC Rules	Result
Antenna Requirement	FCC Part 15.407(a), 15.203	PASS
Maximum Conducted Output Power	FCC Part 15.407(a)	PASS
6dB Bandwidth	FCC Part 15.407(e)	PASS
Maximum Power Spectral Density	FCC Part 15.407(a)	PASS
Conducted Spurious Emission	FCC Part 15.407(b), 15.209	PASS
Radiated Emission	FCC Part 15.407(b)	PASS
Band Edge (Restricted-band band-edge)	FCC Part 15.407(b)	PASS
Frequency Stability	FCC Part 15.407(g)	PASS
Conducted Emission on AC Mains	FCC Part 15.207	PASS

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 6 of 41

2 Test Condition

2.1 Environmental conditions

Temperature (°C)	18-25
Humidity (%RH)	40-65
Barometric Pressure (mbar)	960-1060

2.2 Equipment List

Name of Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Keysight	N9020B	MY59260184	2021-08-17	2022-08-16
Spectrum Analyzer	Rohde & Schwarz	FSV40N	101450	2021-06-10	2022-06-09
EMI Test Receiver	Rohde & Schwarz	ESPI3	100173	2021-06-10	2022-06-09
EMI Test Receiver	Rohde & Schwarz	ESR 7	101911	2021-06-10	2022-06-09
V-network	SCHWARZBECK	NSLK 8127	8127-902	2021-06-10	2022-06-09
Wideband Radio Communication Tester	Rohde & Schwarz	CMW 500	100687	2021-08-13	2022-08-12
Broadband Antenna	SCHWARZBECK	VULB9163	9163-1037	2021-06-08	2023-06-07
Horn Antenna-18G	SCHWARZBECK	BBHA9120D	9120D-1775	2021-06-08	2023-06-07
Horn Antenna-40G	YINGLIAN	LB-180400-KF	N/A	2021-06-12	2022-06-11
Loop Antenna	SCHWARZBECK	FMZB 1513	N/A	2020-11-23	2022-11-22
EMC chamber 9*6*6 (L*W*H)	CHANGNING	966	N/A	2020-06-09	2023-06-08
Shielded Enclosure 8*5*4 (L*W*H)	CHANGNING	854	N/A	2020-06-09	2023-06-08
Test Software	BL	BL410_E	N/A	N/A	N/A
Test Software	BL	BL410_R	N/A	N/A	N/A

Note(s): Updated calibration dates for some equipment

Name of Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Rohde & Schwarz	FSV40N	101450	2022-06-09	2023-06-08
EMI Test Receiver	Rohde & Schwarz	ESPI3	100173	2022-06-09	2023-06-08
EMI Test Receiver	Rohde & Schwarz	ESR 7	101911	2022-06-09	2023-06-08
V-network	SCHWARZBECK	NSLK 8127	8127-902	2022-06-09	2023-06-08
Horn Antenna-40G	YINGLIAN	LB-180400-KF	N/A	2022-06-09	2023-06-08

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 7 of 41

2.3 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.

Parameter	Frequency	Uncertainty
Antenna Port Conducted Emission	< 1GHz	± 1.5 dB
	> 1GHz	± 1.5 dB
Radiated Emission	30 MHz – 1 GHz	± 3.42 dB
	> 1GHz	± 4.20 dB
Conducted Emission on AC Mains	9 kHz to 30 MHz	± 1.71 dB

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 8 of 41

3 Test Set-up and Operation Modes

3.1 Details of Test Mode

Using test software (Engineer Mode) was control EUT work in continuous transmitter and receiver mode.

Select test channel as below:

For 802.11a/n(HT20), 802.11ac (VHT20)

Band IV (5725 – 5850 MHz)	
Channel	Frequency
The lowest channel (CH149)	5745MHz
The middle channel (CH157)	5785MHz
The highest channel (CH165)	5825MHz

For 802.11n(HT40), 802.11ac (VHT40)

Band IV (5725 – 5850 MHz)	
Channel	Frequency
The lowest channel (CH151)	5755MHz
The highest channel (CH159)	5795MHz

For 802.11ac (VHT80)

Band IV (5725 – 5850 MHz)	
Channel	Frequency
The lowest channel (CH155)	5775MHz

Through Pre-scan under all rate at lowest channel, the data rate as below table described is the worst case, so we choose these data rate for test.

Type	Data rate
802.11a	54Mbps
802.11n(HT20)	MCS4
802.11n(HT40)	MCS3
802.11ac (VHT20)	MCS4
802.11ac (VHT40)	MCS2
802.11ac (VHT80)	MCS3

The basic operation modes are:

- A. On
 - 1. WLAN mode
 - a. Transmitting

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 9 of 41

- b. Receiving
- B. Standby
- C. Off

3.2 Special Accessories and Auxiliary Equipment

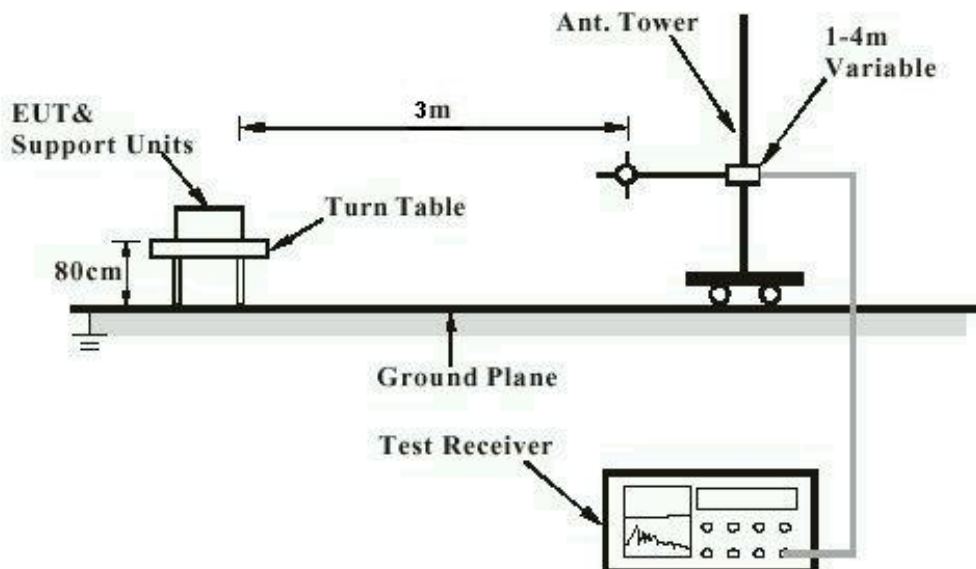
Description	Manufacturer	Model No.	Serial No.
Switching Adapter	N/A	GST160A15	1.00m Unshielded

3.3 Support Software

Description	Manufacturer	Software Name
Software	N/A	Engineer Mode

3.4 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test



Note: Measurements above 1GHz are done with a table height of 1.5m. In addition, there is RF absorbing material on the floor of the test site for above 1GHz measurement.

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 10 of 41

Diagram of Measurement Equipment Configuration for Conduction Measurement

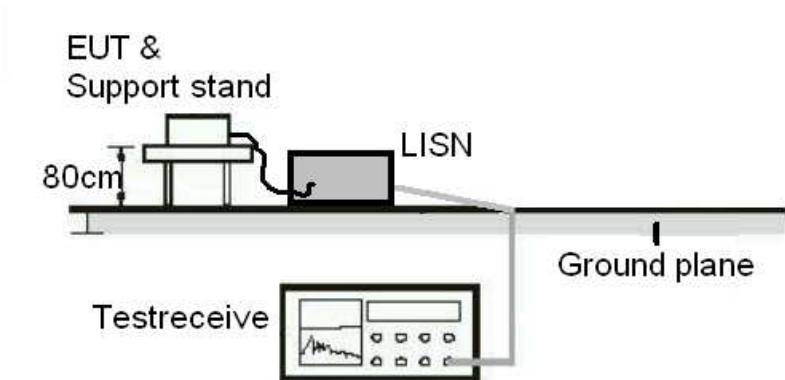
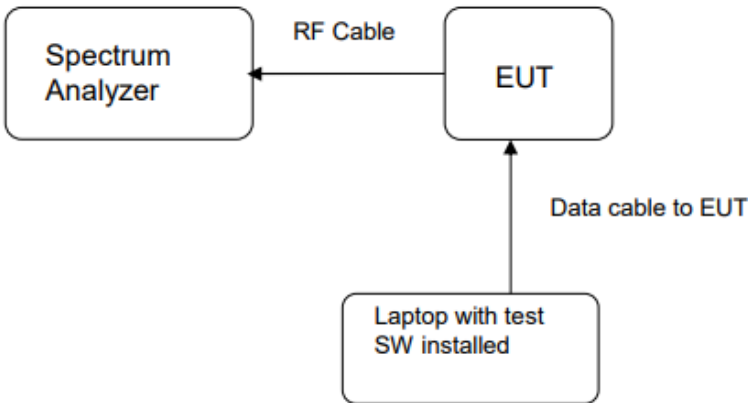


Diagram of Measurement Equipment Configuration for Transmitter Measurement



TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 11 of 41

4 Test Results

4.1 Transmitter Requirement & Test Suites

4.1.1 Antenna Requirement

RESULT:

PASS

Test standard : FCC Part 15.407(a), 15.203

Requirement : The use of approved antennas only with directional gains that do not exceed 6dBi

According to the manufacturer declaration, the EUT has an antenna with a directional gain of 3dBi. The antenna is an internal antenna with no possibility of replacement with a non-approved antenna by the end-user.

Therefore, the EUT is considered to comply with this provision.

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 12 of 41

4.1.2 Maximum Conducted Output Power

RESULT:

PASS

Test standard : FCC Part 15.407(a)
Requirement : ANSI C63.10-2013, KDB 789033

Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High
Operation Mode : A.1.a
Ambient temperature : 23°C
Relative humidity : 52%

Table 1: Maximum Conducted Output Power

Test Mode	Duty Cycle	Test Channel (MHz)	Maximum Conducted Output Power		FCC/IC Limit (W)
			(dBm)	(mW)	
802.11a	85.19%	5745	12.14	16.37	1
		5785	11.35	13.65	
		5825	10.30	10.72	
802.11n(HT20)	88.88%	5745	11.70	14.79	
		5785	10.79	11.99	
		5825	10.03	10.07	
802.11ac(VHT20)	89.54%	5745	12.09	16.18	
		5785	10.46	11.12	
		5825	9.95	9.89	
802.11n(HT40)	86.86%	5755	11.40	13.80	
		5795	10.25	10.59	
802.11ac(VHT40)	88.68%	5755	11.24	13.30	
		5795	10.05	10.12	
802.11ac(VHT80)	60.37%	5775	12.85	19.28	

Note(s): Add $[10 \log (1 / D)]$, where D is the duty cycle, to the measured power 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).

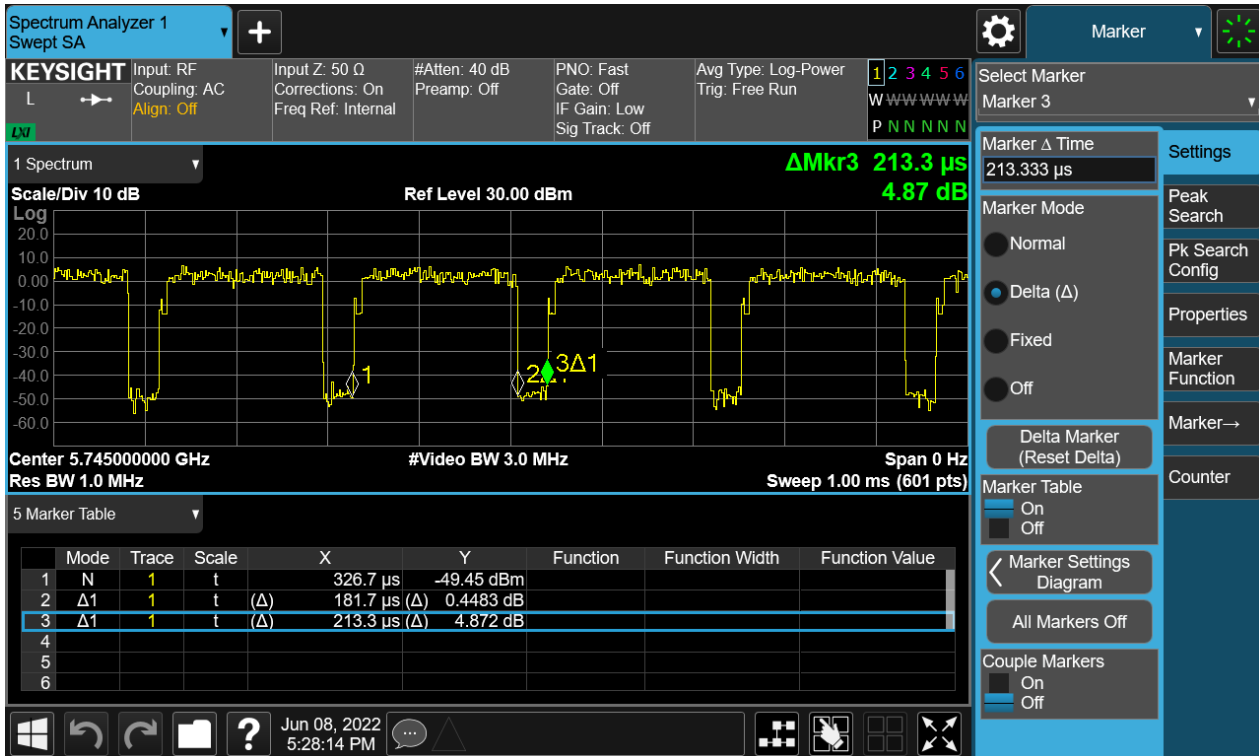
TEST REPORT

Report No.: SHH22020028-01FE

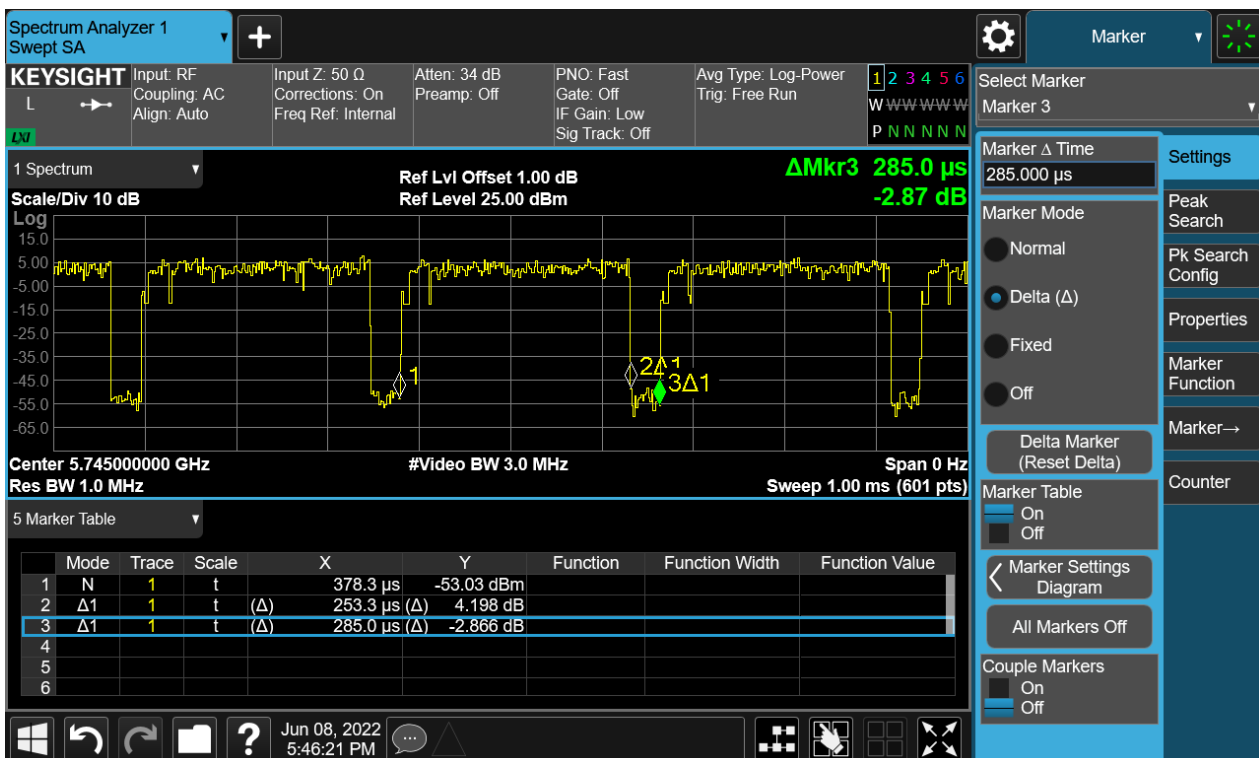
Date: 2022-07-08

Page 13 of 41

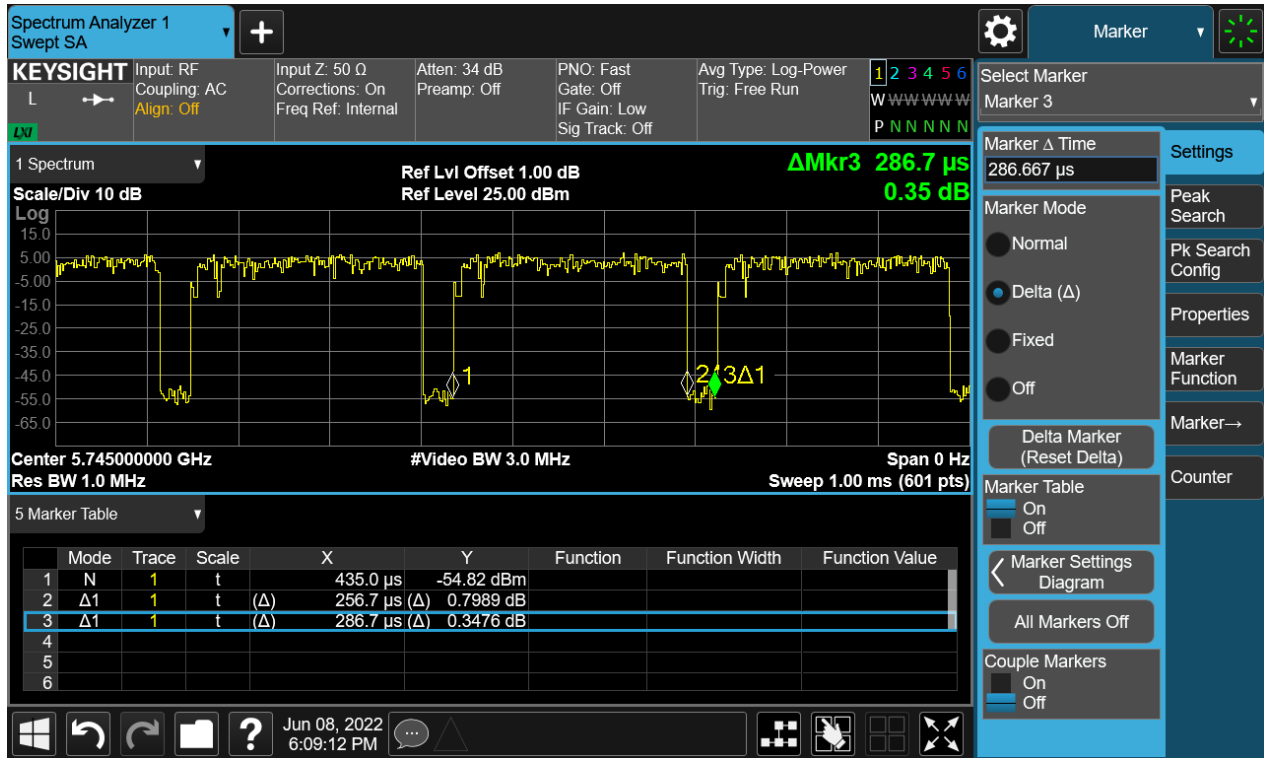
The plots of 802.11a_duty cycle



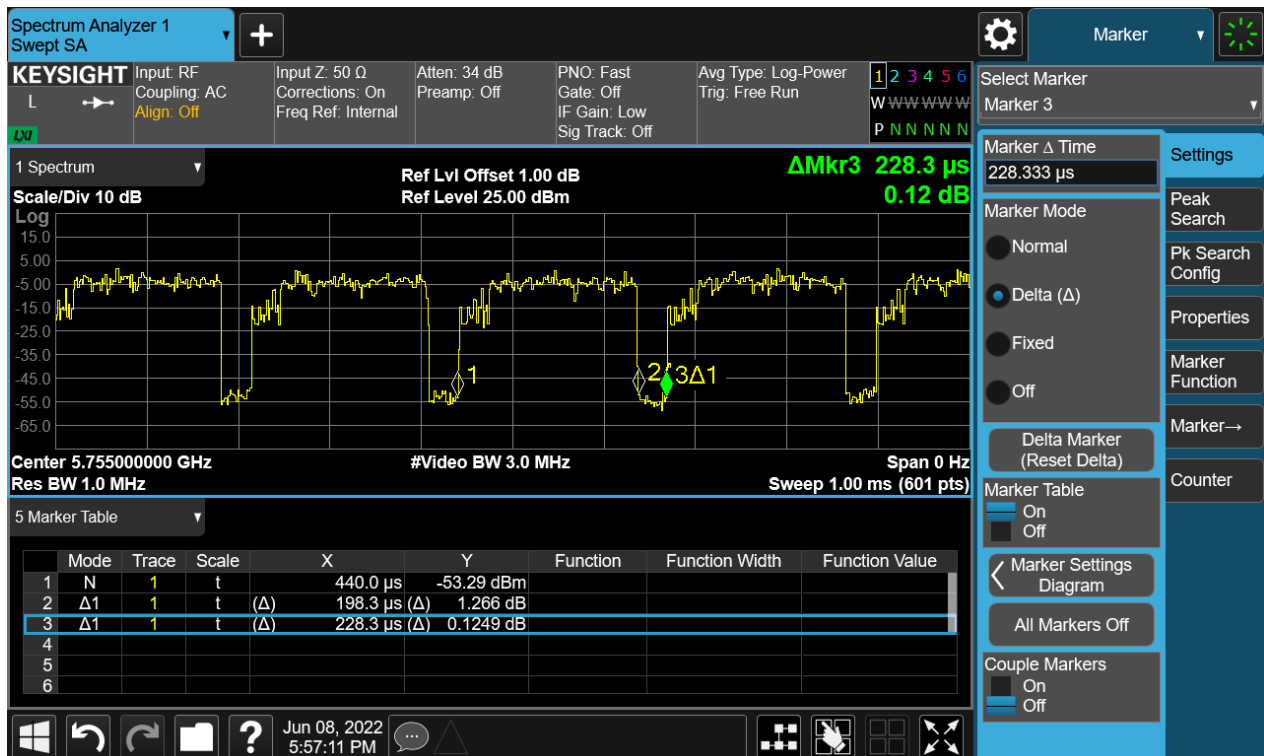
The plots of 802.11n20_duty cycle



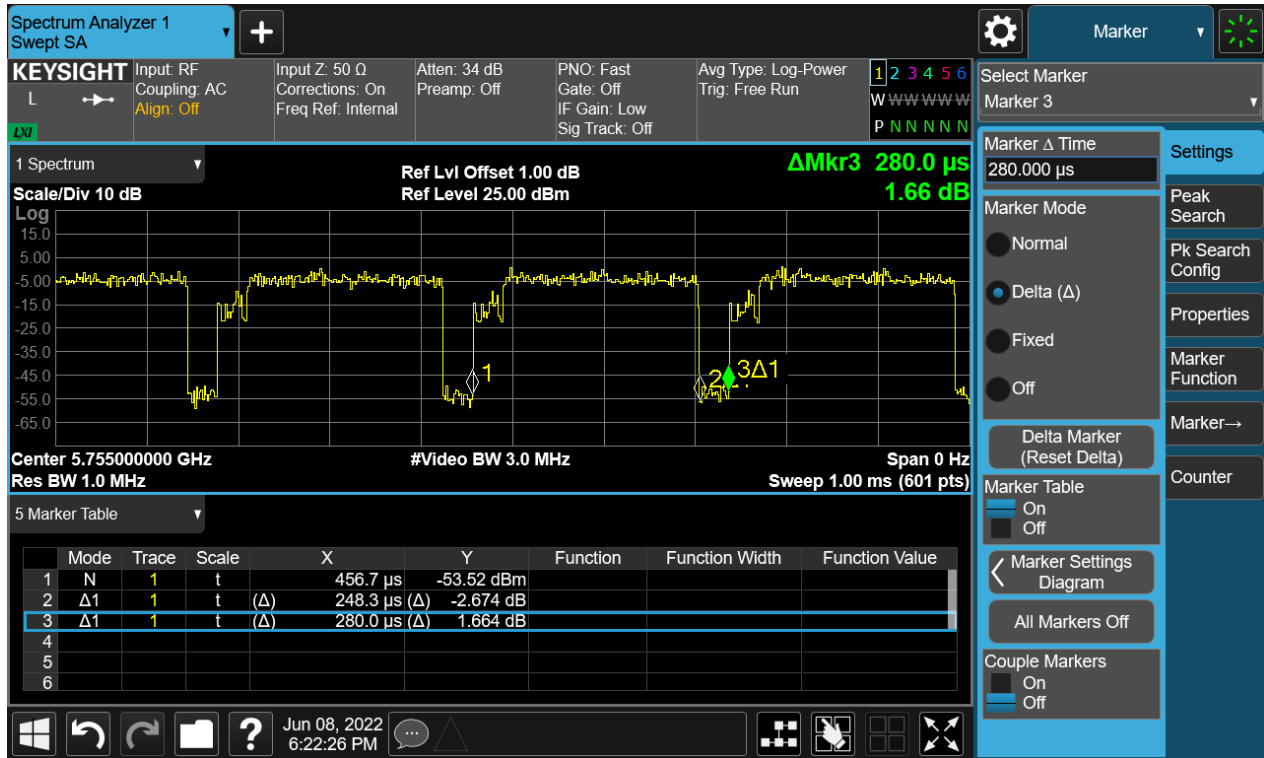
The plots of 802.11ac20_duty cycle



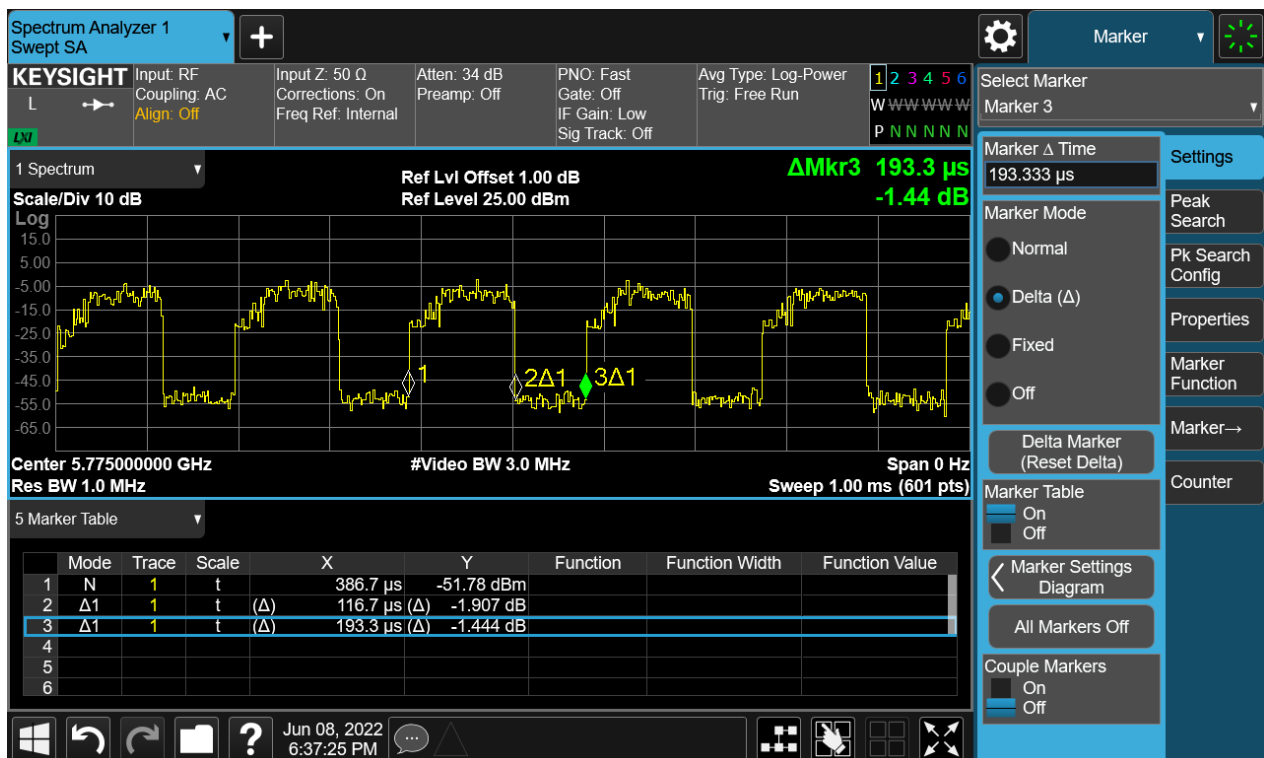
The plots of 802.11n40_duty cycle



The plots of 802.11ac40_duty cycle



The plots of 802.11ac80_duty cycle



TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 16 of 41

4.1.3 6dB Bandwidth

RESULT:

PASS

Test standard : FCC Part 15.407(e)

Requirement : ANSI C63.10-2013, KDB 789033

Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High

Operation Mode : A.1.a

Ambient temperature : 23°C

Relative humidity : 52%

Table 2: -6dB Bandwidth and 99% Occupied Bandwidth

Test Mode	Test Channel (MHz)	-6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit (MHz)
802.11a	5745	14.78	16.579	≥ 0.5
	5785	15.17	16.673	
	5825	15.17	16.554	
802.11n(HT20)	5745	15.11	17.694	
	5785	15.12	17.662	
	5825	15.14	17.752	
802.11ac(VHT20)	5745	15.05	18.047	
	5785	15.05	17.894	
	5825	15.04	17.957	
802.11n(HT40)	5755	33.91	36.776	
	5795	35.01	36.863	
802.11ac(VHT40)	5755	35.11	37.036	
	5795	35.16	36.931	
802.11ac(VHT80)	5775	75.42	77.060	

TEST REPORT

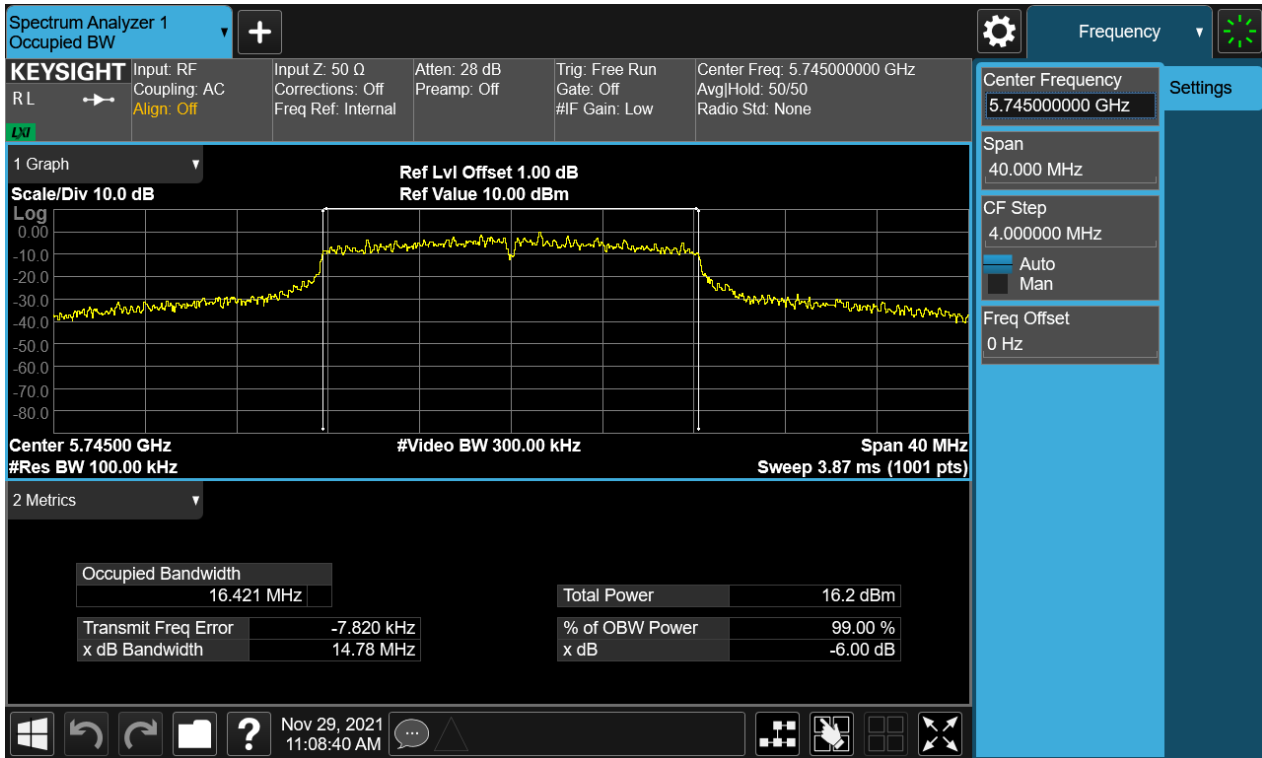
Report No.: SHH22020028-01FE

Date: 2022-07-08

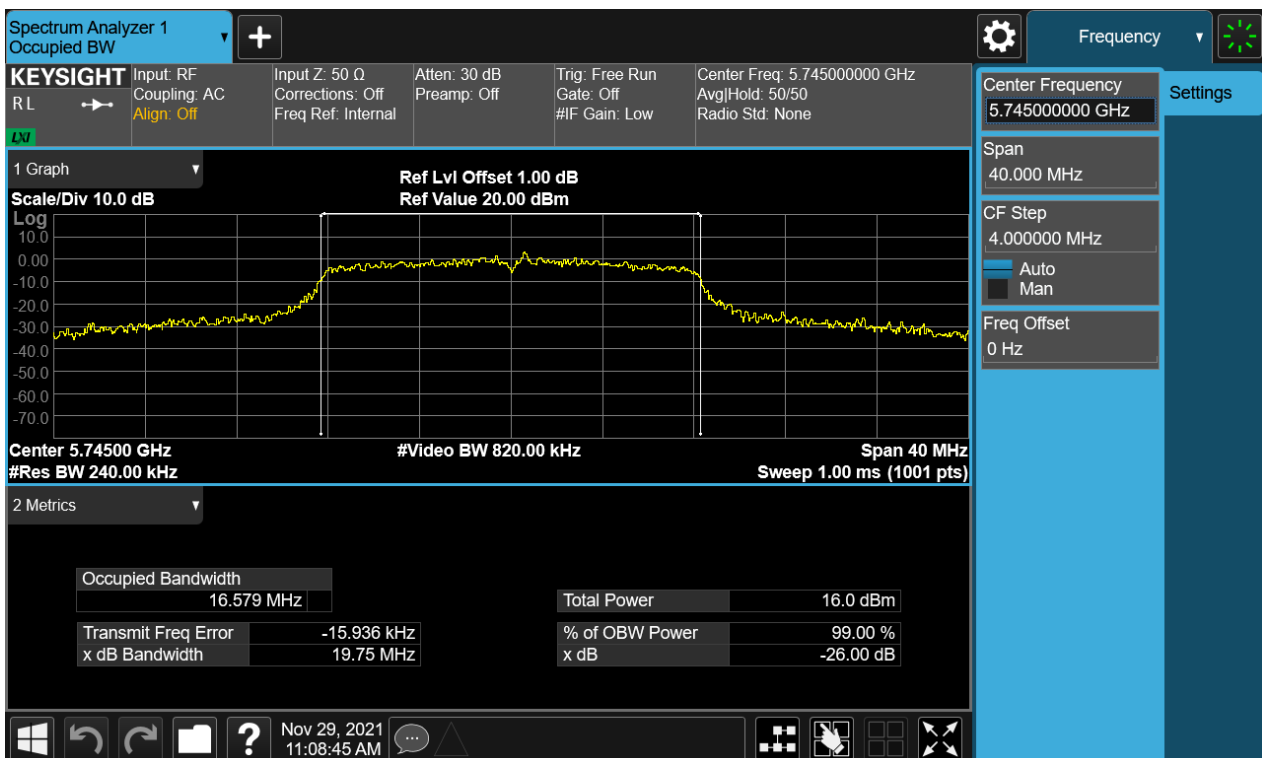
Page 17 of 41

Figure 1: 802.11a, 5745MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth



TEST REPORT

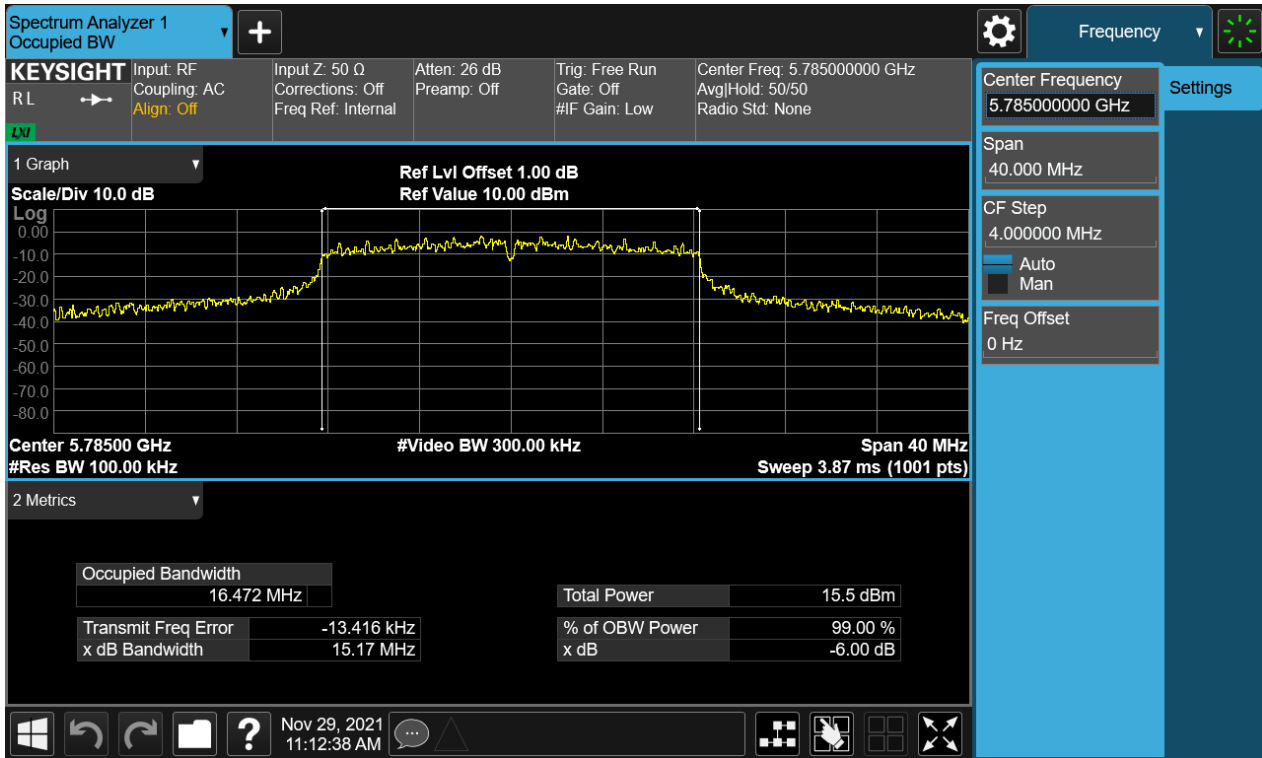
Report No.: SHH22020028-01FE

Date: 2022-07-08

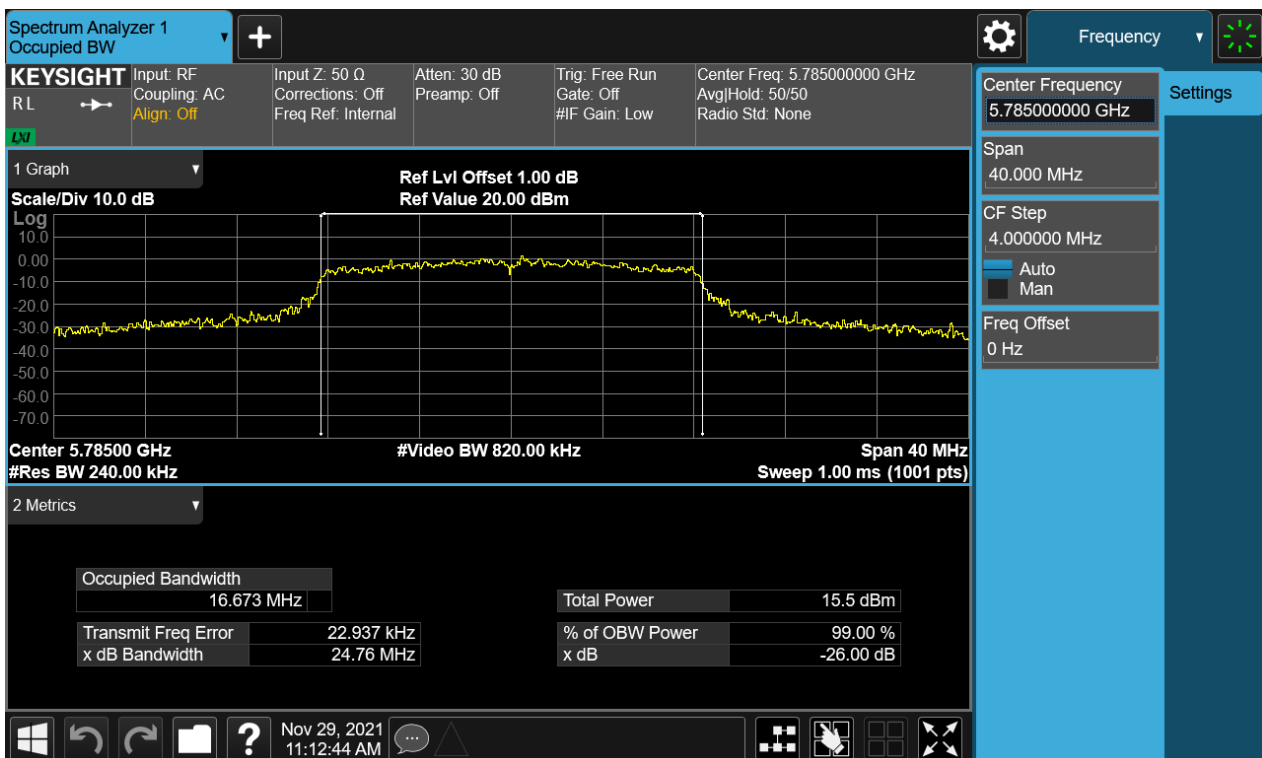
Page 18 of 41

Figure 2: 802.11a, 5785MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth



TEST REPORT

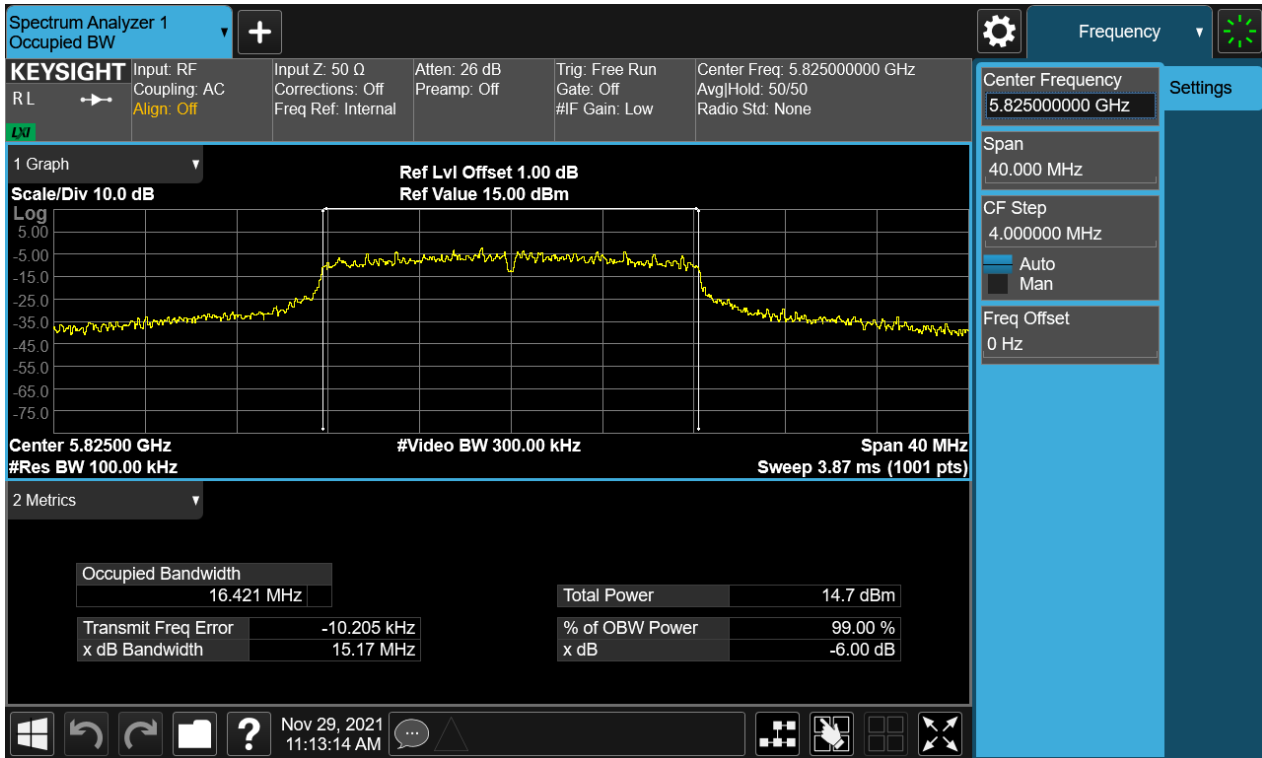
Report No.: SHH22020028-01FE

Date: 2022-07-08

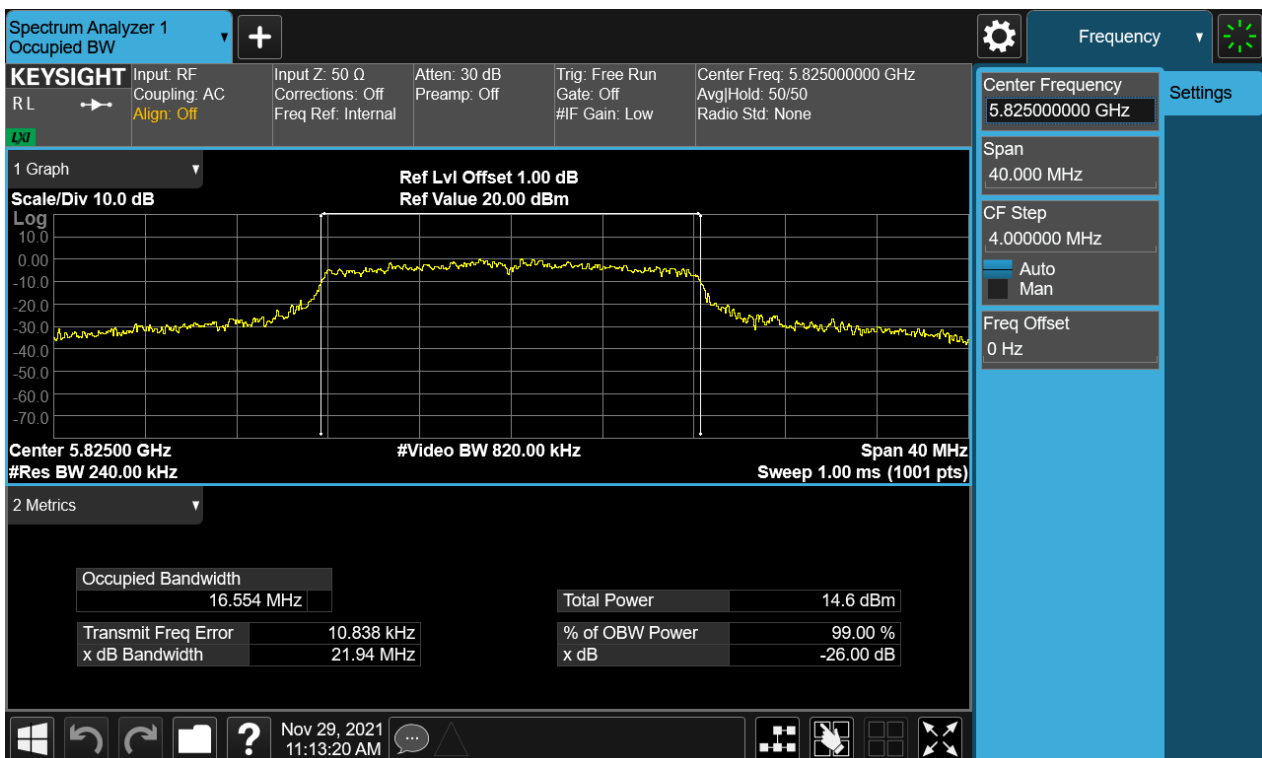
Page 19 of 41

Figure 3: 802.11a, 5825MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth



TEST REPORT

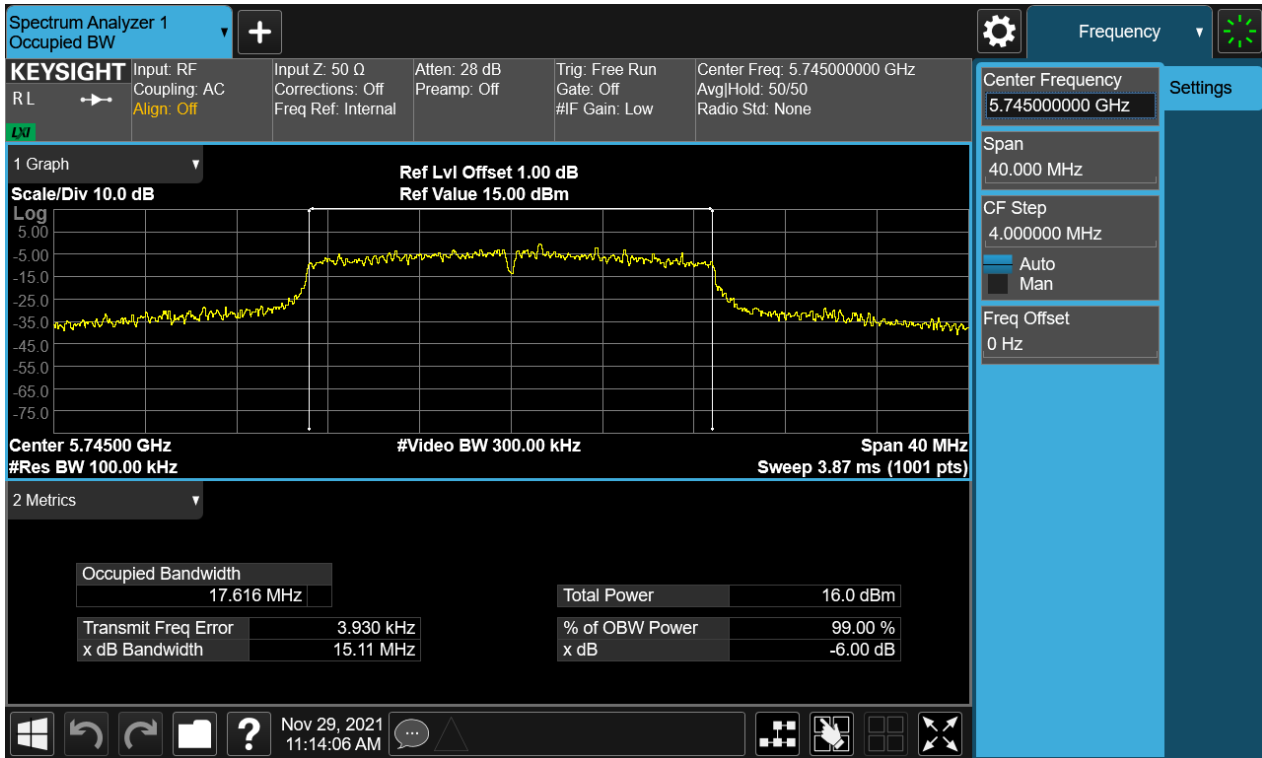
Report No.: SHH22020028-01FE

Date: 2022-07-08

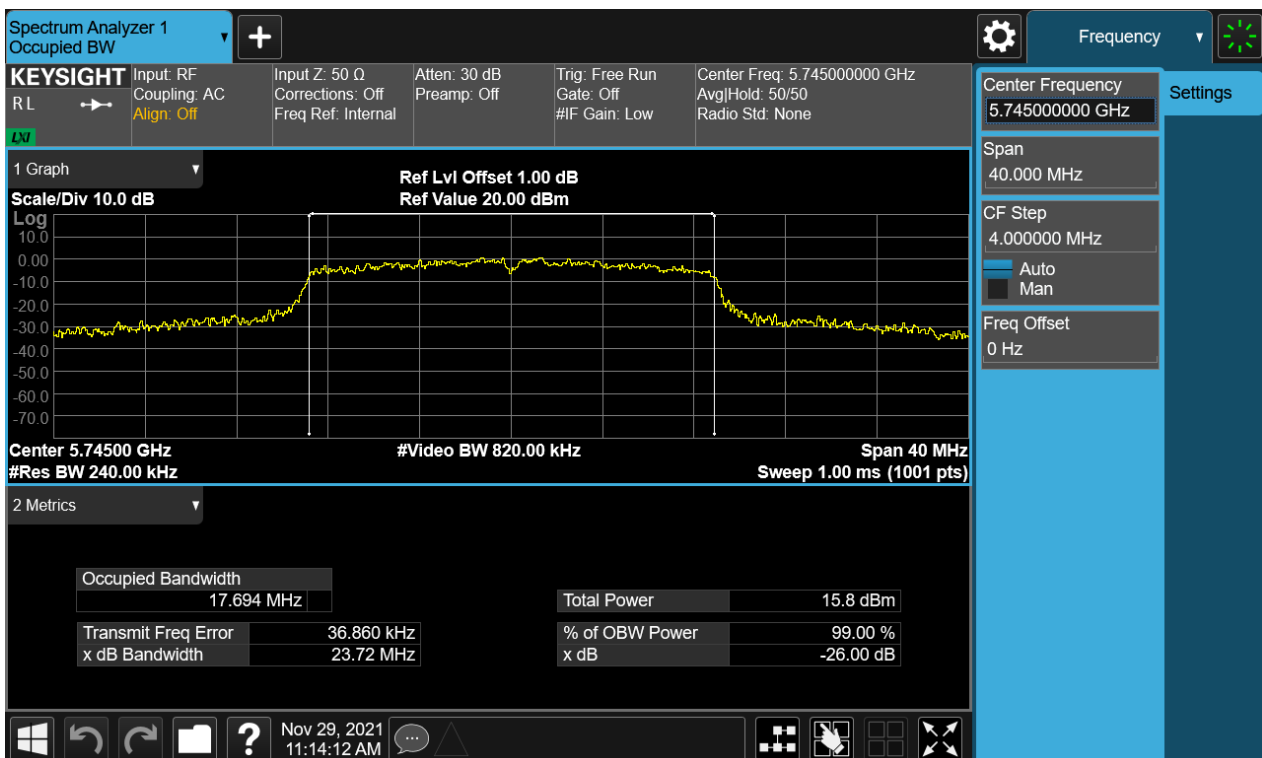
Page 20 of 41

Figure 4: 802.11n(HT20), 5745MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth



TEST REPORT

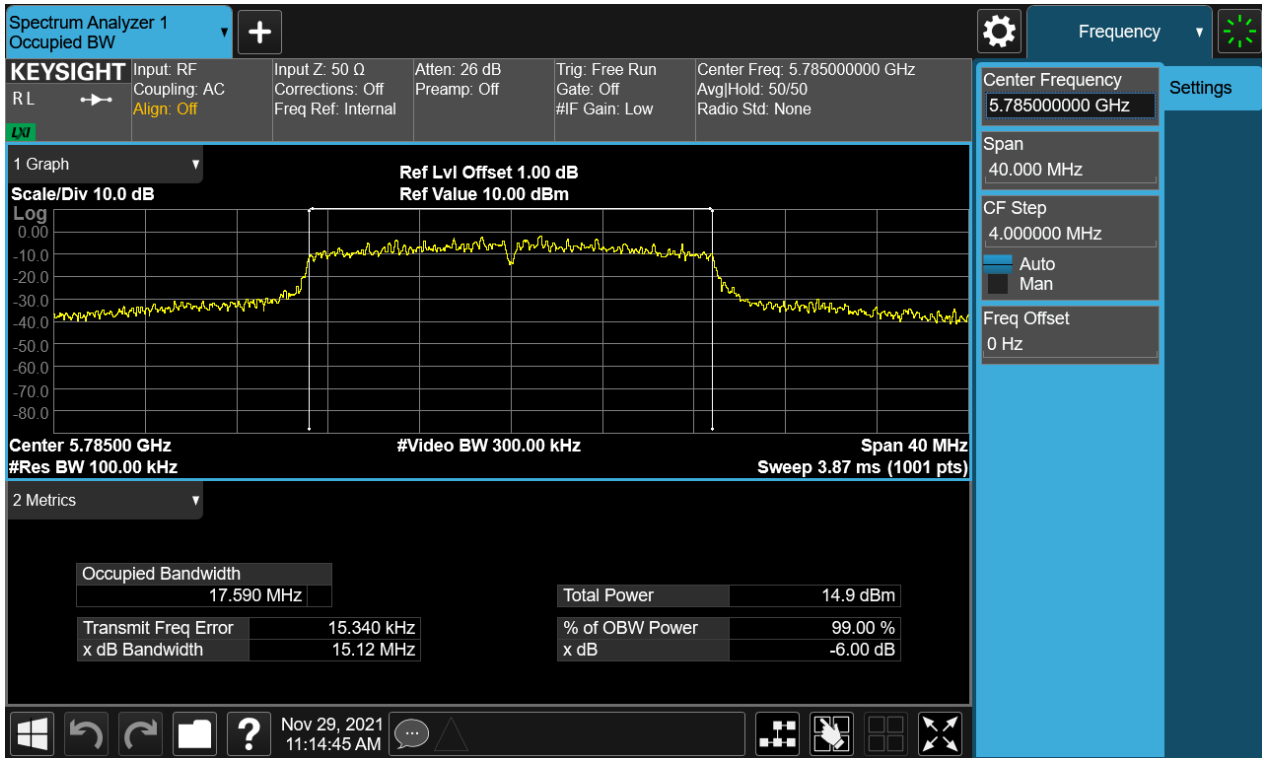
Report No.: SHH22020028-01FE

Date: 2022-07-08

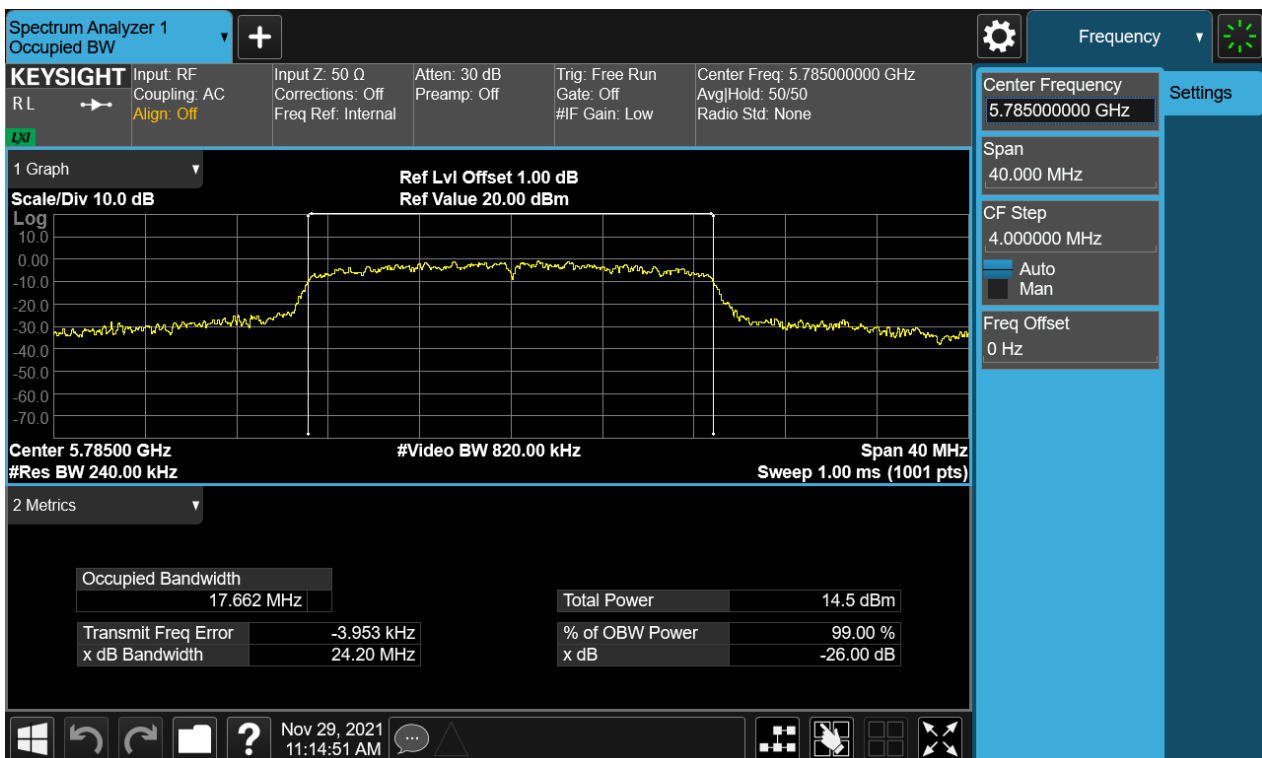
Page 21 of 41

Figure 5: 802.11n(HT20), 5785MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth



TEST REPORT

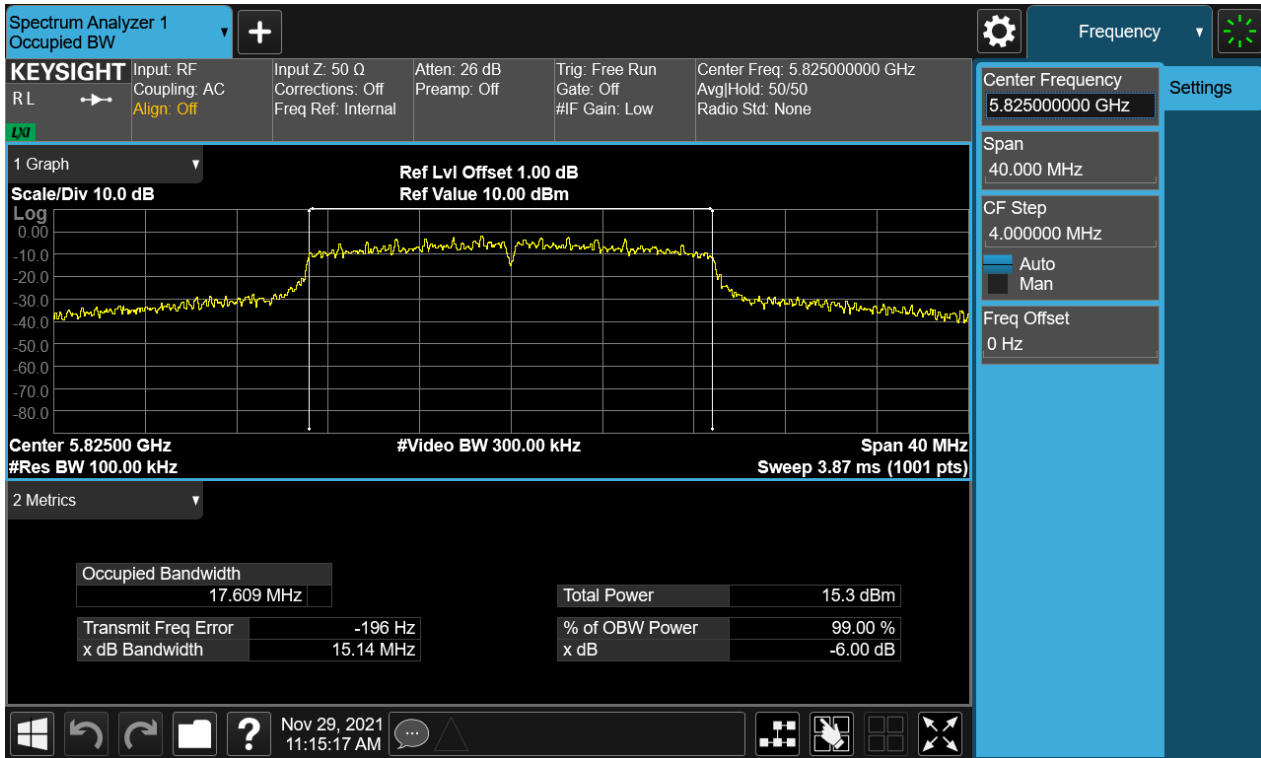
Report No.: SHH22020028-01FE

Date: 2022-07-08

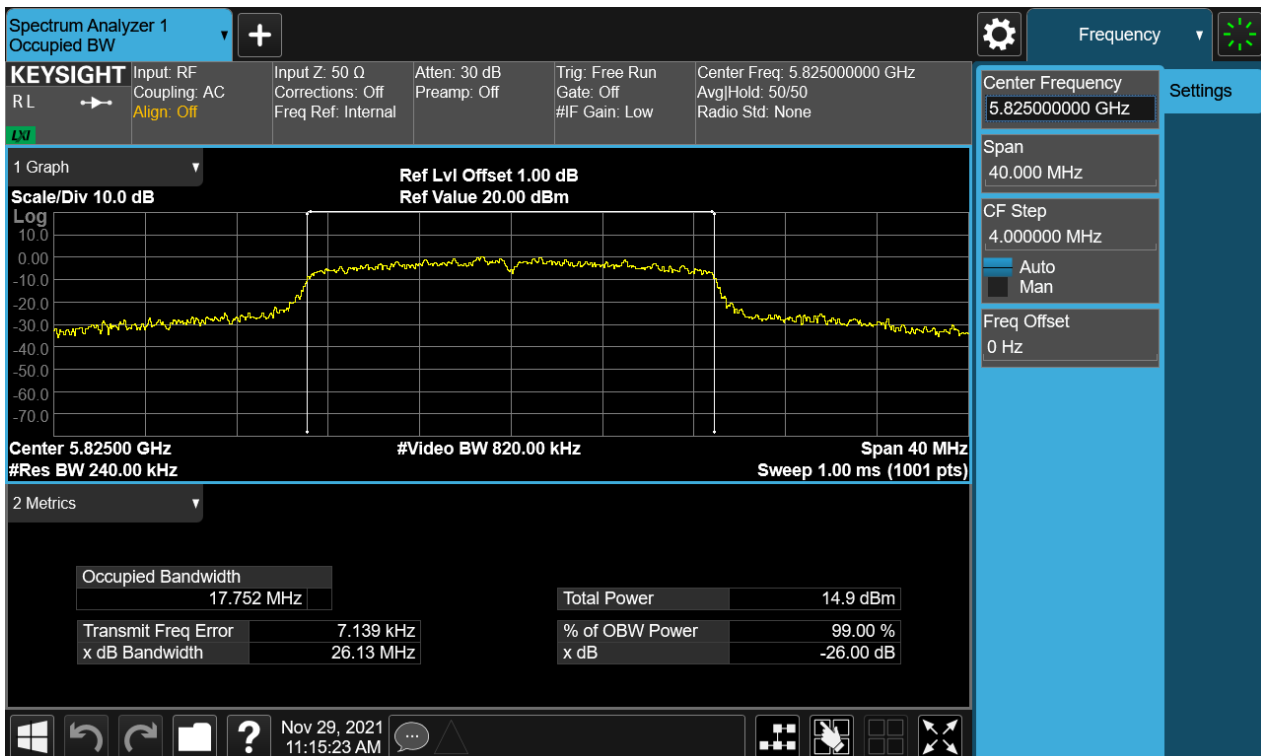
Page 22 of 41

Figure 6: 802.11n(HT20), 5825MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth



TEST REPORT

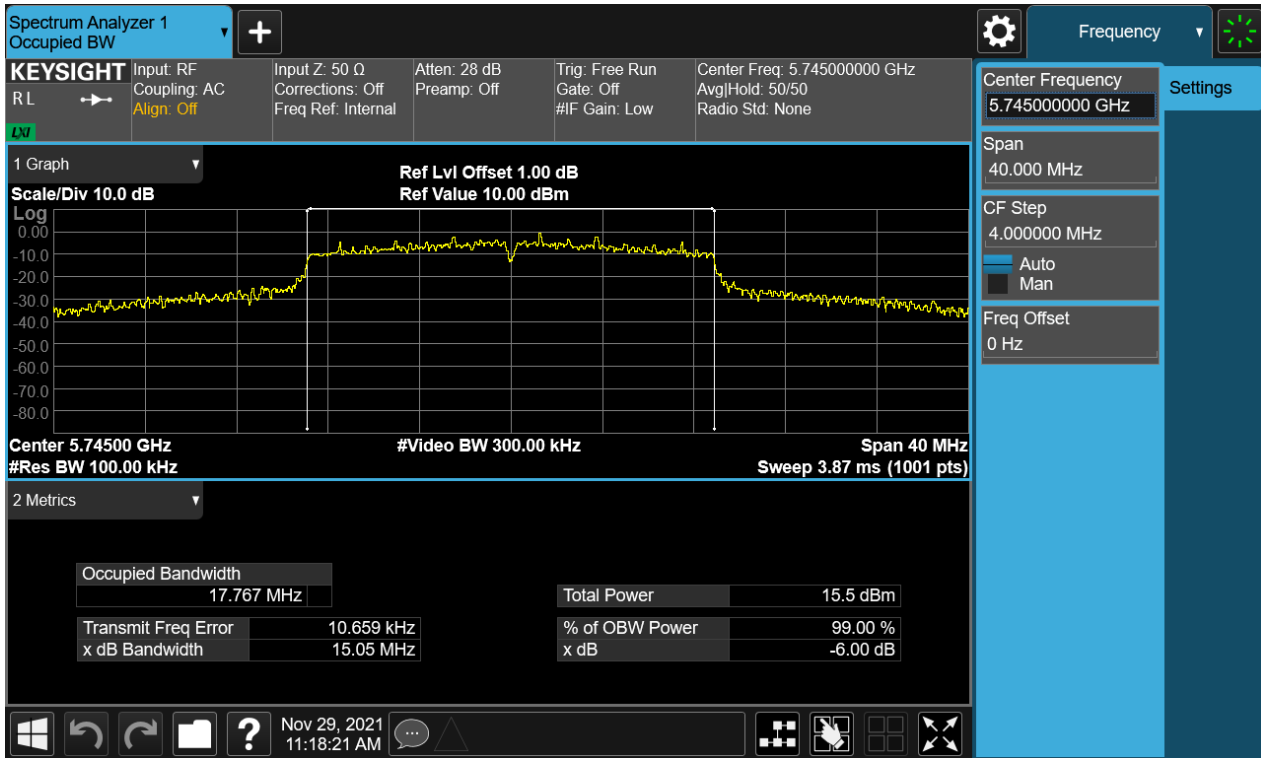
Report No.: SHH22020028-01FE

Date: 2022-07-08

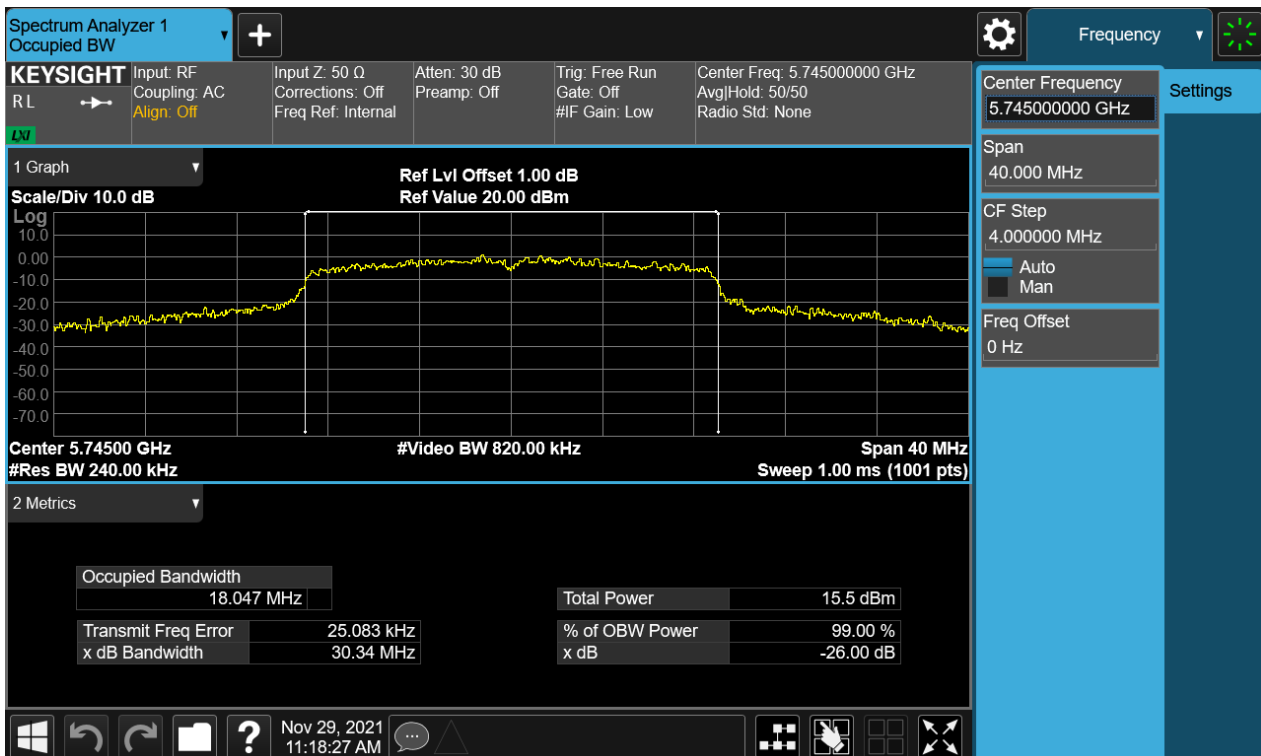
Page 23 of 41

Figure 7: 802.11ac(VHT20), 5745MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth



TEST REPORT

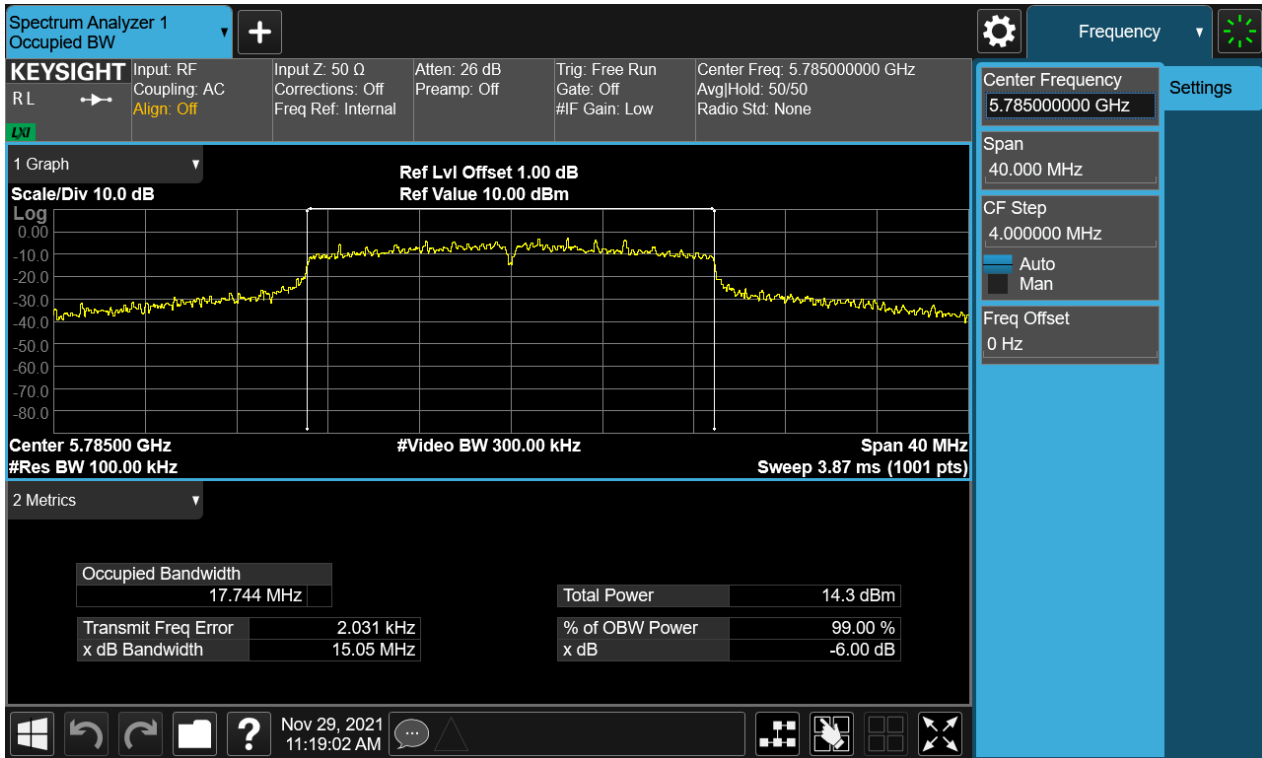
Report No.: SHH22020028-01FE

Date: 2022-07-08

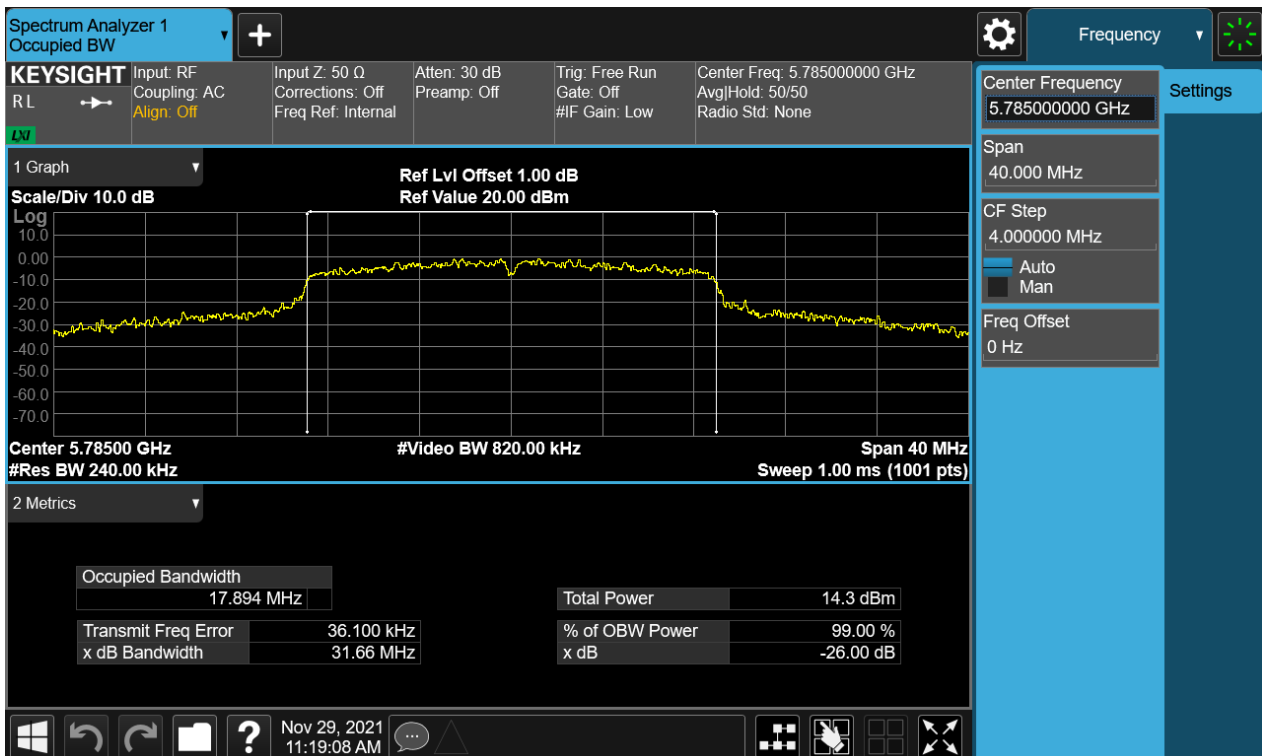
Page 24 of 41

Figure 8: 802.11ac(VHT20), 5785MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth



TEST REPORT

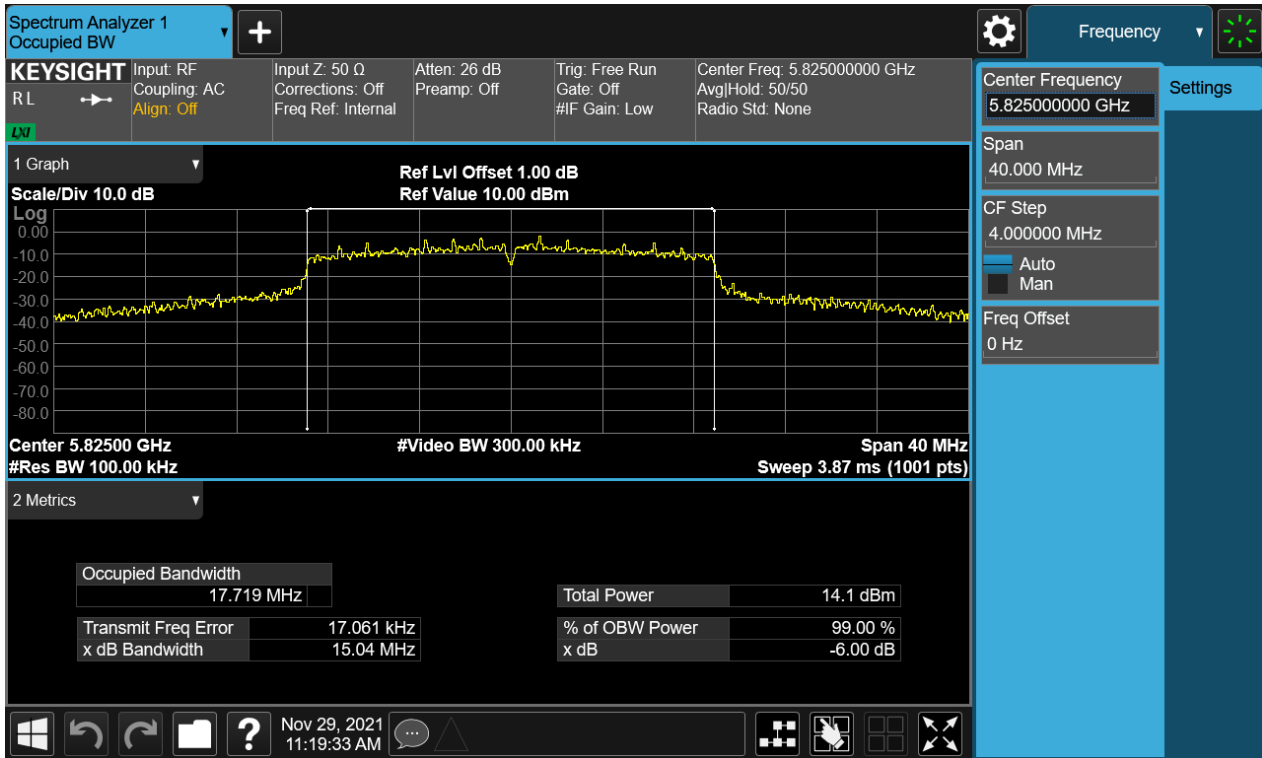
Report No.: SHH22020028-01FE

Date: 2022-07-08

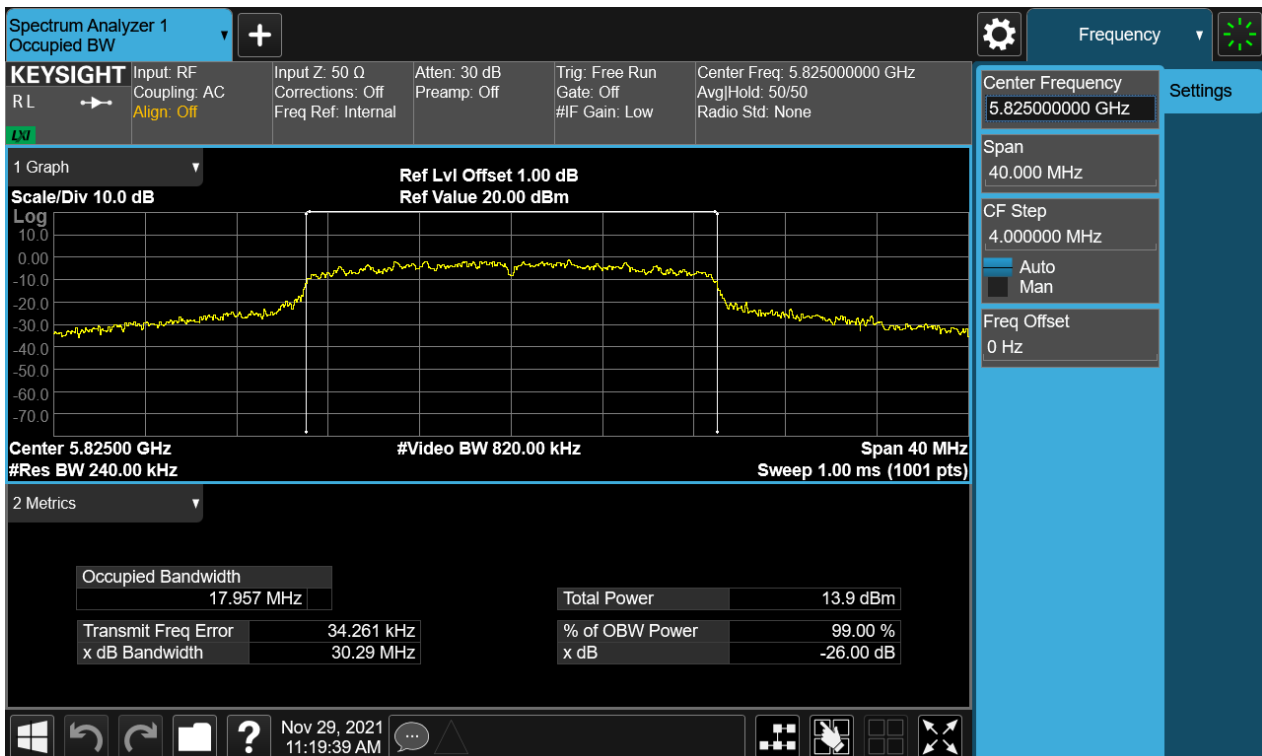
Page 25 of 41

Figure 9: 802.11ac(VHT20), 5825MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth



TEST REPORT

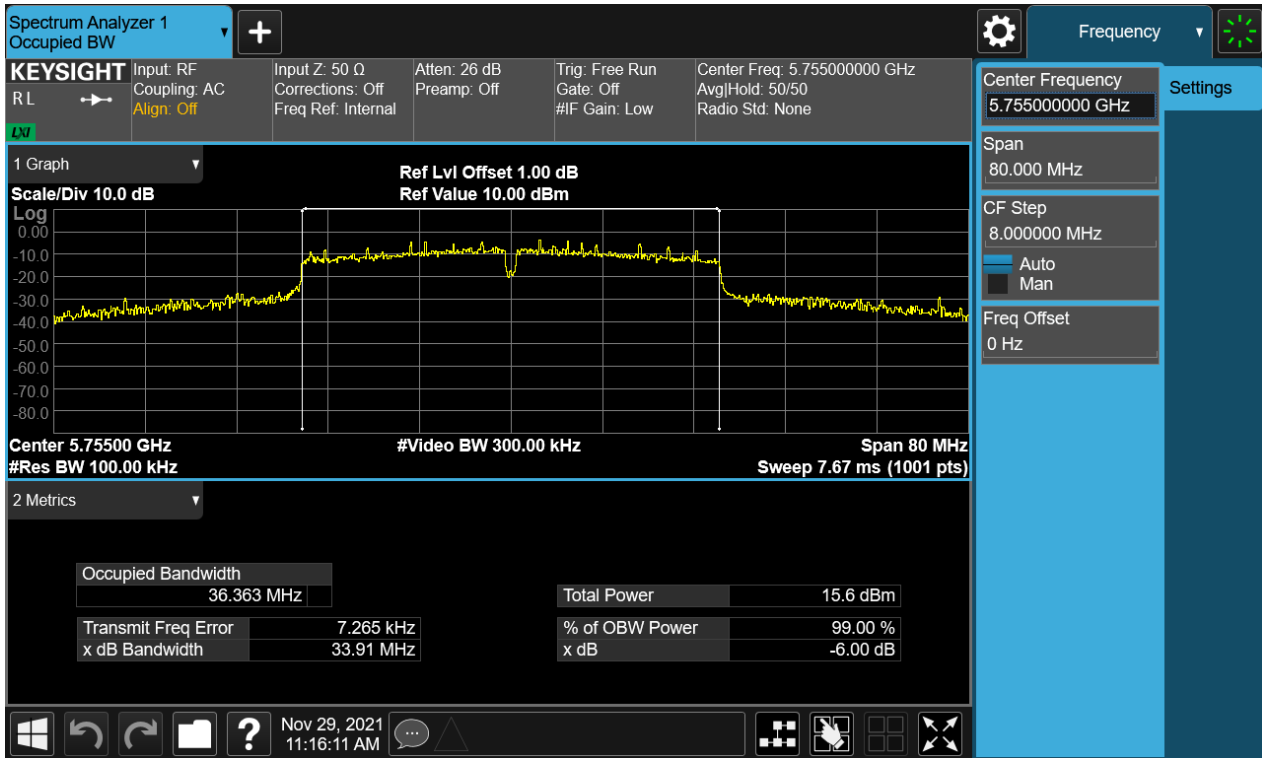
Report No.: SHH22020028-01FE

Date: 2022-07-08

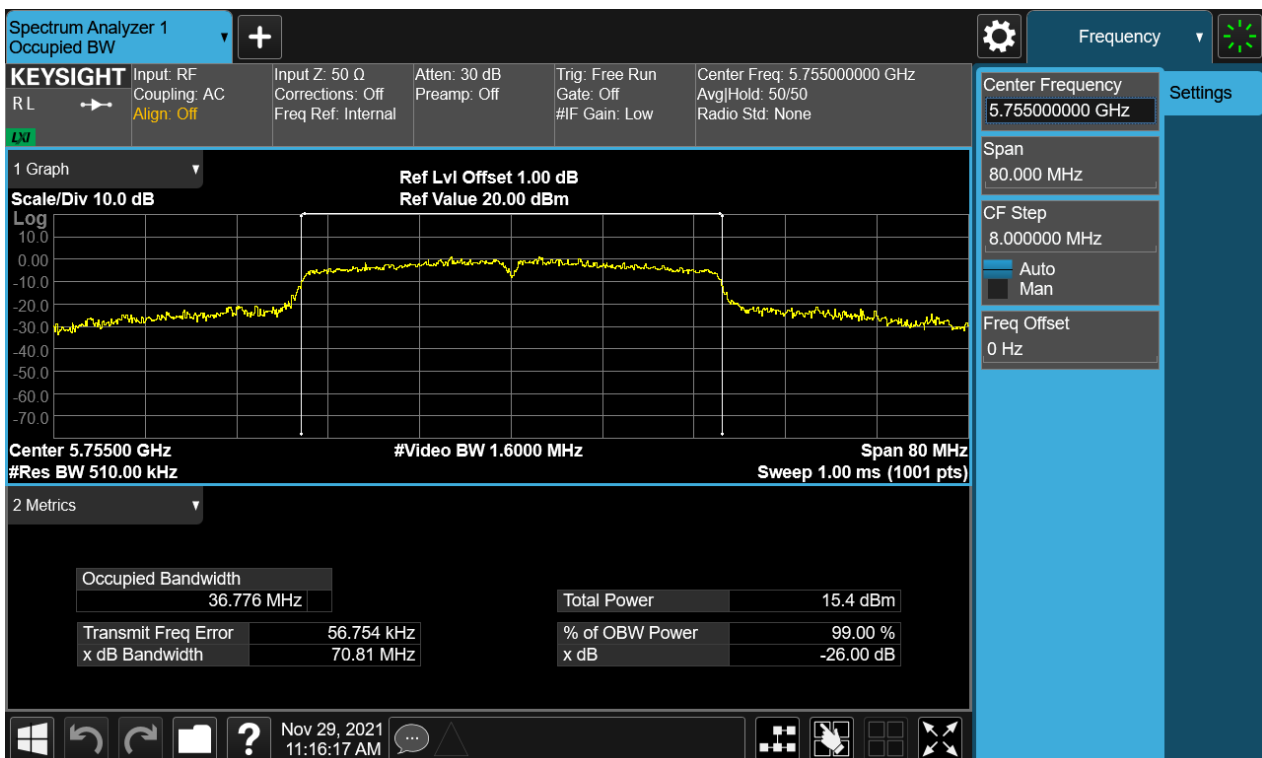
Page 26 of 41

Figure 10: 6dB Bandwidth, 802.11n(HT40), 5755MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth



TEST REPORT

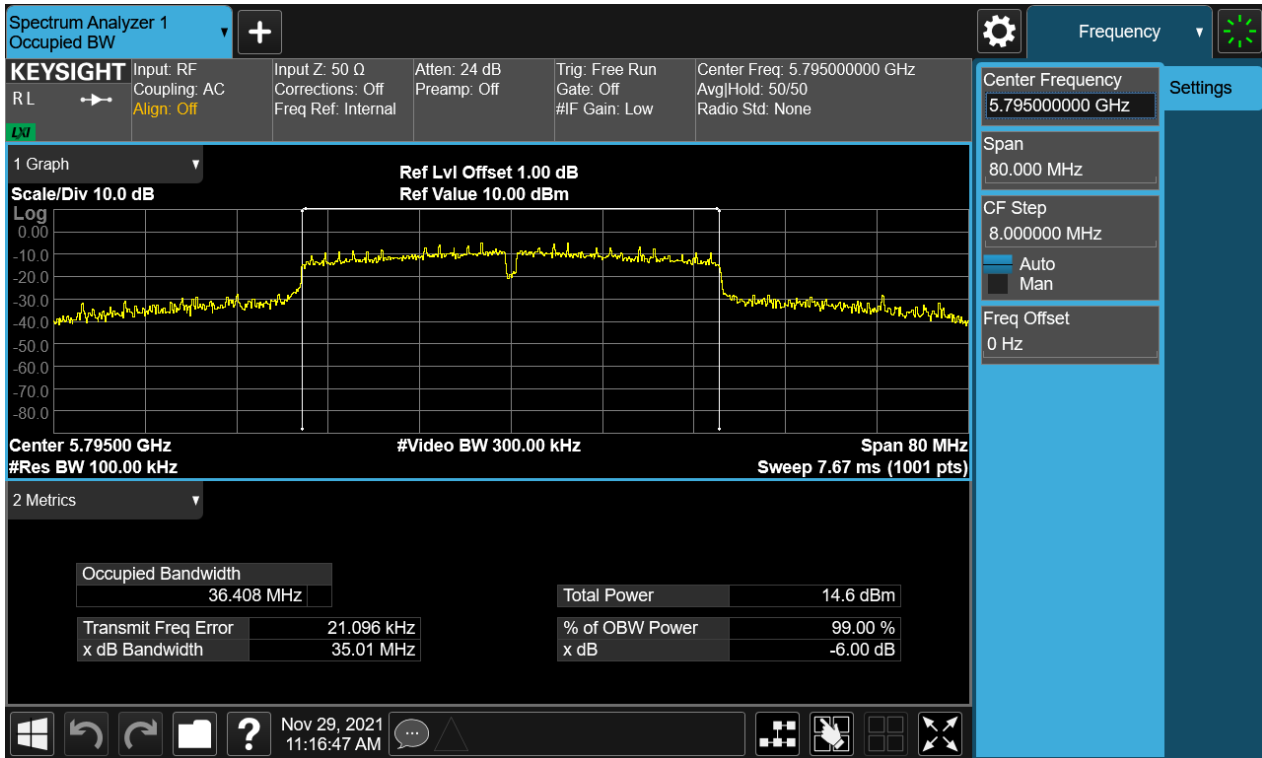
Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 27 of 41

Figure 11: 802.11n(HT40), 5795MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth



TEST REPORT

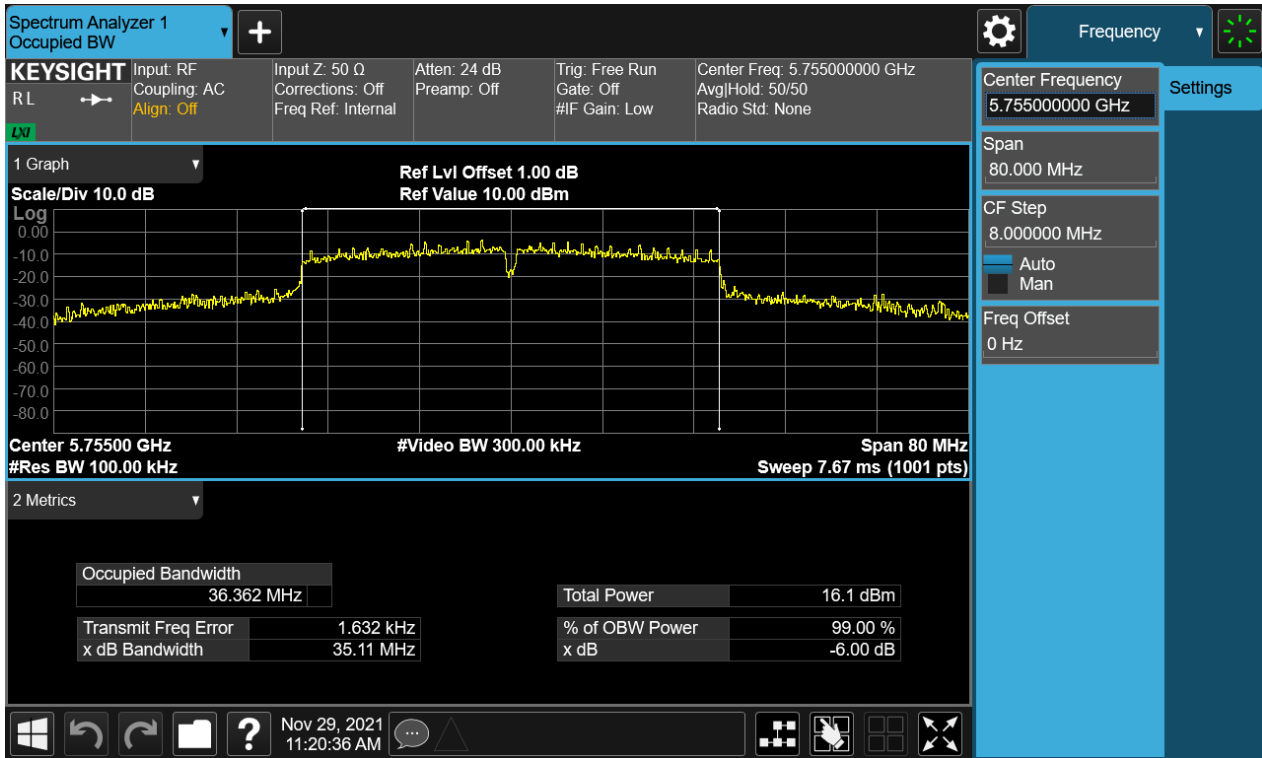
Report No.: SHH22020028-01FE

Date: 2022-07-08

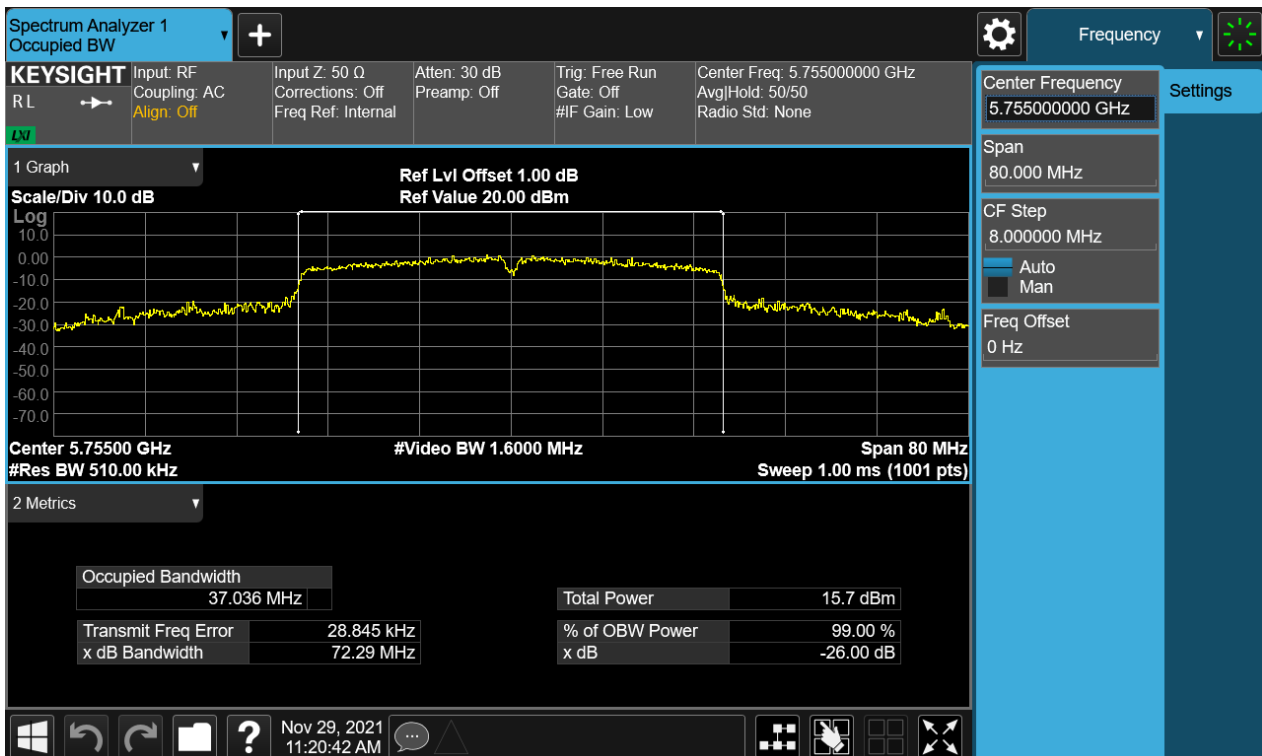
Page 28 of 41

Figure 12: 802.11ac(VHT40), 5755MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth



TEST REPORT

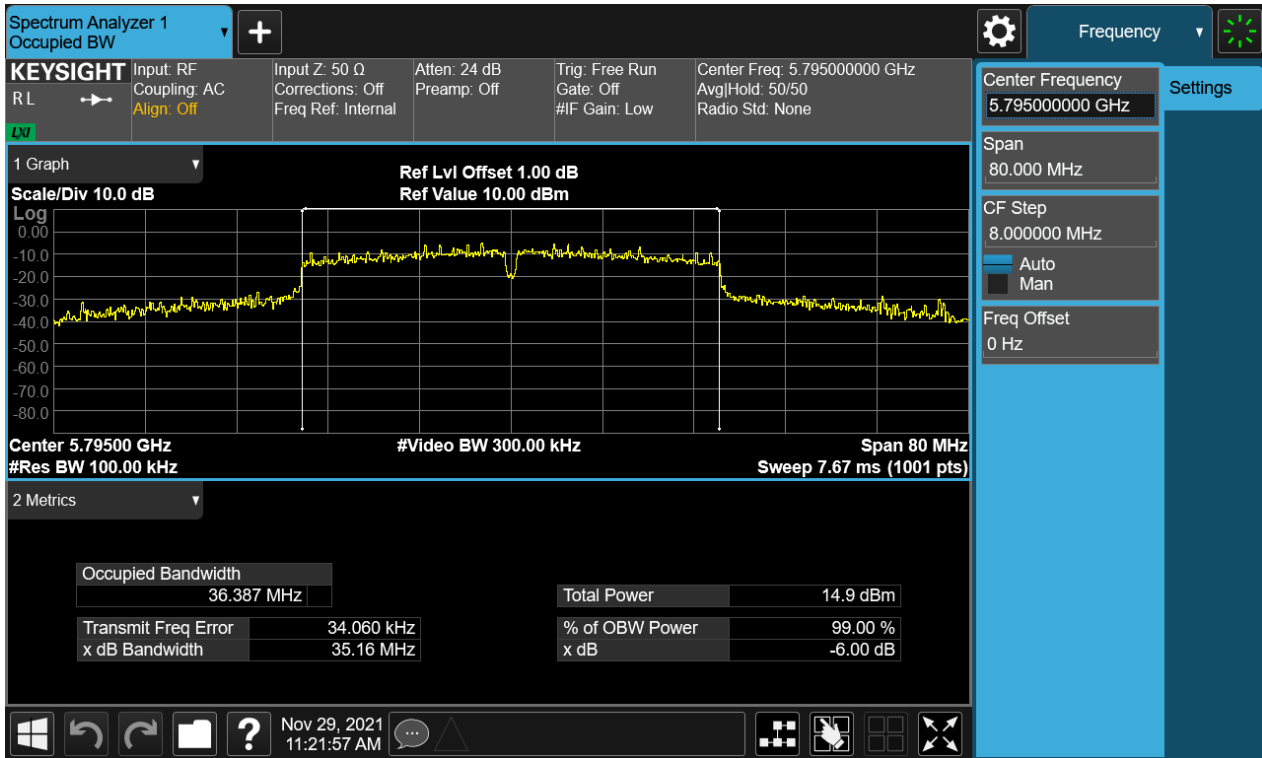
Report No.: SHH22020028-01FE

Date: 2022-07-08

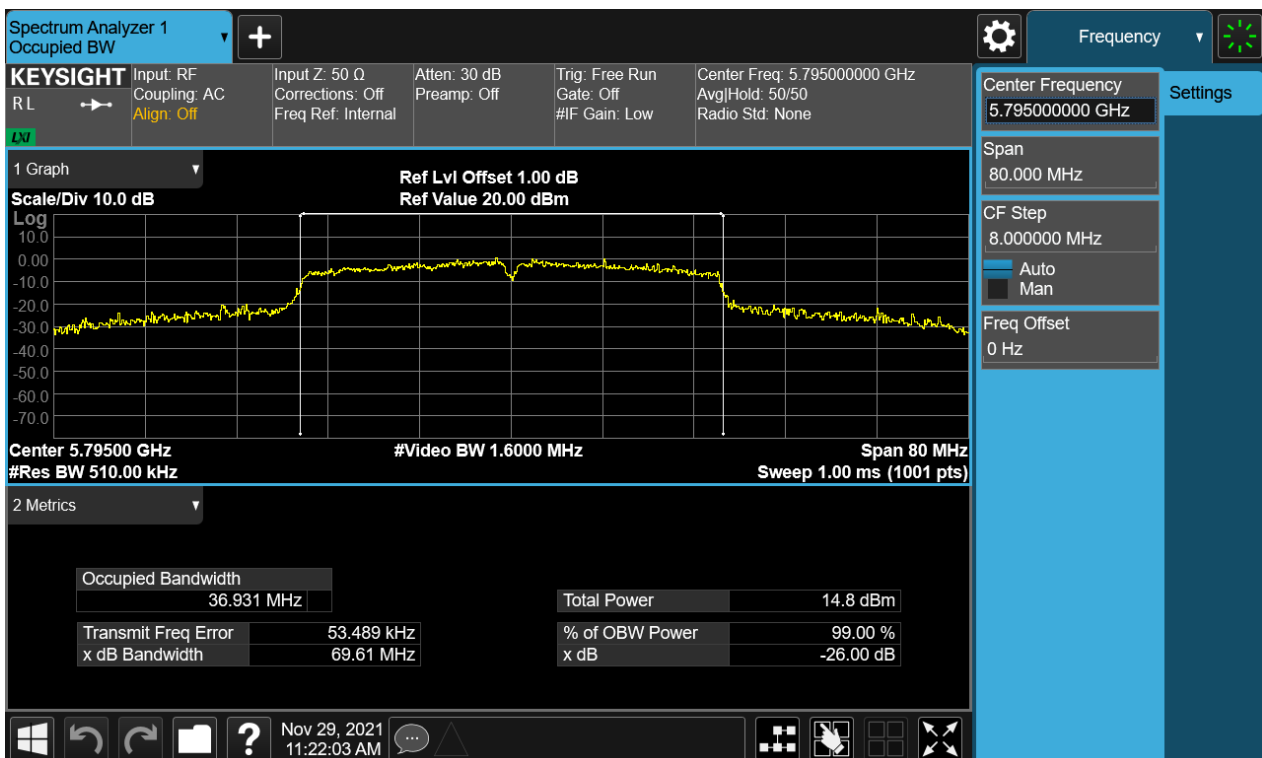
Page 29 of 41

Figure 13: 802.11ac(VHT40), 5795MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth



TEST REPORT

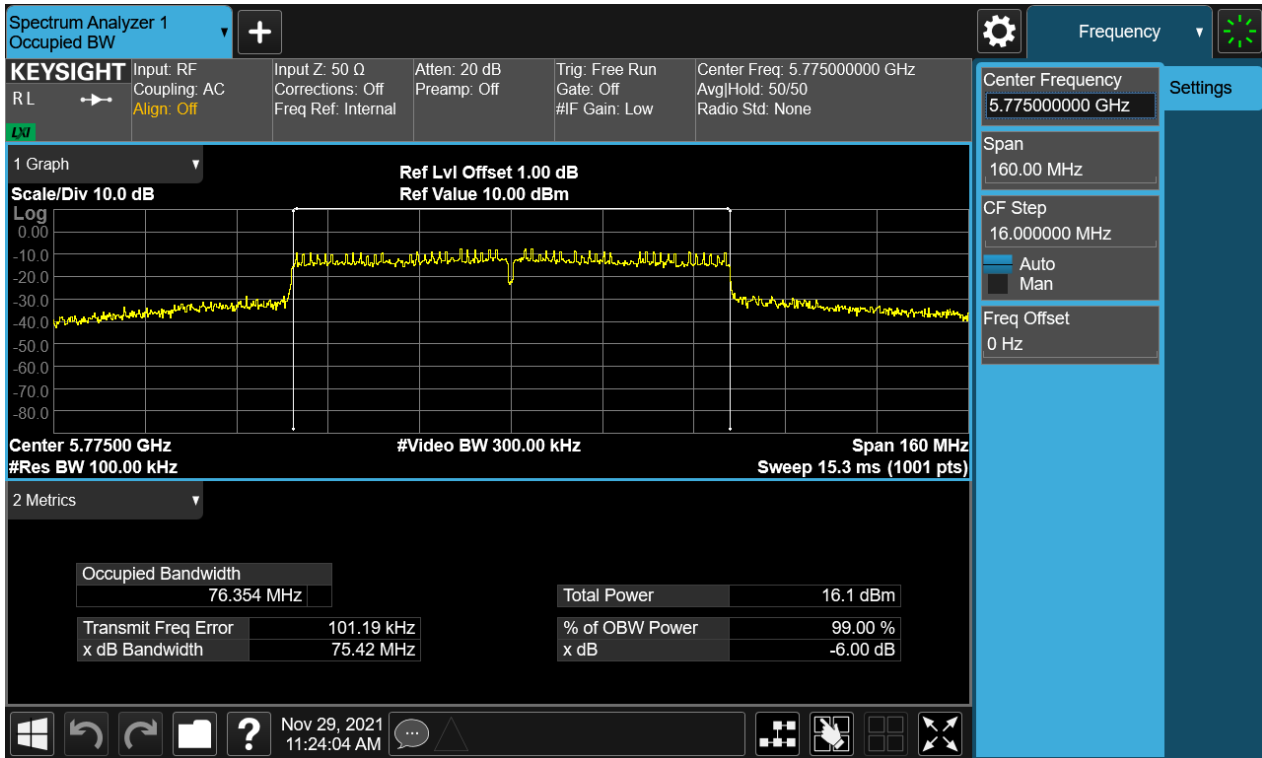
Report No.: SHH22020028-01FE

Date: 2022-07-08

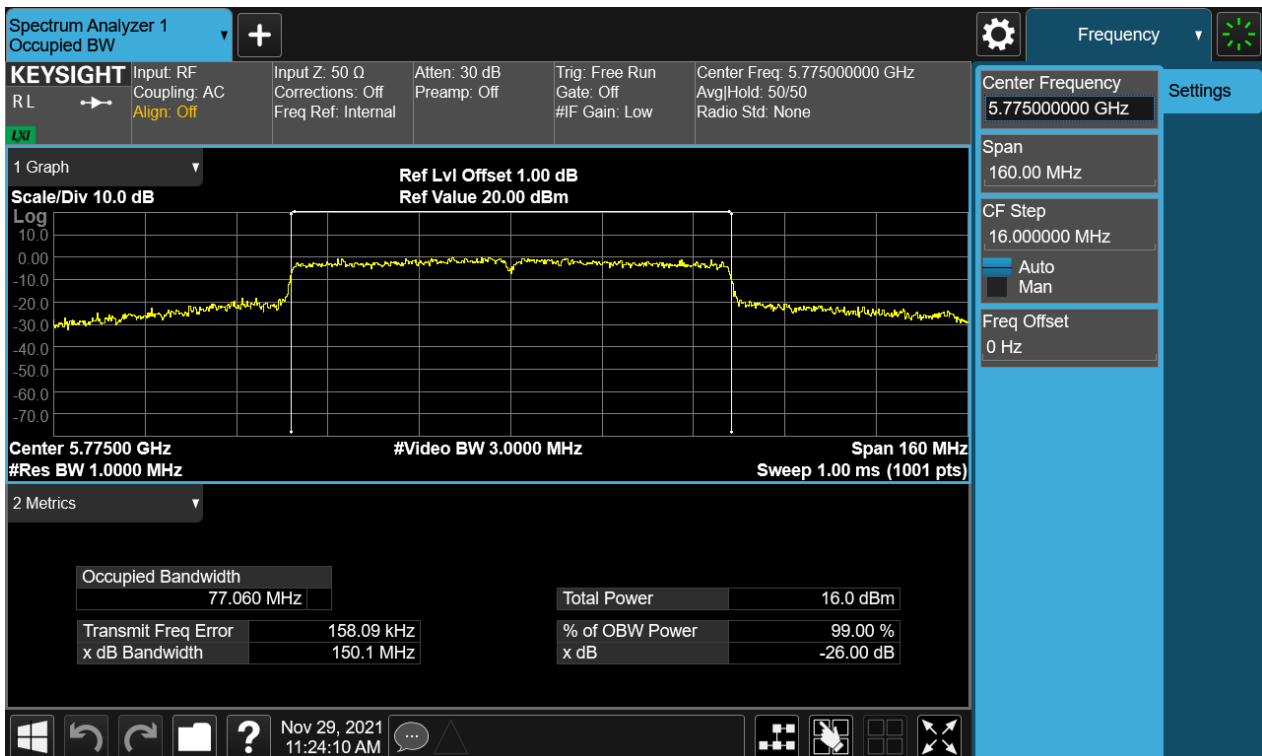
Page 30 of 41

Figure 14: 802.11ac(VHT80), 5775MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth



TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 31 of 41

4.1.4 Maximum Power Spectral Density (PSD)

RESULT:

PASS

Test standard : FCC Part 15.407(a)
Requirement : ANSI C63.10-2013, KDB 789033
Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High
Operation Mode : A.1.a
Ambient temperature : 23°C
Relative humidity : 52%

Notes

Test plots please refer to the annex document "SHH22020028-01FE DATA WIFI5G PSD EXHIBIT A".

Table 3: Maximum Power Spectral Density

Test Mode	Duty Cycle	Test Channel (MHz)	Actual Measurement PSD (dBm/500KHz)	Maximum PSD (dBm/500KHz)	FCC Limit (dBm/500KHz)
802.11a	85.19%	5745	4.47	5.17	30
		5785	3.21	3.91	
		5825	3.48	4.18	
802.11n(HT20)	88.88%	5745	3.23	3.74	
		5785	1.82	2.33	
		5825	1.76	2.27	
802.11ac(VHT20)	89.54%	5745	3.60	4.08	
		5785	2.46	2.94	
		5825	1.19	1.67	
802.11n(HT40)	86.86%	5755	0.27	0.88	
		5795	-0.93	-0.32	
802.11ac(VHT40)	88.68%	5755	1.53	2.05	
		5795	-1.25	-0.73	
802.11ac(VHT80)	60.37%	5775	-4.00	-1.81	

Note(s): add 10 log (1/x), where x is the duty cycle.

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 32 of 41

4.1.5 Conducted Spurious Emission

RESULT:

PASS

Test standard	: FCC Part 15.407(b), 15.209
Requirement	: ANSI C63.10-2013, KDB 789033
Kind of test site	: Shielded room

Test setup

Test Channel	: Low/Middle/High
Operation Mode	: A.1.a
Ambient temperature	: 23°C
Relative humidity	: 52%

Notes:

Test plots please refer to the annex document "SHH22020028-01FE DATA WLAN 5GHz-TX CSE EXHIBIT A".

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 33 of 41

4.1.6 Radiated Emission

RESULT:

PASS

Test standard	: FCC Part 15.407(b)
Requirement	: ANSI C63.10-2013
Kind of test site	: 3m Semi-Anechoic Chamber

Test setup

Test Channel	: Low/Middle/High
Operation Mode	: A
Ambient temperature	: 16.8°C
Relative humidity	: 42%

Notes:

Test plots please refer to the annex document "SHH22020028-01FE DATA WIFI5GHz-TX EXHIBIT A"

1. For 9 kHz ~ 30 MHz, the amplitude of spurious emissions that are attenuated by more than 20dB below the permissible. The value has no need to be reported.
2. The spurious above 18GHz is noise only and 20dB below the limit. The value has no need to be reported.
3. The EUT is working in the Normal link mode below 1 GHz.

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 34 of 41

4.1.7 Band Edge (Restricted-band band-edge)

RESULT:

PASS

Test standard	: FCC Part 15.407(b)
Requirement	: ANSI C63.10-2013, KDB 789033
Kind of test site	: 3m Semi-Anechoic Chamber

Test setup

Test Channel	: Low/Middle/High
Operation Mode	: A.1
Ambient temperature	: 16.3°C
Relative humidity	: 49%

Notes:

Test plots please refer to the annex document "SHH22020028-01FE DATA WIFI5GHz-TX EXHIBIT A"

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 35 of 41

4.1.8 Frequency Stability

RESULT:

PASS

Test standard

: FCC Part 15.407(g)

Kind of test site

: Shielded room

Test setup

Test Channel

: Low/Middle/High

Operation Mode

: A.1

Ambient temperature

: 23°C

Relative humidity

: 52%

Table 4: Frequency Stability

Band IV (5725 – 5850 MHz):

Voltage vs. Frequency Stability (5745MHz)

Test Conditions		Frequency (MHz)	Max. Deviation (ppm)	Limit (ppm)
Temp (°C)	Voltage (V)			
23	AC 120V	5745.0010	0.174	± 20
	AC 100V	5745.0010	0.174	
	AC 240V	5745.0012	0.209	

Temperature vs. Frequency Stability (5745MHz)

Test Conditions		Frequency (MHz)	Max. Deviation (ppm)	Limit (ppm)
Voltage (V)	Temp (°C)			
AC 120V	0	5745.0011	0.191	
	5	5745.0023	0.400	
	10	5744.9931	-1.201	
	20	5745.0016	0.279	
	30	5744.9962	-0.661	
	40	5744.9951	-0.853	

Note:

The all configurations were tested respectively, but only the worst channel shown here.

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 36 of 41

4.2 Mains Emissions

4.2.1 Conducted Emission on AC Mains

RESULT:

PASS

Test standard	: FCC Part 15.207
Requirement	: ANSI C63.10-2013
Kind of test site	: Shielded room

Test setup

Input Voltage	: AC 120V, 60Hz
Operation Mode	: Normal Link
Earthing	: Not Connected
Ambient temperature	: 23°C
Relative humidity	: 51%

For details refer to following test plot.

TEST REPORT

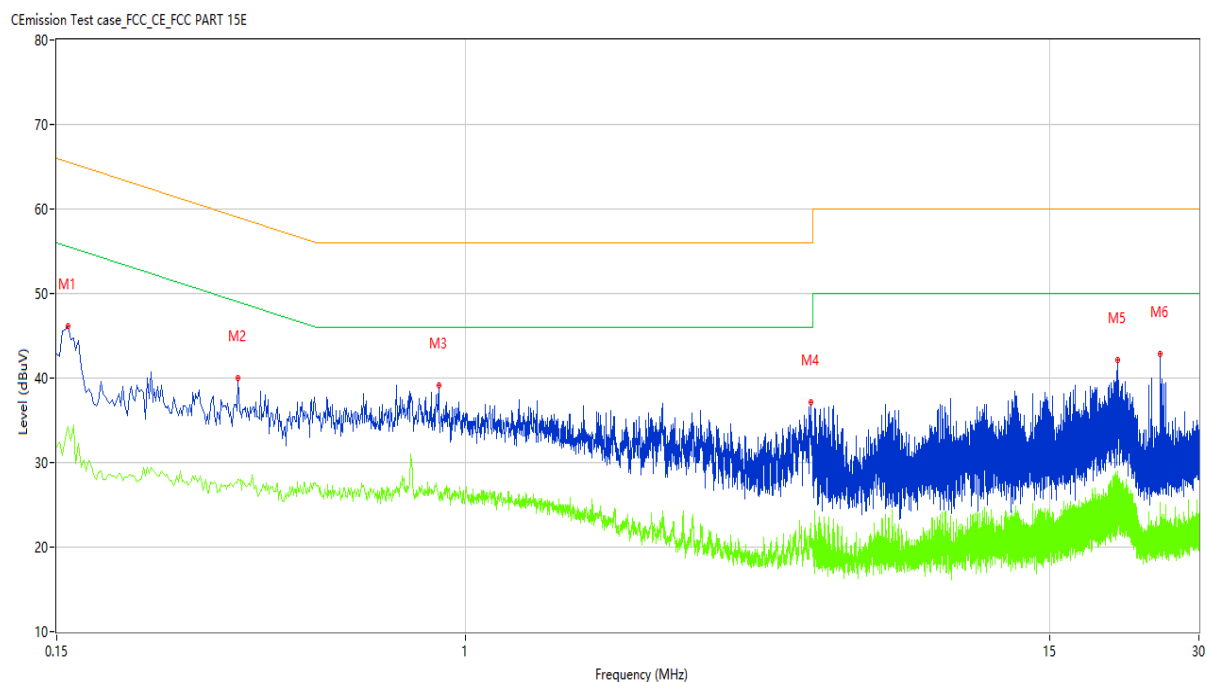
Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 37 of 41

Note: The all configurations were tested respectively, but only the worst configuration shown here.

Figure 1: Conducted Emission on AC Mains, L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.158	46.15	10.26	65.57	-19.42	Peak	L	Pass
1*	0.158	40.52	10.26	65.57	-25.05	QP	L	Pass
1**	0.158	34.26	10.26	55.57	-21.31	AV	L	Pass
2	0.348	36.87	10.23	59.01	-22.14	Peak	L	Pass
2*	0.348	29.50	10.23	59.01	-29.51	QP	L	Pass
2**	0.348	28.05	10.23	49.01	-20.96	AV	L	Pass
3	0.882	33.76	10.30	56.00	-22.24	Peak	L	Pass
3*	0.882	24.46	10.30	56.00	-31.54	QP	L	Pass
3**	0.882	26.07	10.30	46.00	-19.93	AV	L	Pass
4	4.952	38.97	10.26	56.00	-17.03	Peak	L	Pass
4*	4.952	27.45	10.26	56.00	-28.55	QP	L	Pass
4**	4.952	22.91	10.26	46.00	-23.09	AV	L	Pass
5	20.622	42.34	10.97	60.00	-17.66	Peak	L	Pass
5*	20.622	33.88	10.97	60.00	-26.12	QP	L	Pass
5**	20.622	29.03	10.97	50.00	-20.97	AV	L	Pass
6	25.042	40.04	11.03	60.00	-19.96	Peak	L	Pass
6*	25.042	26.00	11.03	60.00	-34.00	QP	L	Pass
6**	25.042	25.28	11.03	50.00	-24.72	AV	L	Pass

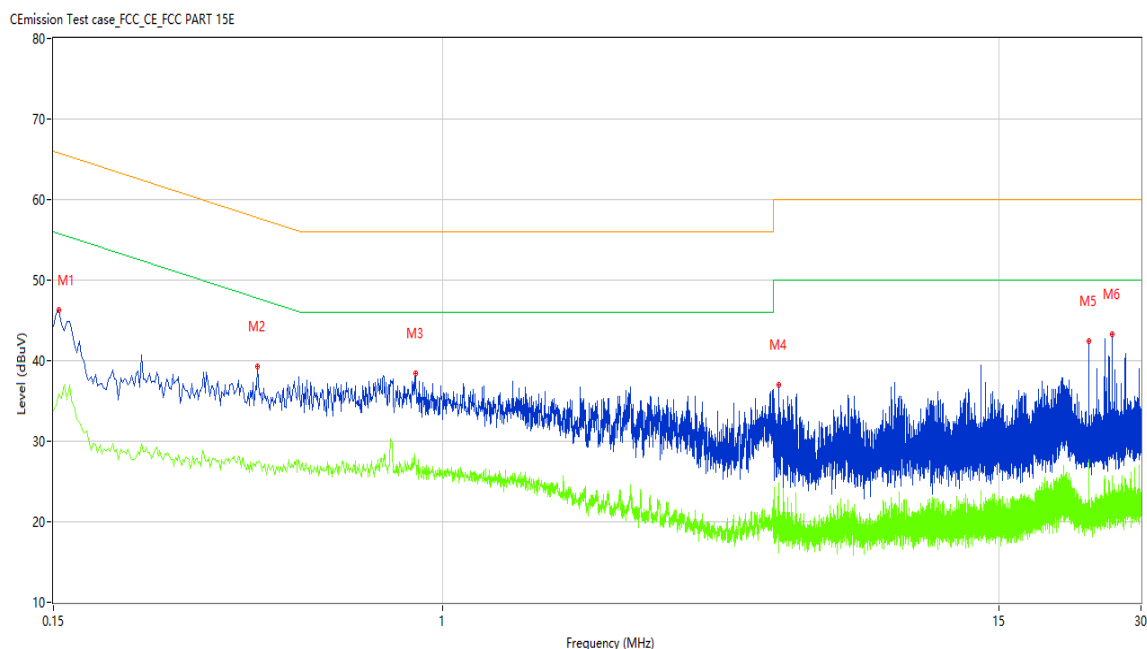
TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 38 of 41

Figure 72: Conducted Emission on AC Mains, N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.154	47.56	10.26	65.78	-18.22	Peak	N	Pass
1*	0.154	41.34	10.26	65.78	-24.44	QP	N	Pass
1**	0.154	35.79	10.26	55.78	-19.99	AV	N	Pass
2	0.406	36.21	10.24	57.73	-21.52	Peak	N	Pass
2*	0.406	26.66	10.24	57.73	-31.07	QP	N	Pass
2**	0.406	27.27	10.24	47.73	-20.46	AV	N	Pass
3	0.876	36.15	10.30	56.00	-19.85	Peak	N	Pass
3*	0.876	30.66	10.30	56.00	-25.34	QP	N	Pass
3**	0.876	26.94	10.30	46.00	-19.06	AV	N	Pass
4	5.128	37.71	10.26	60.00	-22.29	Peak	N	Pass
4*	5.128	32.03	10.26	60.00	-27.97	QP	N	Pass
4**	5.128	24.85	10.26	50.00	-25.15	AV	N	Pass
5	23.228	42.74	11.01	60.00	-17.26	Peak	N	Pass
5*	23.228	26.44	11.01	60.00	-33.56	QP	N	Pass
5**	23.228	27.65	11.01	50.00	-22.35	AV	N	Pass
6	26.098	41.96	11.03	60.00	-18.04	Peak	N	Pass
6*	26.098	27.43	11.03	60.00	-32.57	QP	N	Pass
6**	26.098	25.78	11.03	50.00	-24.22	AV	N	Pass

TEST REPORT

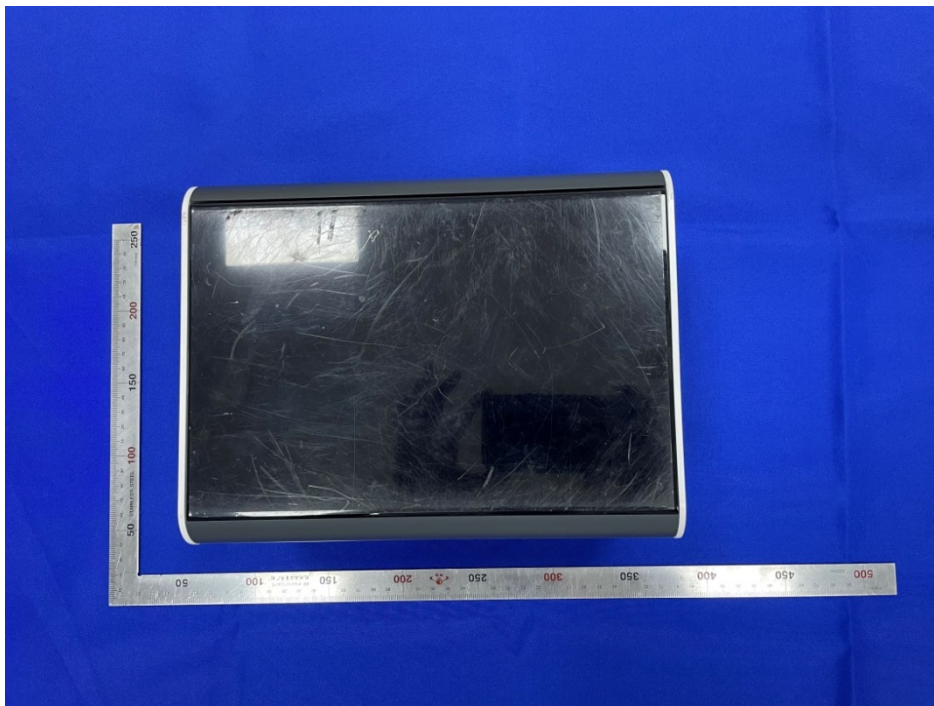
Report No.: SHH22020028-01FE

Date: 2022-07-08

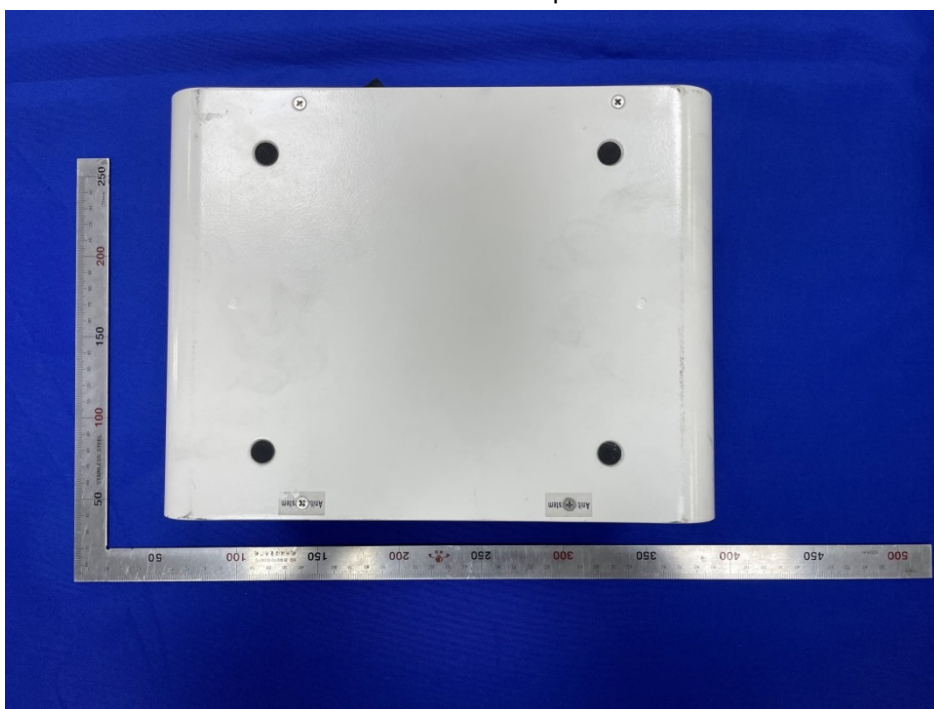
Page 39 of 41

5 Appendixes

5.1 Photographs of the Sample



Front of the sample



Rear of the sample

TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 40 of 41

5.2 Set-up for Conducted Emissions



5.3 Set-up for Conducted RF test at Antenna Port



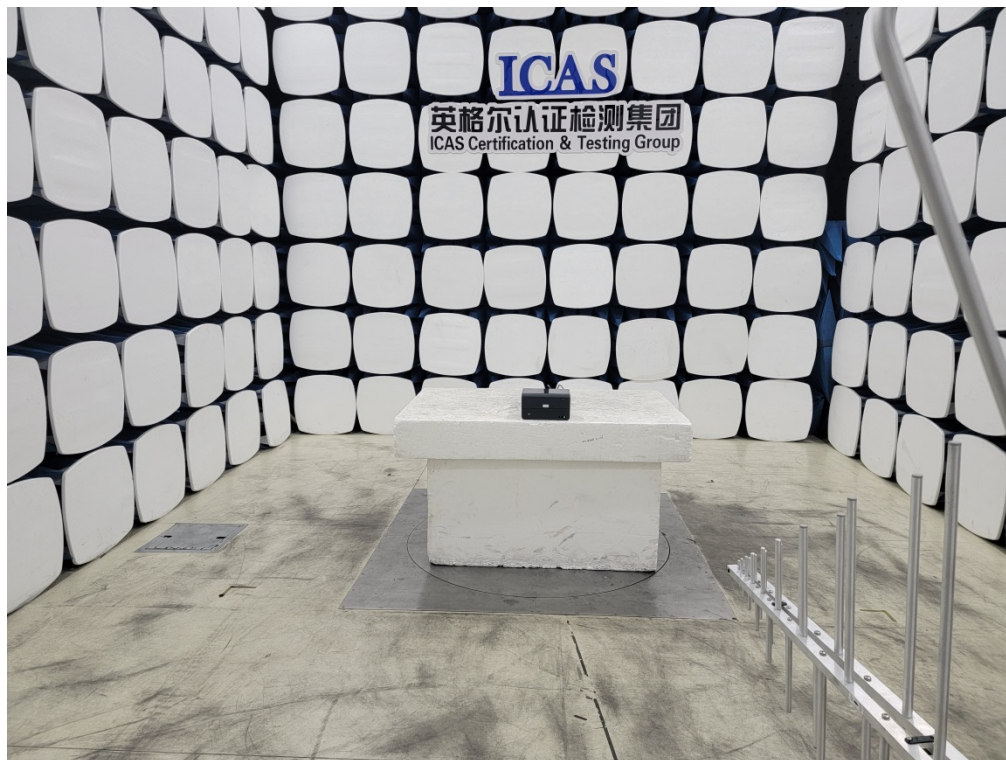
TEST REPORT

Report No.: SHH22020028-01FE

Date: 2022-07-08

Page 41 of 41

5.4 Set-up for Radiated Emission below 1GHz



5.5 Set-up for Radiated Emission above 1GHz



End of the report