



**FCC 47 CFR PART 15 SUBPART C
CERTIFICATION TEST REPORT**

For

CONSUMER CAMERA

MODEL NUMBER: DH-IPC-HDBW1235EP-W-S2

**ADDITIONAL MODEL NUMBER: DH-IPC-HDBW1235EN-W-0280B-S2;
DH-IPC-HDBW1235EN-W-0360B-S2;
DH-IPC-HDBW1235EP-W-0280B-S2; DH-IPC-HDBW1235EP-W-0360B-S2;
DH-IPC-HDBW1235EN-W-S2; IPC-D22MP-0280B; IPC-D22MP-0360B;
IPC-D22MN-0280B; IPC-D22MN-0360B; IPC-D22MP; IPC-D22MN;
IPC-HDBW1235E-W-0280B-S2; IPC-HDBW1235E-W-0360B-S2;
DH-IPC-HDBW1235E-W-S2; IPC-HDBW1235E-W-S2; IPC-D22M-0360B;
IPC-D22M-0280B; IPC-D22M;**

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Prepared for

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Revision History

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TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. CALIBRATION AND UNCERTAINTY	7
4.1. <i>MEASURING INSTRUMENT CALIBRATION</i>	<i>7</i>
4.2. <i>MEASUREMENT UNCERTAINTY.....</i>	<i>7</i>
5. EQUIPMENT UNDER TEST	8
5.1. <i>DESCRIPTION OF EUT</i>	<i>8</i>
5.2. <i>MAXIMUM OUTPUT POWER.....</i>	<i>9</i>
5.3. <i>CHANNEL LIST</i>	<i>9</i>
5.4. <i>TEST CHANNEL CONFIGURATION.....</i>	<i>10</i>
5.5. <i>THE WORSE CASE POWER SETTING PARAMETER.....</i>	<i>10</i>
5.6. <i>DESCRIPTION OF AVAILABLE ANTENNAS</i>	<i>11</i>
5.7. <i>THE WORSE CASE CONFIGURATIONS</i>	<i>11</i>
5.8. <i>TEST ENVIRONMENT</i>	<i>12</i>
5.9. <i>DESCRIPTION OF TEST SETUP.....</i>	<i>13</i>
5.10. <i>MEASURING INSTRUMENT AND SOFTWARE USED</i>	<i>14</i>
6. MEASUREMENT METHODS	15
7. ANTENNA PORT TEST RESULTS	16
7.1. <i>ON TIME AND DUTY CYCLE.....</i>	<i>16</i>
7.2. <i>6 dB BANDWIDTH.....</i>	<i>19</i>
7.3. <i>PEAK CONDUCTED OUTPUT POWER.....</i>	<i>27</i>
7.4. <i>POWER SPECTRAL DENSITY.....</i>	<i>29</i>
7.5. <i>CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS.....</i>	<i>37</i>
7.6. <i>RADIATED TEST RESULTS</i>	<i>69</i>
7.6.1. <i>LIMITS AND PROCEDURE</i>	<i>69</i>
7.6.2. <i>TEST ENVIRONMENT</i>	<i>74</i>
7.6.3. <i>RESTRICTED BANDEDGE</i>	<i>74</i>
7.6.4. <i>SPURIOUS EMISSIONS</i>	<i>91</i>
7.7. <i>AC POWER LINE CONDUCTED EMISSIONS</i>	<i>123</i>
8. ANTENNA REQUIREMENTS.....	126



1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: Zhejiang Dahua Vision Technology Co., Ltd.
Address: No.1199, Bin'an road, Binjiang District, Hangzhou, P.R.China.

Manufacturer Information

Company Name: Zhejiang Dahua Vision Technology Co., Ltd.
Address: No.1199, Bin'an road, Binjiang District, Hangzhou, P.R.China.

EUT Description

Product Name CONSUMER CAMERA
Model Name DH-IPC-HDBW1235EP-W-S2
Additional No. DH-IPC-HDBW1235EN-W-0280B-S2;
DH-IPC-HDBW1235EN-W-0360B-S2;
DH-IPC-HDBW1235EP-W-0280B-S2;DH-IPC-HDBW1235EP-W-0360B-S2;DH-IPC-HDBW1235EN-W-S2; IPC-D22MP-0280B;IPC-D22MP-0360B;IPC-D22MN-0280B;IPC-D22MN-0360B;IPC-D22MP;IPC-D22MN;IPC-HDBW1235E-W-0280B-S2;IPC-HDBW1235E-W-0360B-S2;DH-IPC-HDBW1235E-W-S2;IPC-HDBW1235E-W-S2;IPC-D22M-0360B;IPC-D22M-0280B;IPC-D22M;
Sample Number 3099081
Data of Receipt Sample Jun 05, 2020
Date Tested Jun 05, 2020 ~ Jul 04, 2020

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	PASS



Summary of Test Results			
Clause	Test Items	FCC/IC Rules	Test Results
1	6db DTS Bandwidth	FCC 15.247 (a) (2)	Complied
2	Peak Conducted Power	FCC 15.247 (b) (3)	Complied
3	Power Spectral Density	FCC 15.247 (e)	Complied
4	Conducted Band edge And Spurious emission	FCC 15.247 (d)	Complied
5	Radiated Band edges and Spurious emission	FCC 15.247 (d) FCC 15.209 FCC 15.205	Complied
6	Conducted Emission Test For AC Power Port	FCC 15.207	Complied
7	Antenna Requirement	FCC 15.203	Complied
Remark: 1) The measurement result for the sample received is <Pass> according to < ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15C > when <Accuracy Method> decision rule is applied.			

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15C.

3. FACILITIES AND ACCREDITATION

Test Location	UL-CCIC Company Limited, EMC&RF Lab
Address	No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122 ,China
Accreditation Certificate	CNAS (Certificate No.: L2065) The Laboratory has been assessed and proved to be in compliance with CNAS, The Certificate Registration Number is L2065. A2LA (Certificate No.: 4829.01) UL-CCIC COMPANY LIMITED has been assessed and proved to be in compliance with A2LA. FCC (FCC Designation No.: CN1247) UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules. IC (IC Designation No.: 25056) UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.

Note 1: All tests measurement facilities use to collect the measurement data are located at No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122, People's Republic of China

Note 2: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. These measurements below 30MHz had been correlated to measurements performed on an OFS.

Note 3: The test anechoic chamber in UL-CCIC COMPANY LIMITED had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.



4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. MEASUREMENT UNCERTAINTY

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

Test Item	Uncertainty
Conduction emission	3.00dB
Radiation Emission test(include Fundamental emission) (9KHz-30MHz)	3.32dB
Radiation Emission test(include Fundamental emission) (30MHz-1GHz)	3.27dB
Radiation Emission test (1GHz to 26GHz)(include Fundamental emission)	3.80dB (1GHz-18Gz)
	4.11dB (18GHz-26.5Gz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	



5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

Product Name:	CONSUMER CAMERA
Model No.:	DH-IPC-HDBW1235EP-W-S2
Operating Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz
Type of Modulation:	IEEE for 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE for 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n (HT20 and HT40): OFDM (64QAM, 16QAM, QPSK, BPSK)
Channels Step:	Channels with 5MHz step
Test power grade:	30 (manufacturer declare)
Test software of EUT:	Secure CRT (manufacturer declare)
Antenna Type:	Dipole antenna
Antenna Gain:	4 dBi
	Remark: This data is provided by customer and our lab isn't responsible for this data

Remark:

Model No.:

Number:	Name:	Number:	Name:	Number:	Name:
1	DH-IPC-HDBW1235EP-W-S2	2	DH-IPC-HDBW1235EN-W-0280B-S2	3	DH-IPC-HDBW1235EN-W-0360B-S2
4	DH-IPC-HDBW1235EP-W-0280B-S2	5	DH-IPC-HDBW1235EP-W-0360B-S2	6	DH-IPC-HDBW1235EN-W-S2
7	IPC-D22MP-0280B	8	IPC-D22MP-0360B	9	IPC-D22MN-0280B
10	IPC-D22MN-0360B	11	IPC-D22MP	12	IPC-D22MN
13	IPC-HDBW1235E-W-0280B-S2	14	IPC-HDBW1235E-W-0360B-S2	15	DH-IPC-HDBW1235E-W-S2
16	IPC-HDBW1235E-W-S2	17	IPC-D22M-0360B	18	IPC-D22M-0280B
19	IPC-D22M				

Remark: Only the main model **DH-IPC-HDBW1235EP-W-S2** was tested and only the data of this model is shown in this test report. Since Their electrical circuit design, layout, components used and internal wiring are identical, only the model name, product color, marketing channel and sale country.



5.2. MAXIMUM OUTPUT POWER

Number of Transmit Chains (NTX)	IEE Std. 802.11	Channel Number	Max AVG Conducted Power (dBm)
1	IEEE 802.11B	1-11[11]	14.63
1	IEEE 802.11G	1-11[11]	8.68
1	IEEE 802.11n HT20	1-11[11]	8.55
1	IEEE 802.11nHT40	3-9[7]	8.64

5.3. CHANNEL LIST

Channel List for 802.11b/g/n (20 MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	4	2427	7	2442	10	2457
2	2417	5	2432	8	2447	11	2462
3	2422	6	2437	9	2452		

Channel List for 802.11n (40 MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	5	2432	7	2442	9	2452
4	2427	6	2437	8	2447		



5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel (MHz)
IEEE 802.11B	LCH :CH01 2412
	MCH: CH06 2437
	HCH: CH11 2462
IEEE 802.11G	LCH :CH01 2412
	MCH: CH06 2437
	HCH: CH11 2462
IEEE 802.11n HT20	LCH :CH01 2412
	MCH: CH06 2437
	HCH: CH11 2462
IEEE 802.11n HT40	LCH :CH03 2422
	MCH: CH06 2437
	HCH: CH09 2452

5.5. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band							
Test Software		Secure CRT					
Modulation Mode	Transmit Antenna Number	Test Channel					
		NCB: 20MHz			NCB: 40MHz		
		CH 1	CH 6	CH 11	CH 3	CH 6	CH 9
802.11b	1	30	30	30	/		
802.11g	1	30	30	30			
802.11n HT20	1	30	30	30			
802.11n HT40	1	/			30	30	30



5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	2400-2483.5	Dipole antenna	4

Test Mode	Transmit and Receive Mode	Description
IEEE 802.11b	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna1 can be used as transmitting/receiving antenna independently.
IEEE 802.11g	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna1 can be used as transmitting/receiving antenna independently.
IEEE 802.11N (HT20)	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna1 can be used as transmitting/receiving antenna independently.
IEEE 802.11N (HT40)	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna1 can be used as transmitting/receiving antenna independently.

5.7. THE WORSE CASE CONFIGURATIONS

For the product, there two transmission antennas, and pre-testing both of them, only the worse data for the antenna is recorded in the report.

Worst-case data rates as provided by the client were:

802.11b mode: 1 Mbps
802.11b mode: 6 Mbps
802.11n HT20 mode: MCS0
802.11n HT40 mode: MCS0



5.8. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests	
Relative Humidity	55 ~ 65%	
Atmospheric Pressure:	101kPa	
Temperature	TN	23 ~ 28°C
Voltage :	VL	N/A
	VN	AC 120V
	VH	N/A

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

5.9. DESCRIPTION OF TEST SETUP


SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Description
1	Laptop	ThinkPad	E550c	N/A
2	Fixed Frequency Board	N/A	N/A	Supply by UL Lab

I/O PORT

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	USB	USB-VGA	100cm Length (Supply by UL Lab)	N/A
2	LAN	LAN	LAN Cable	100cm Length (Supply by UL Lab)	N/A

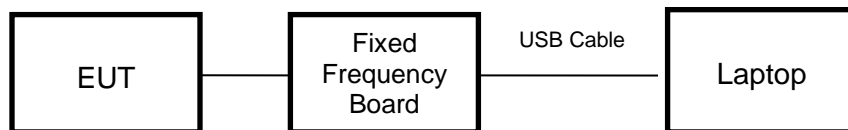
ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	Adapter(Supply by UL Lab)	NA	ADS-26FSG-12 12024EPCU/EP C	INPUT:100-240V~50/60Hz 0.7A Max OUTPUT:12.0V  2.0A

TEST SETUP

The EUT can work in an engineer mode with a software through a table PC.

SETUP DIAGRAM FOR TESTS





5.10. MEASURING INSTRUMENT AND SOFTWARE USED

Conducted Emissions (Instrument)							
Used	Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	EMI Test Receiver	R&S	ESR3	126700	2018-12-13	2019-12-12	2020-12-11
<input checked="" type="checkbox"/>	Two-Line V-Network	R&S	ENV216	126701	2018-12-13	2019-12-12	2020-12-11
<input checked="" type="checkbox"/>	Artificial Mains Networks	R&S	ENY81	126711	2018-12-13	2019-12-12	2020-12-11
Software							
Used	Description		Manufacturer	Name	Version		
<input checked="" type="checkbox"/>	Test Software for Conducted disturbance		R&S	EMC32	Ver. 9.25		
Radiated Emissions (Instrument)							
Used	Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	Spectrum Analyzer	Keysight	N9010B	MY57110128	2019-05-29	2020-05-10	2021-05-09
<input checked="" type="checkbox"/>	EMI test receiver	R&S	ESR26	1267603	2018-12-13	2019-12-22	2020-12-21
<input checked="" type="checkbox"/>	Receiver Antenna (9kHz-30MHz)	Schwarzbeck	FMZB 1513	513-265	N/A	2018-06-15	2021-06-14
<input checked="" type="checkbox"/>	Receiver Antenna (30MHz-1GHz)	SunAR RF Motion	JB1	126704	N/A	2019-01-28	2022-01-27
<input checked="" type="checkbox"/>	Receiver Antenna (1GHz-18GHz)	R&S	HF907	126705	2019-01-26	2020-01-26	2021-01-25
<input checked="" type="checkbox"/>	Receiver Antenna (18GHz-26.5GHz)	Schwarzbeck	BBHA9170	126706	2019-02-06	2020-02-05	2021-02-04
<input checked="" type="checkbox"/>	Receiver Antenna (26.5GHz-40GHz)	TOYO	HAP 26-40W	00000012	2018-07-25	2019-07-23	2020-07-22
<input checked="" type="checkbox"/>	Pre-amplification (To 1GHz)	R&S	SCU-03D	134666	2019-02-06	2020-02-05	2021-02-04
<input checked="" type="checkbox"/>	Pre-amplification (To 18GHz)	Compliance Direction System Inc.	PAP-1G18-50	14140-13467	2019-03-18	2020-02-20	2021-02-19
<input checked="" type="checkbox"/>	Pre-amplification (To 26.5GHz)	R&S	SCU-26D	134668	2019-02-06	2020-02-05	2021-02-04
<input checked="" type="checkbox"/>	Band Reject Filter	Wainwright	WRCJV8-2350-2400-2483.5-2533.5-40SS	1	2019-05-29	2020-05-10	2021-05-09
<input checked="" type="checkbox"/>	Highpass Filter	Wainwright	WHKX10-2700-3000-18000-40SS	2	2019-05-29	2020-05-10	2021-05-09
Software							
Used	Description		Manufacturer	Name	Version		
<input checked="" type="checkbox"/>	Test Software for Radiated disturbance		Tonscend	JS32	V1.0		
Other instruments							
Used	Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	Spectrum Analyzer	Keysight	N9010B	MY57110128	2019-05-29	2020-05-10	2021-05-09



<input checked="" type="checkbox"/>	Power Meter	Keysight	U2021XA	MY57110002	2019-06-12	2020-05-10	2021-05-09
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6. MEASUREMENT METHODS

No.	Test Item	KDB Name	Section
1	6dB Bandwidth and 99% Bandwidth	KDB 558074 D01 15.247 Meas Guidance v05r02	8.2
2	Peak Output Power	KDB 558074 D01 15.247 Meas Guidance v05r02	8.3.1.3/8.3.2.3
3	Power Spectral Density	KDB 558074 D01 15.247 Meas Guidance v05r02	8.4
4	Out-of-band emissions in non-restricted bands	KDB 558074 D01 15.247 Meas Guidance v05r02	8.5
5	Out-of-band emissions in restricted bands	KDB 558074 D01 15.247 Meas Guidance v05r02	8.6
6	Band-edge	KDB 558074 D01 15.247 Meas Guidance v05r02	8.7
7	Conducted Emission Test For AC Power Port	ANSI C63.10-2013	6.2



7. ANTENNA PORT TEST RESULTS

7.1. ON TIME AND DUTY CYCLE

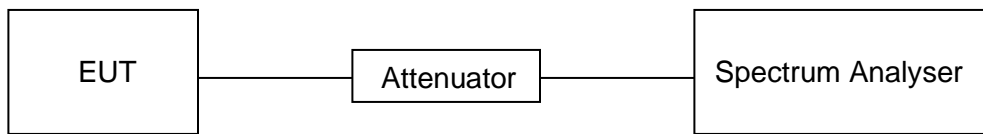
LIMITS

None; for reporting purposes only

PROCEDURE

FCC KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



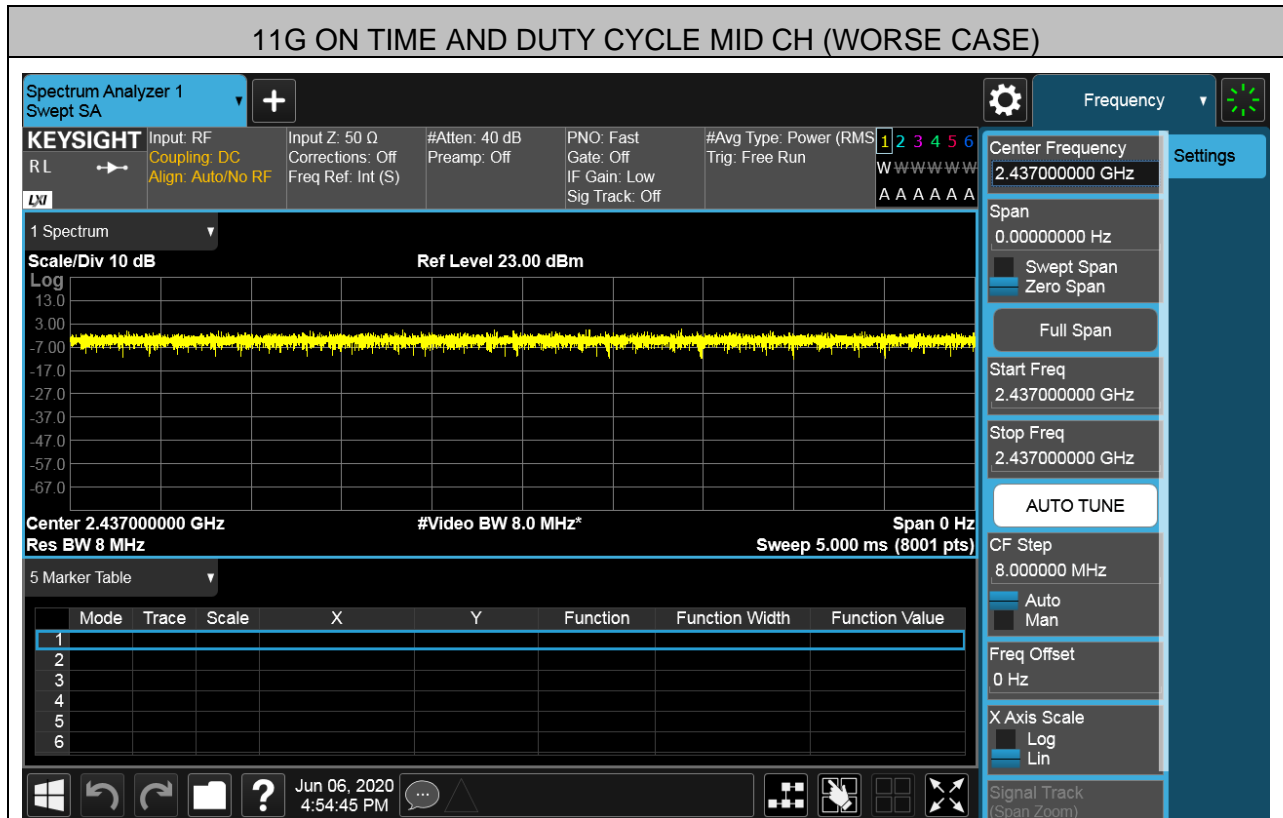
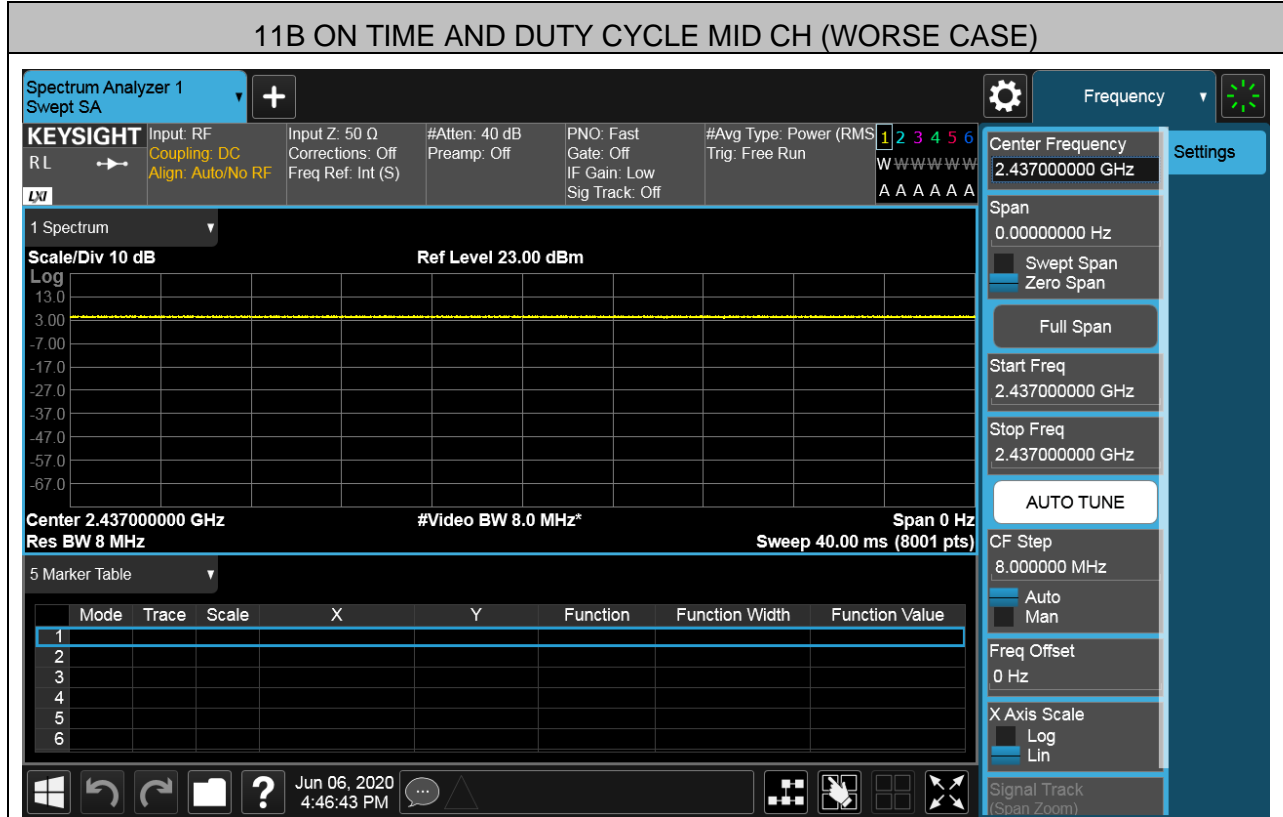
TEST ENVIRONMENT

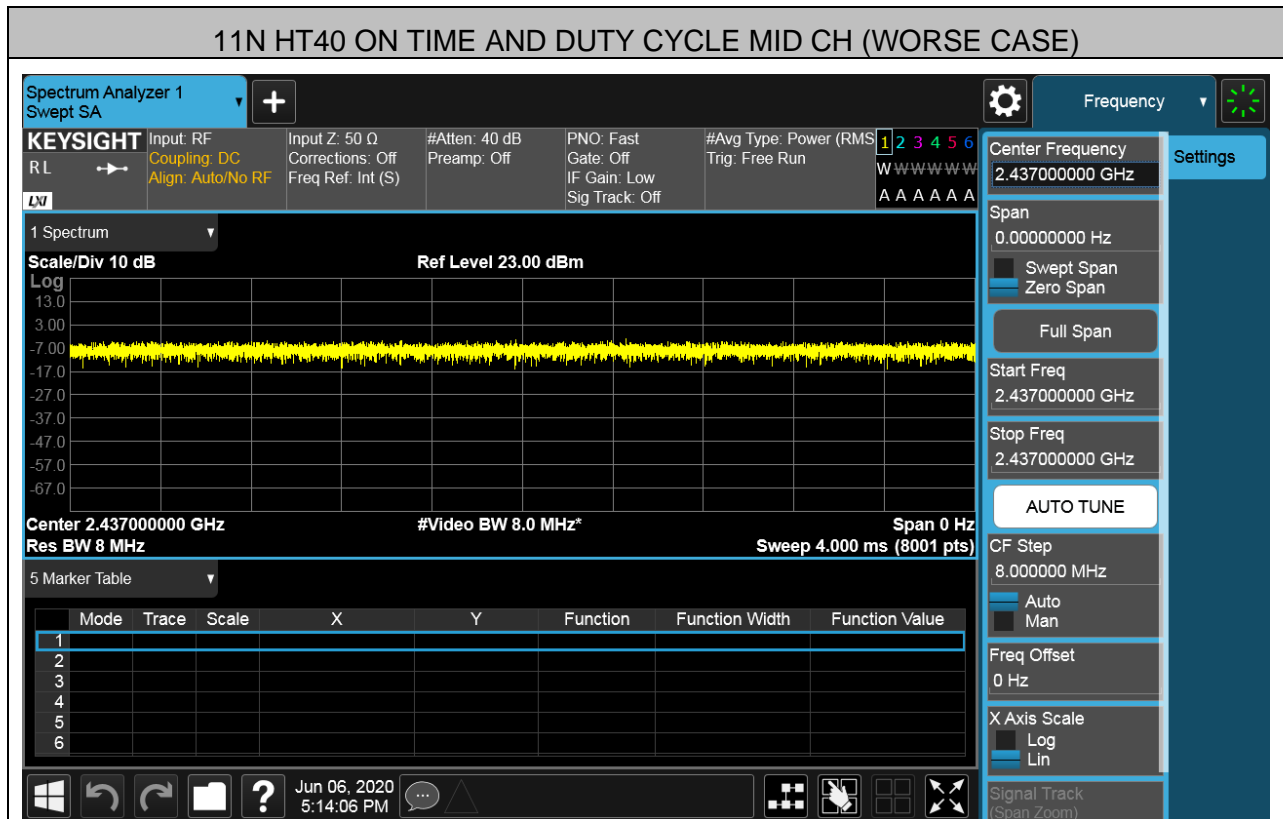
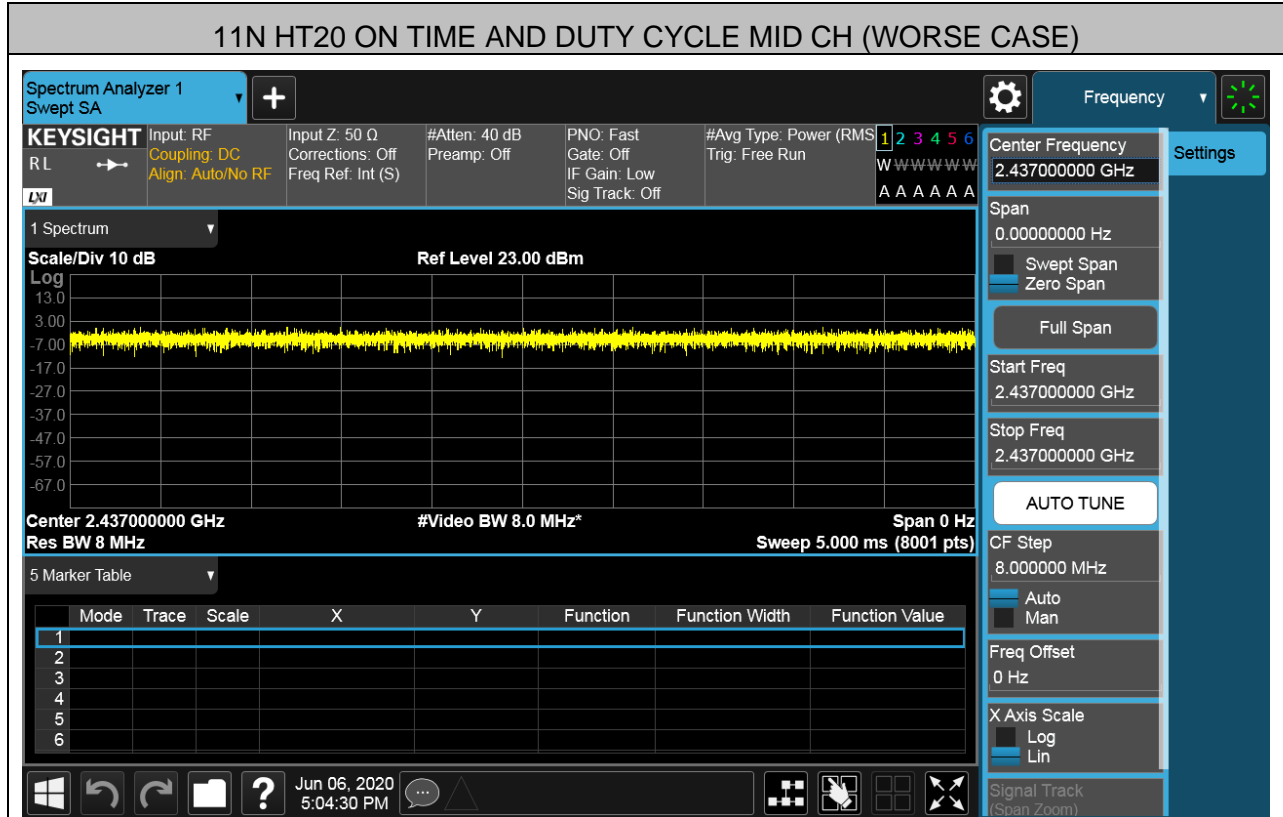
Temperature	22°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V

RESULTS

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/T Minimum VBW (KHz)	Final VBW(Hz)
11B	100	100	1	100	0	0.01	10
11G	100	100	1	100	0	0.01	10
11N HT20	100	100	1	100	0	0.01	10
11N HT40	100	100	1	100	0	0.01	10

Note: 1) Duty Cycle Correction Factor=10log(1/x).
 2) Where: x is Duty Cycle(Linear)
 3) Where: T is On Time (transmit duration)





7.2. 6 dB BANDWIDTH

LIMITS

FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247(a)(2)	6dB Bandwidth	$\geq 500\text{KHz}$	2400-2483.5

TEST PROCEDURE

Refer to FCC KDB 558074, connect the UUT to the spectrum analyser and use the following settings:

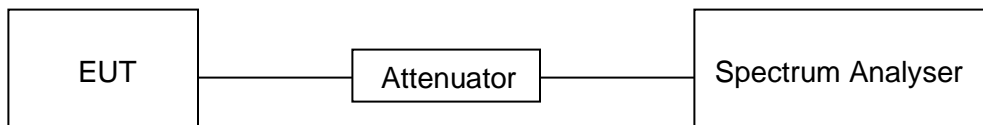
Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	For 6dB Bandwidth :100K
VBW	For 6dB Bandwidth : $\geq 3 \times \text{RBW}$
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

TEST ENVIRONMENT

Temperature	22°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	AC120V

TEST SETUP



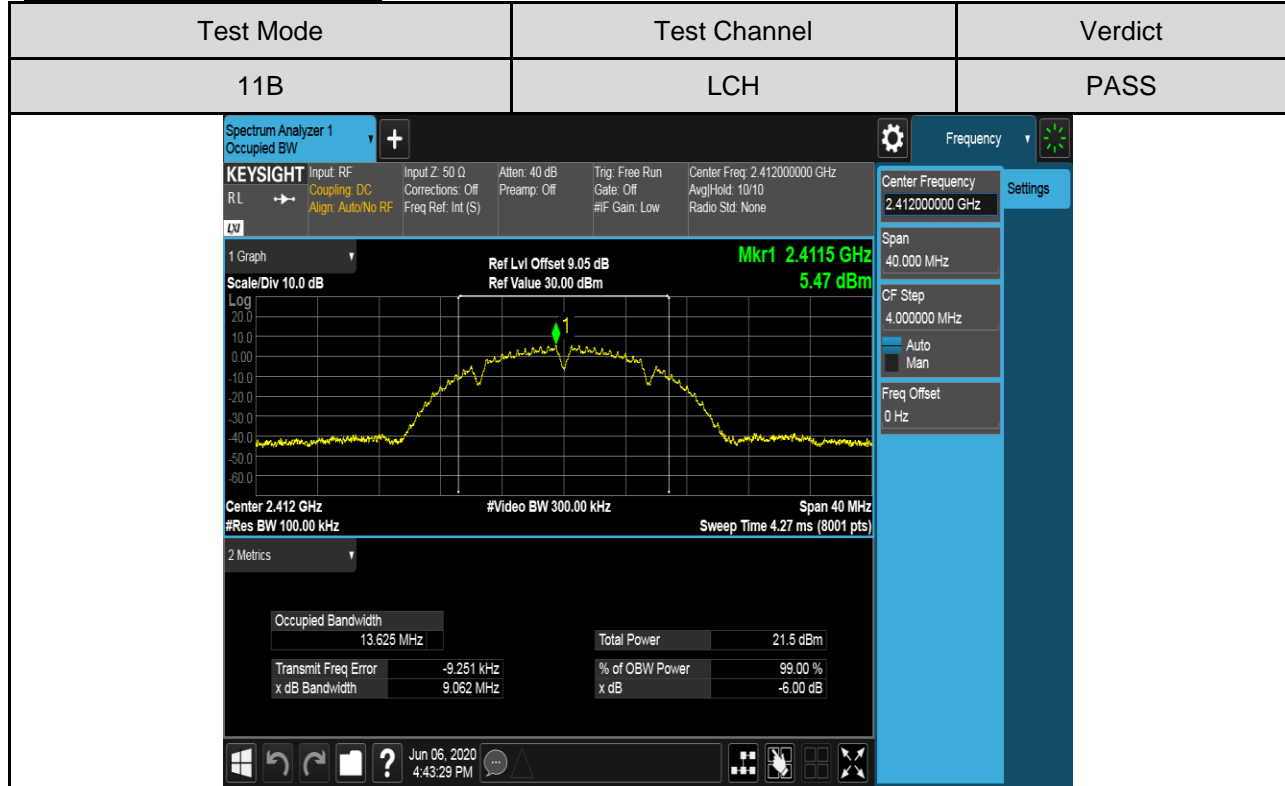


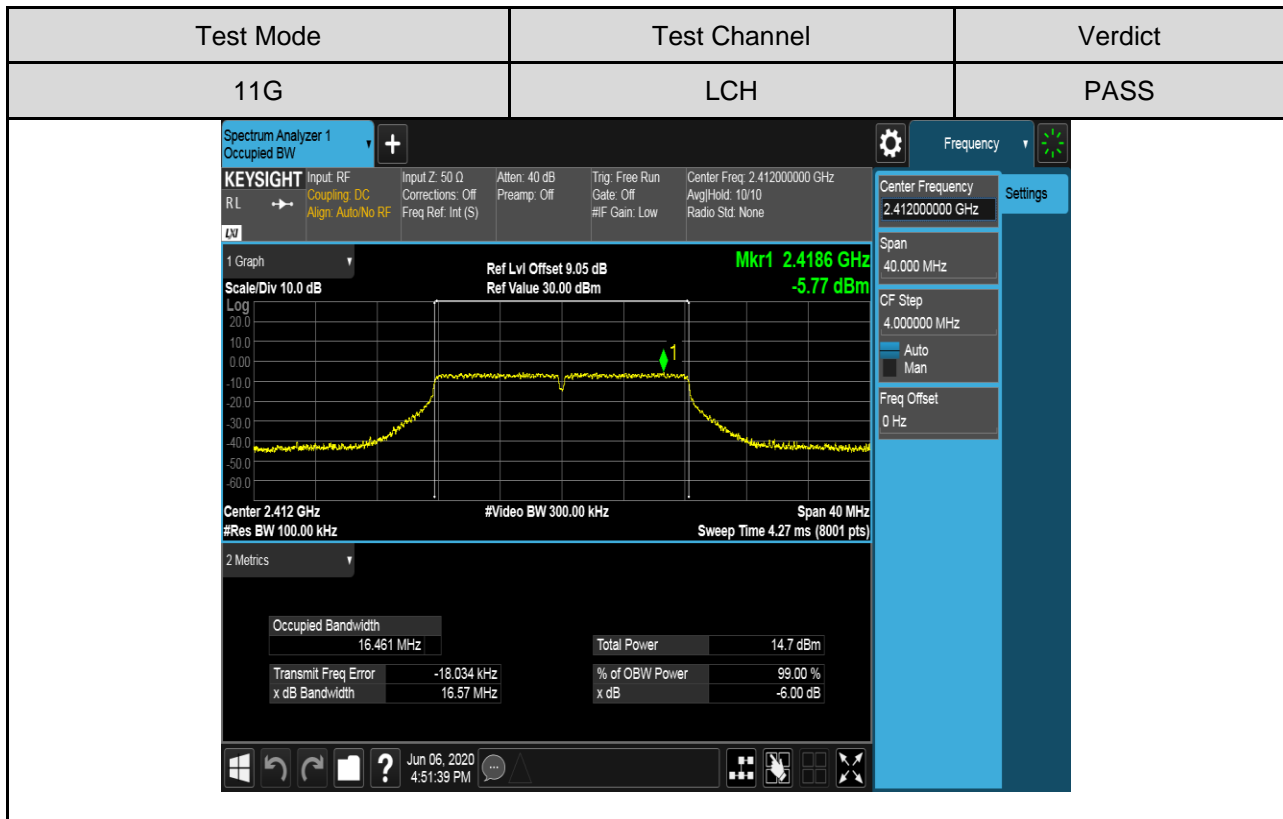
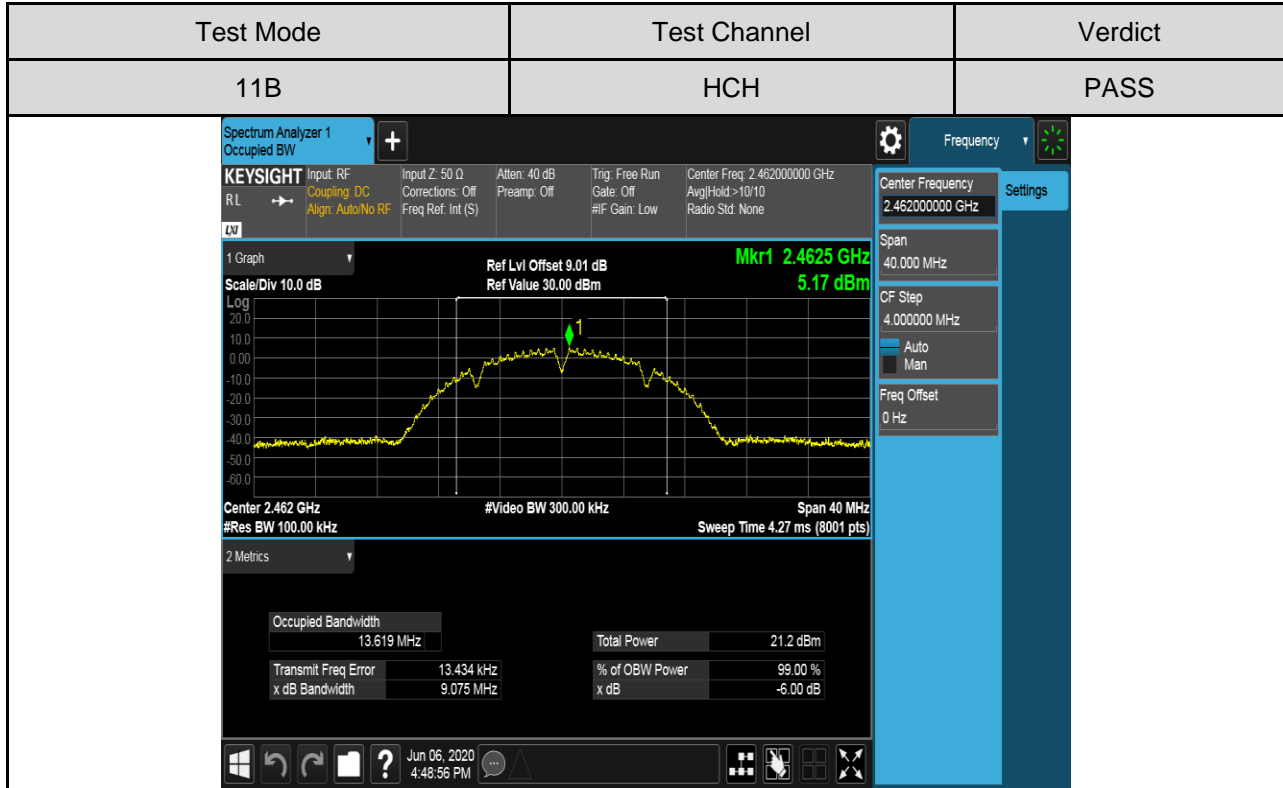
RESULTS TABLE

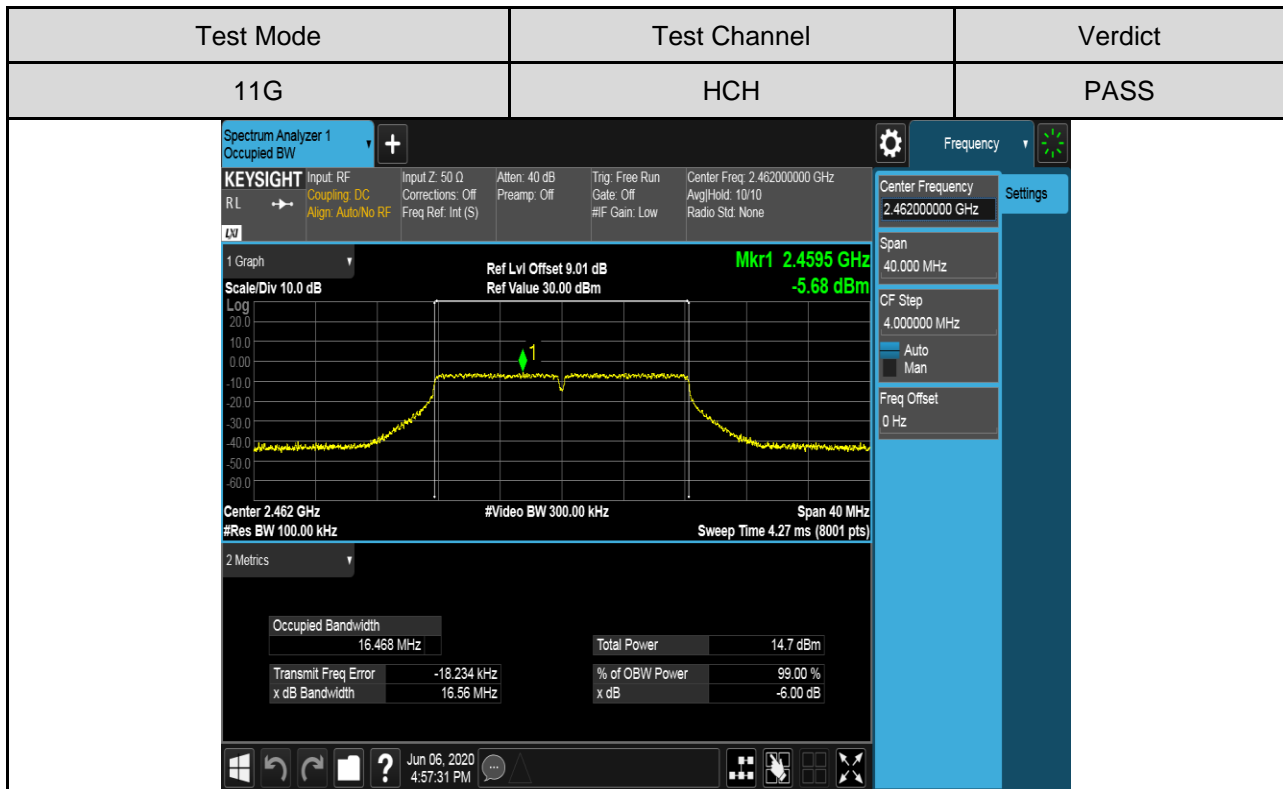
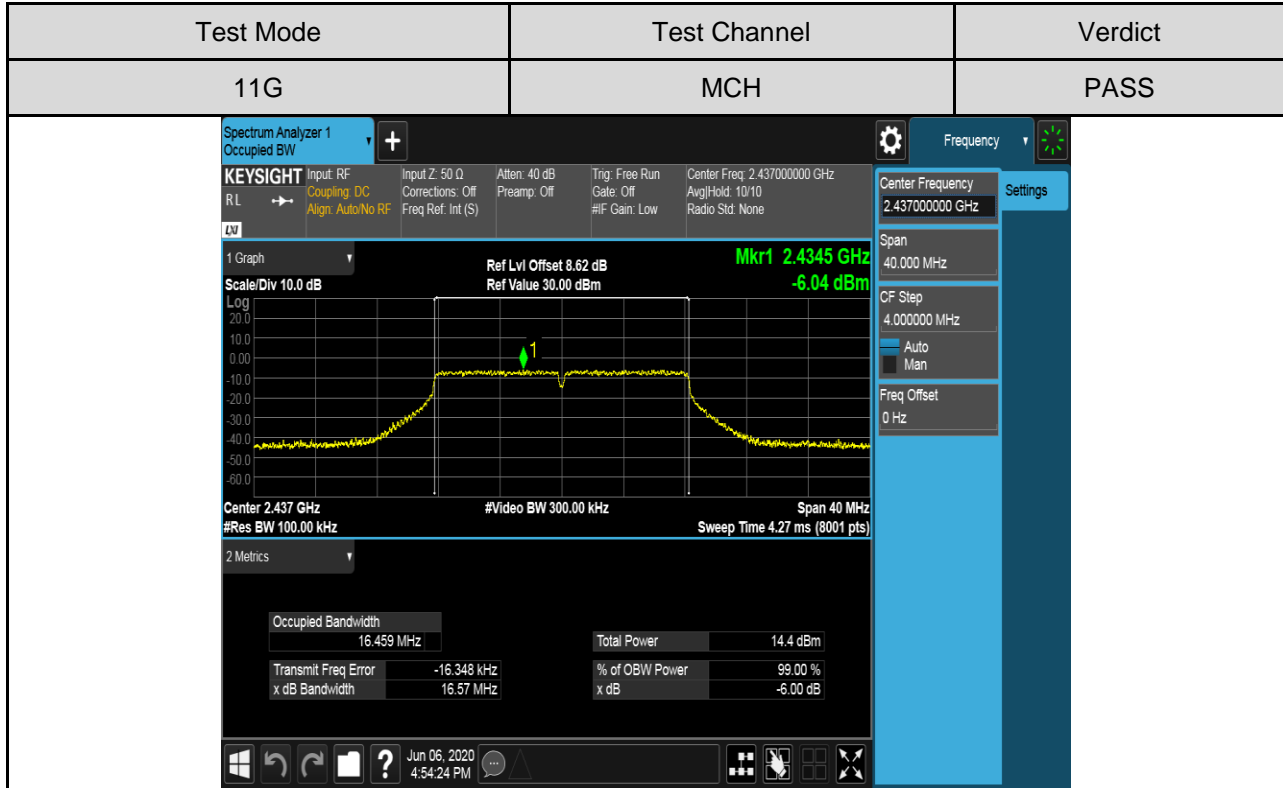
Test Mode	Test Channel	6dB bandwidth(MHz)	Verdict
11B	LCH	9.062	PASS
11B	MCH	9.066	PASS
11B	HCH	9.075	PASS
11G	LCH	16.57	PASS
11G	MCH	16.57	PASS
11G	HCH	16.56	PASS
11N HT20	LCH	17.77	PASS
11N HT20	MCH	17.76	PASS
11N HT20	HCH	17.77	PASS
11N HT40	LCH	36.45	PASS
11N HT40	MCH	36.44	PASS
11N HT40	HCH	36.46	PASS

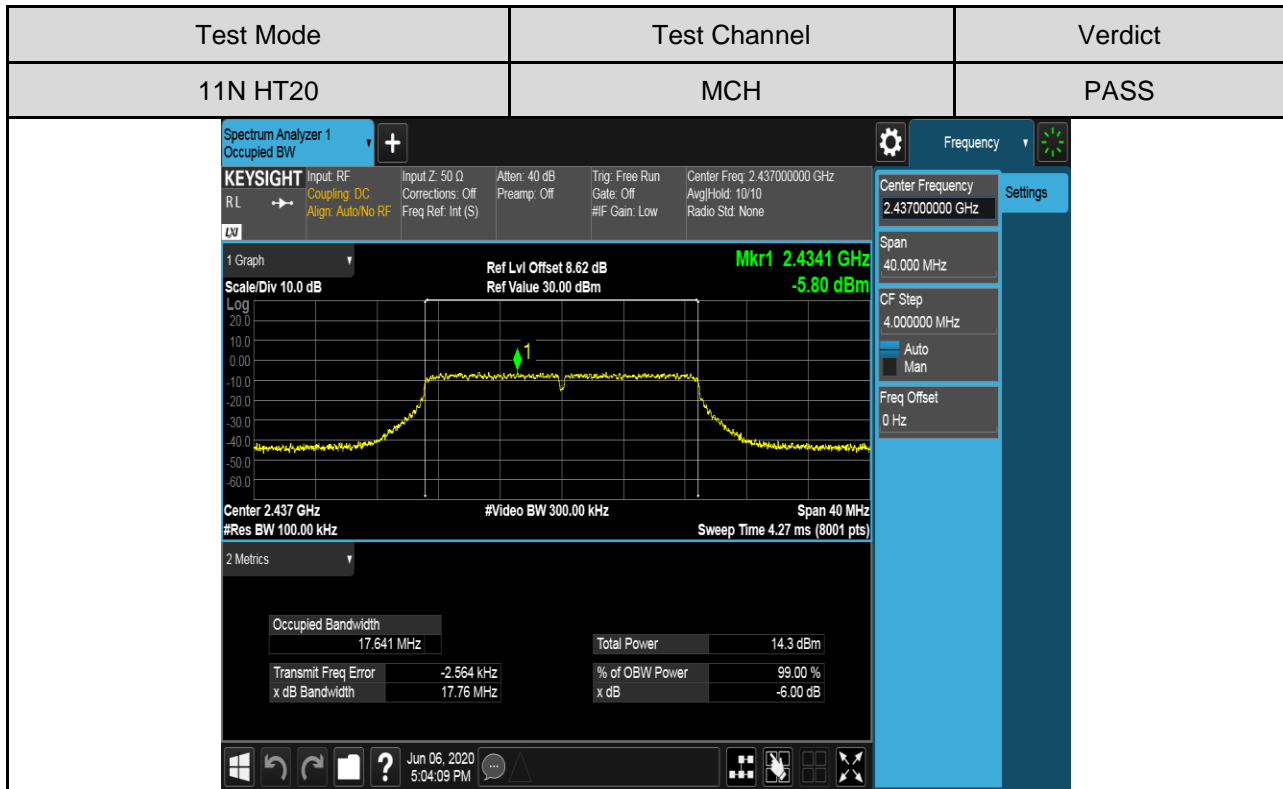
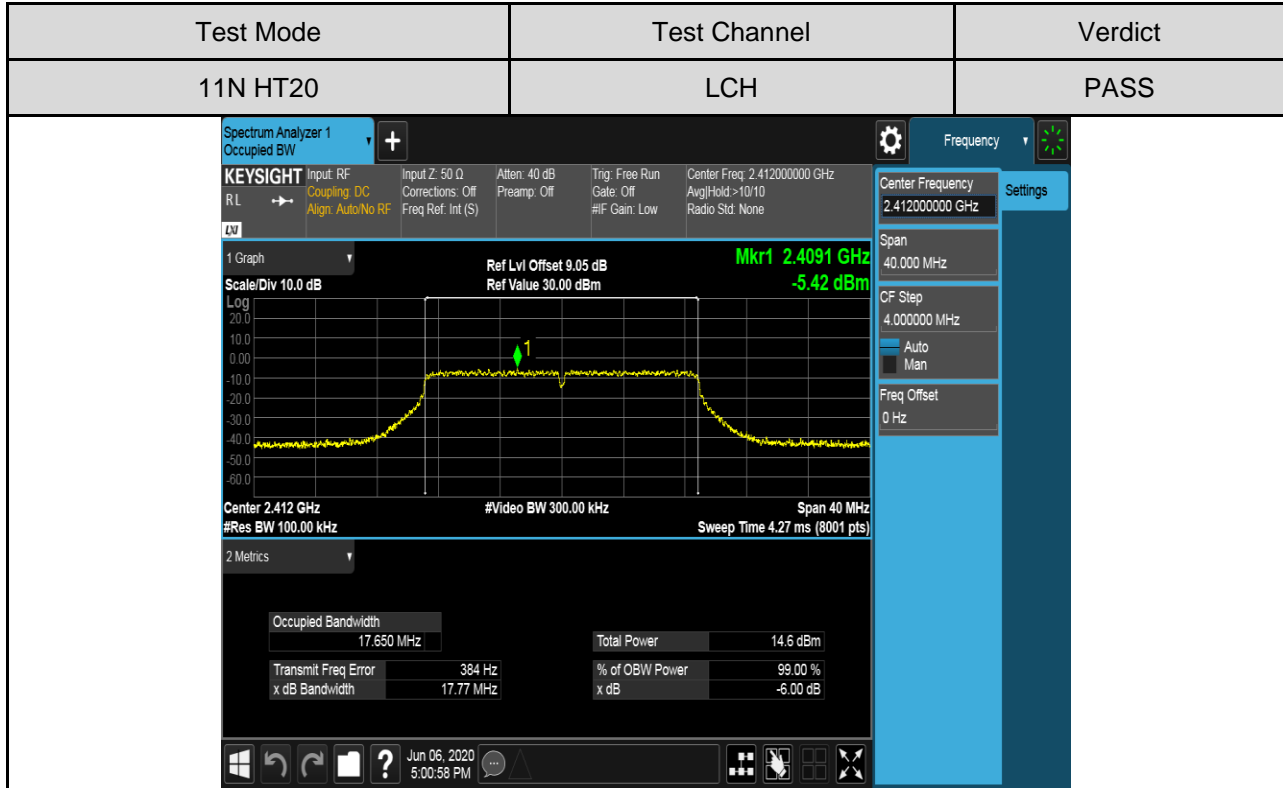


Test Graphs
Part I: For 6dB bandwidth







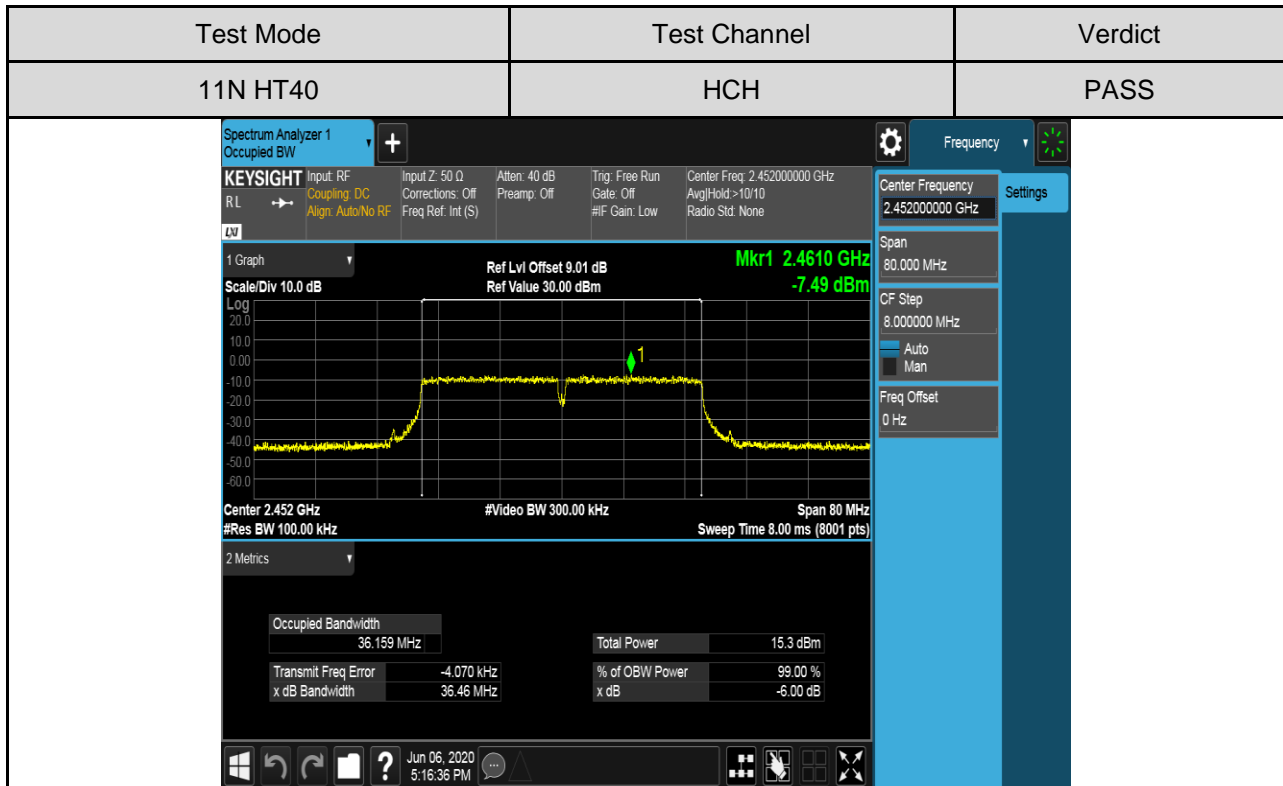
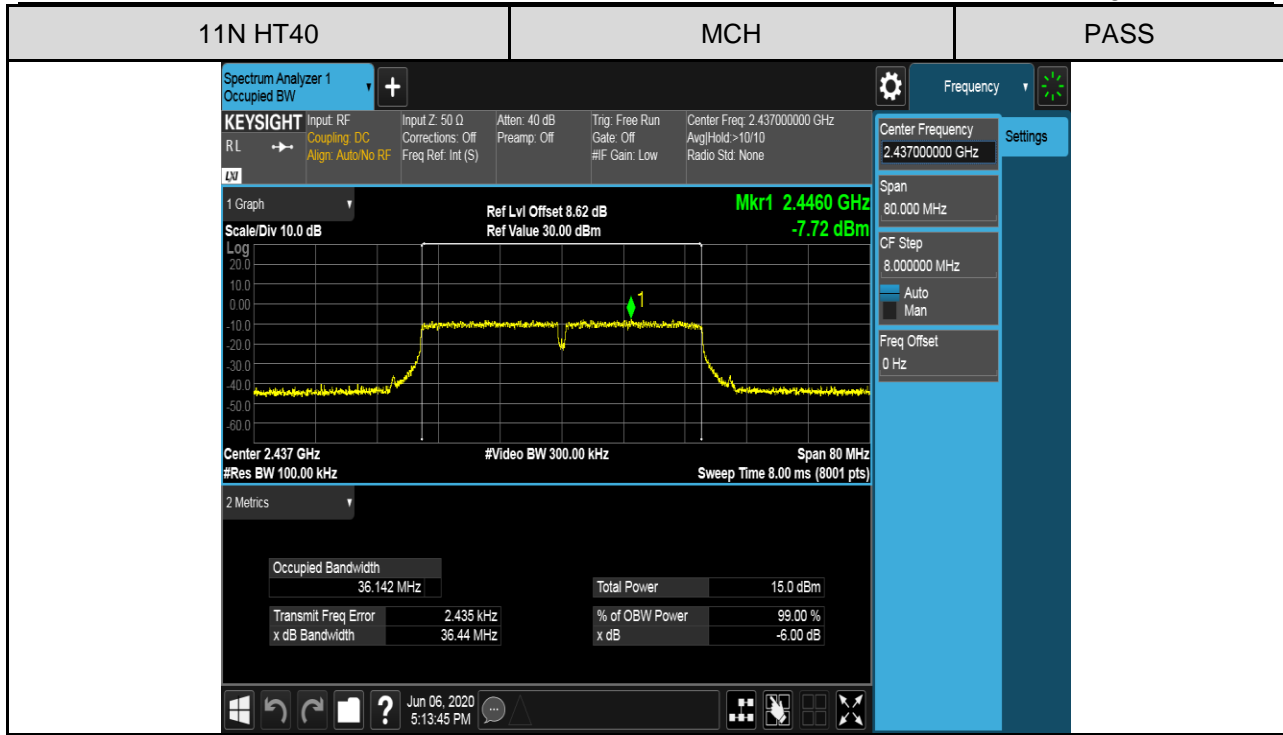




Test Mode	Test Channel	Verdict												
11N HT20	HCH	PASS												
<p>Keysight Spectrum Analyzer 1 Occupied BW</p> <p>Center Freq: 2.46200000 GHz Avg/Hold: 10/10 Radio Std: None</p> <p>Mkr1 2.4591 GHz -5.56 dBm</p> <p>Center 2.462 GHz #Res BW 100.00 kHz #Video BW 300.00 kHz Span 40 MHz Sweep Time 4.27 ms (8001 pts)</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>17.650 MHz</td> <td>Total Power</td> <td>14.5 dBm</td> </tr> <tr> <td>Transmit Freq Error</td> <td>907 Hz</td> <td>% of OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>17.77 MHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table>			Occupied Bandwidth	17.650 MHz	Total Power	14.5 dBm	Transmit Freq Error	907 Hz	% of OBW Power	99.00 %	x dB Bandwidth	17.77 MHz	x dB	-6.00 dB
Occupied Bandwidth	17.650 MHz	Total Power	14.5 dBm											
Transmit Freq Error	907 Hz	% of OBW Power	99.00 %											
x dB Bandwidth	17.77 MHz	x dB	-6.00 dB											

Test Mode	Test Channel	Verdict												
11N HT40	LCH	PASS												
<p>Keysight Spectrum Analyzer 1 Occupied BW</p> <p>Center Freq: 2.422000000 GHz Avg/Hold: 10/10 Radio Std: None</p> <p>Mkr1 2.4310 GHz -7.71 dBm</p> <p>Center 2.422 GHz #Res BW 100.00 kHz #Video BW 300.00 kHz Span 80 MHz Sweep Time 8.00 ms (8001 pts)</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>36.163 MHz</td> <td>Total Power</td> <td>14.9 dBm</td> </tr> <tr> <td>Transmit Freq Error</td> <td>8.104 kHz</td> <td>% of OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>36.45 MHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table>			Occupied Bandwidth	36.163 MHz	Total Power	14.9 dBm	Transmit Freq Error	8.104 kHz	% of OBW Power	99.00 %	x dB Bandwidth	36.45 MHz	x dB	-6.00 dB
Occupied Bandwidth	36.163 MHz	Total Power	14.9 dBm											
Transmit Freq Error	8.104 kHz	% of OBW Power	99.00 %											
x dB Bandwidth	36.45 MHz	x dB	-6.00 dB											

Test Mode	Test Channel	Verdict





7.3. PEAK CONDUCTED OUTPUT POWER

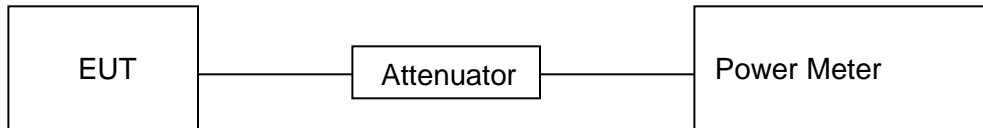
LIMITS

FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5

TEST PROCEDURE

Place the EUT on the table and set it in the transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power sensor.
Measure the power of each channel.
Peak Detector use for Peak result.
AVG Detector use for AVG result.

TEST SETUP



TEST ENVIRONMENT

Temperature	22°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	AC120V



RESULTS

Test Mode	Test Channel	Maximum Conducted Output Power (PK)	Maximum Conducted Output Power (AV)	LIMIT
		dBm	dBm	dBm
11B	LCH	17.37	14.63	30
	MCH	17.02	14.27	30
	HCH	17.2	14.45	30
11G	LCH	16.39	8.68	30
	MCH	16.09	8.37	30
	HCH	16.31	8.60	30
11n HT20	LCH	16.39	8.55	30
	MCH	16.10	8.26	30
	HCH	16.34	8.49	30
11n HT40	LCH	N/A	8.25	30
	MCH	N/A	8.27	30
	HCH	N/A	8.64	30

7.4. POWER SPECTRAL DENSITY

LIMITS

FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
FCC §15.247 (e)	Power Spectral Density	8 dBm in any 3 kHz band	2400-2483.5

TEST PROCEDURE

Refer to FCC KDB 558074, connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	$3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
VBW	$\geq 3 \times \text{RBW}$
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

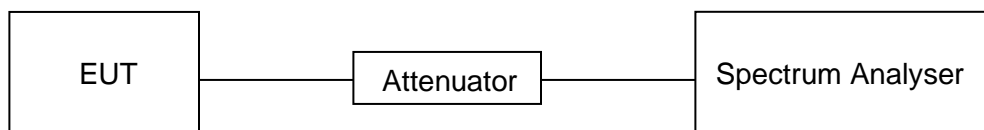
Allow trace to fully stabilize and use the peak marker function to determine the maximum amplitude level within the RBW.

If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST ENVIRONMENT

Temperature	22°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	DC 21.6V

TEST SETUP



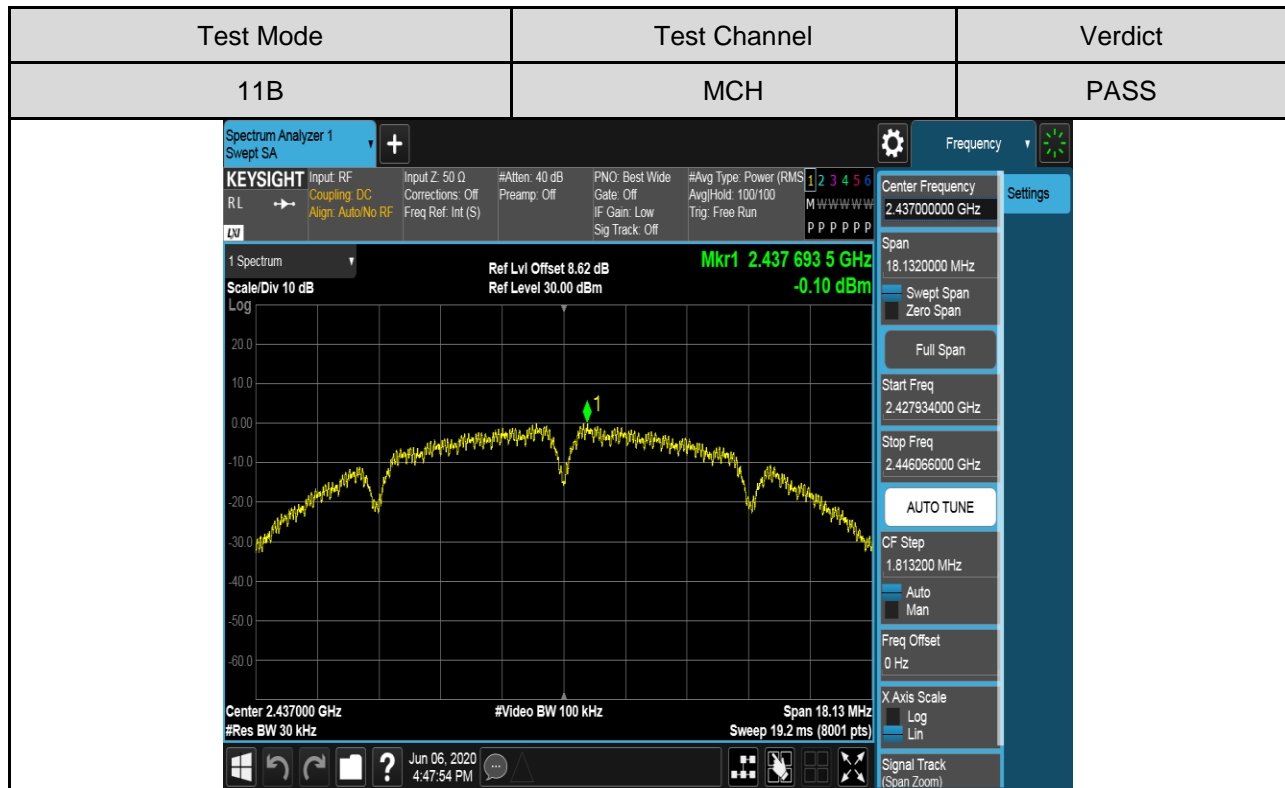
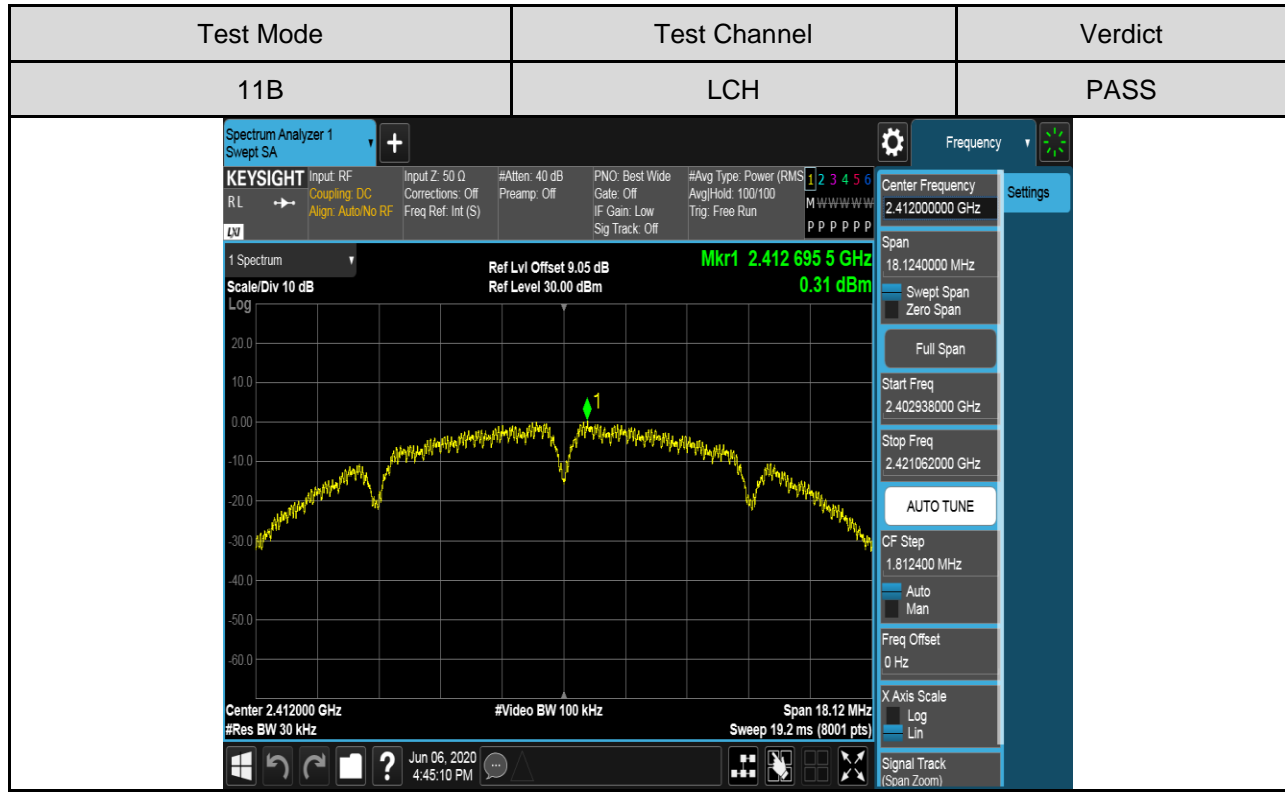


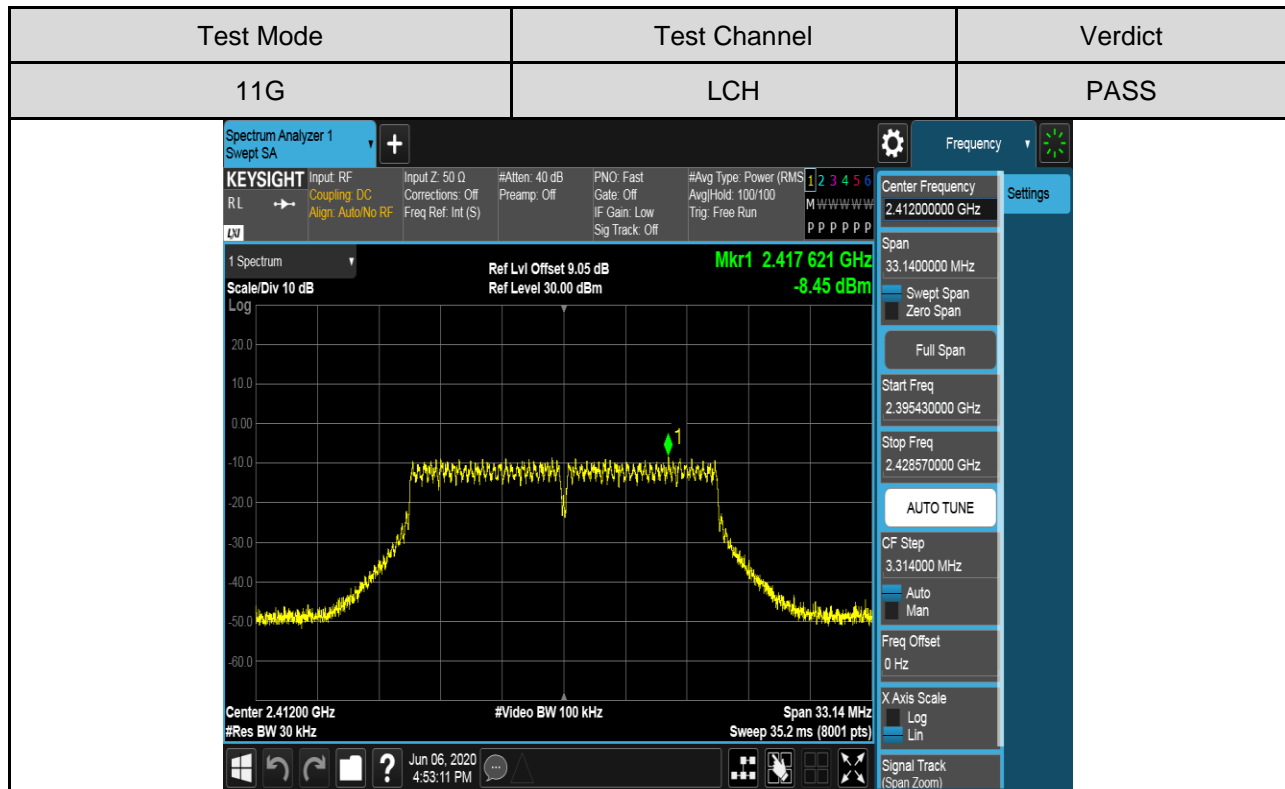
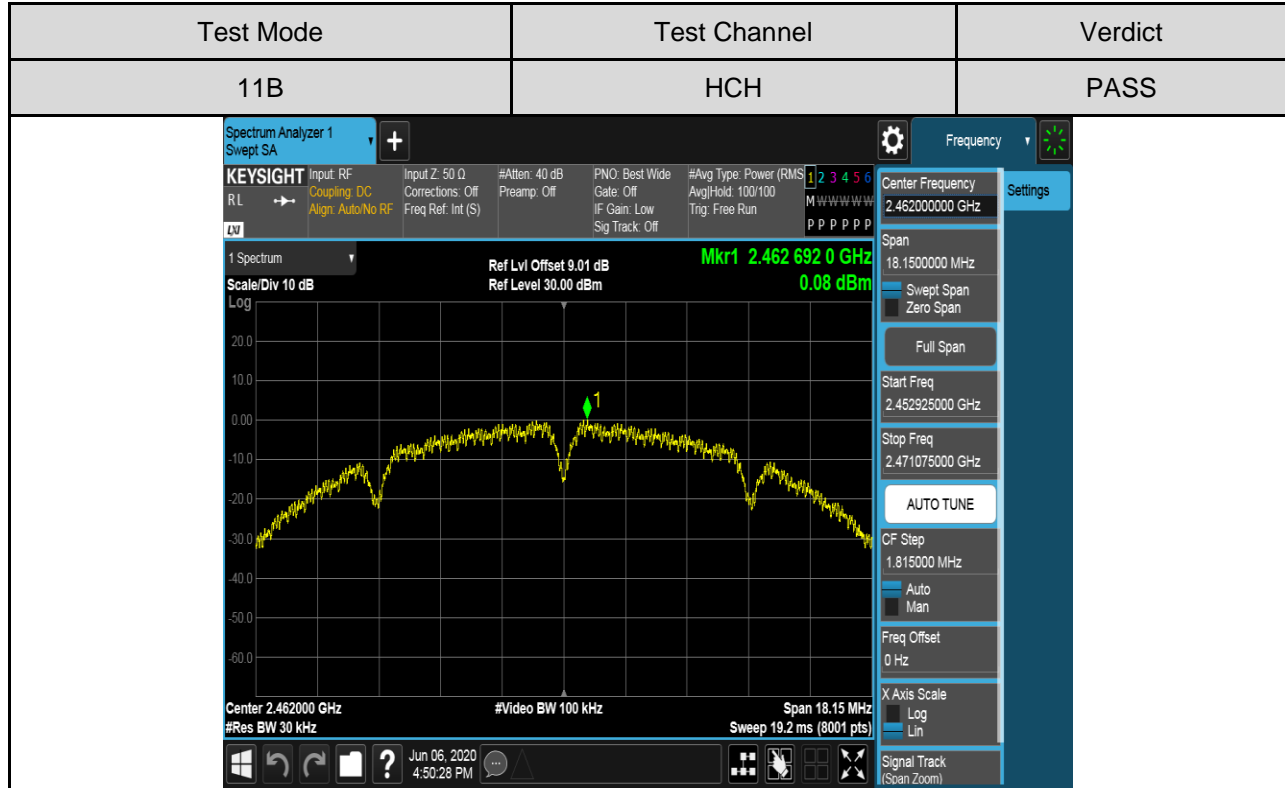
RESULTS

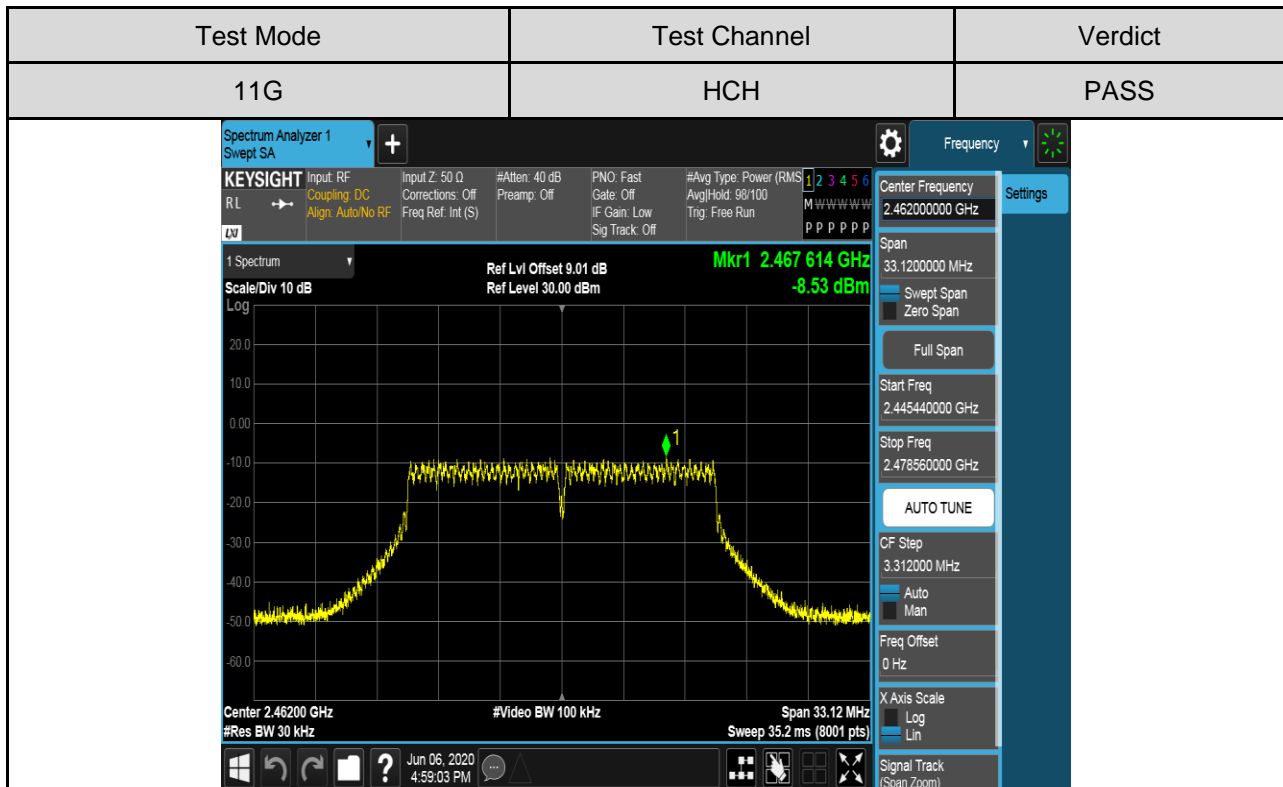
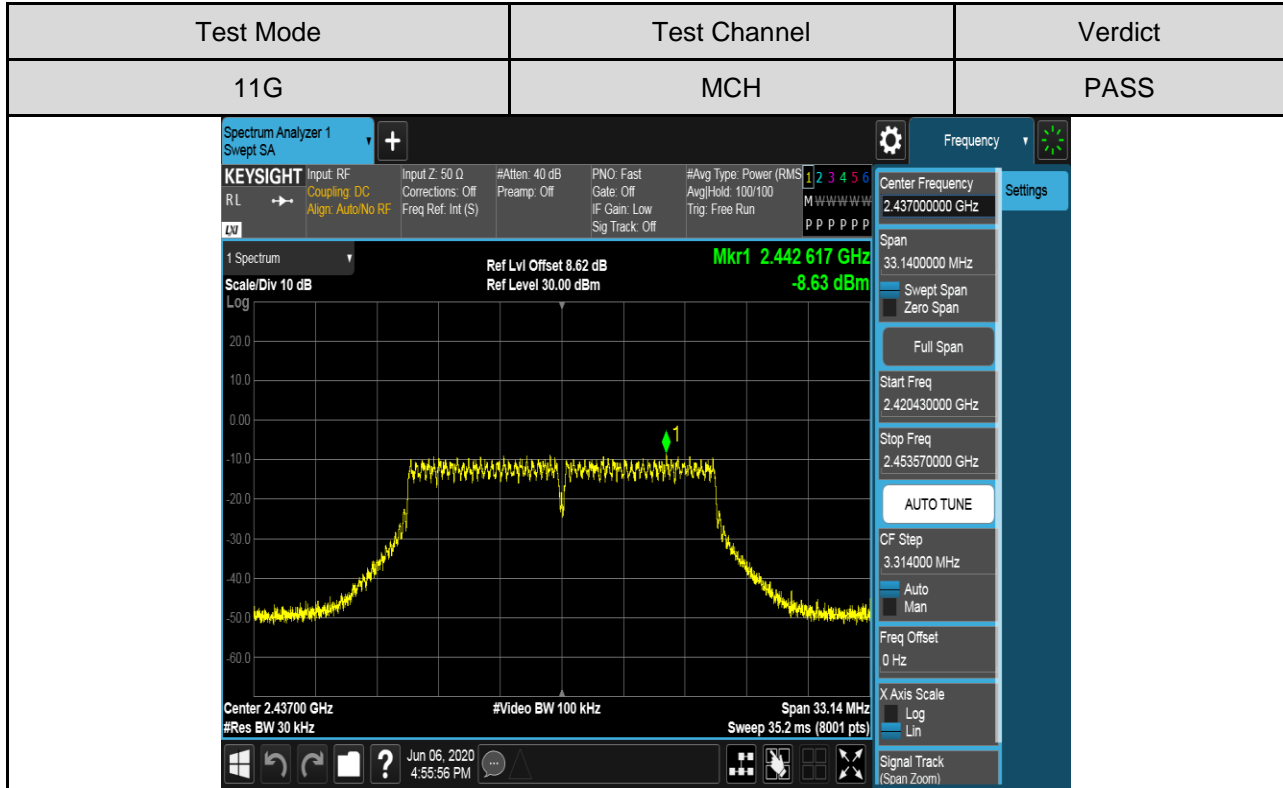
Test Mode	Test Channel	Maximum Peak power spectral density (dBm/30kHz)	Result
11B	LCH	0.31	Pass
	MCH	-0.10	Pass
	HCH	0.08	Pass
11G	LCH	-8.45	Pass
	MCH	-8.63	Pass
	HCH	-8.53	Pass
11N HT20	LCH	-8.13	Pass
	MCH	-8.32	Pass
	HCH	-8.08	Pass
11N HT40	LCH	-10.66	Pass
	MCH	-11.00	Pass
	HCH	-10.89	Pass

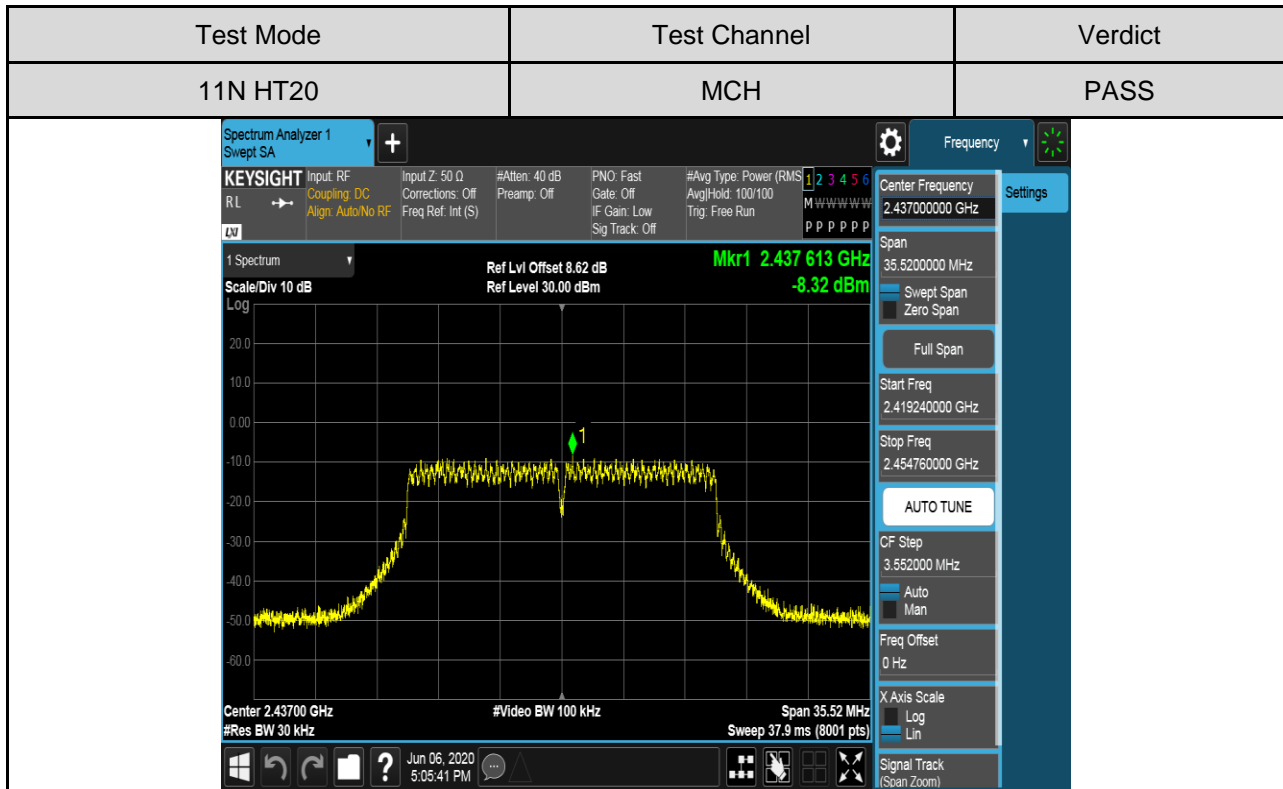
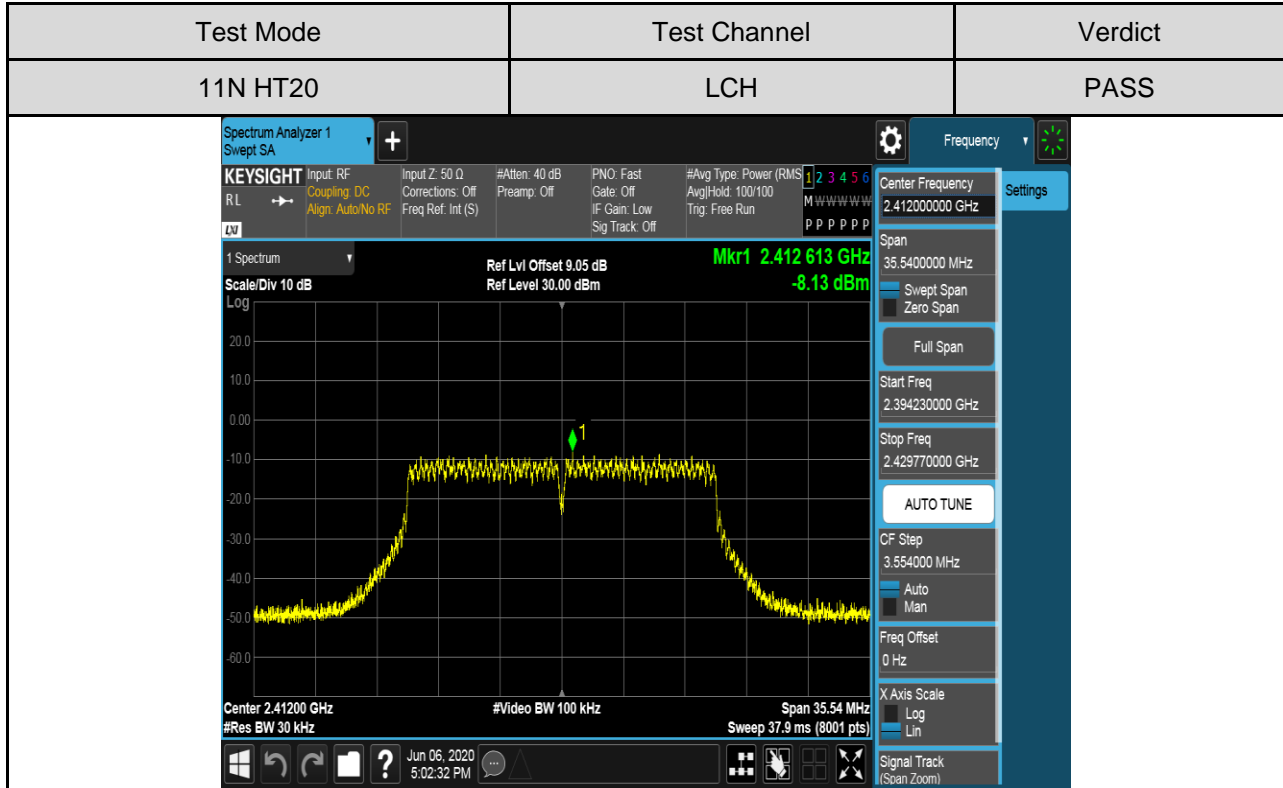


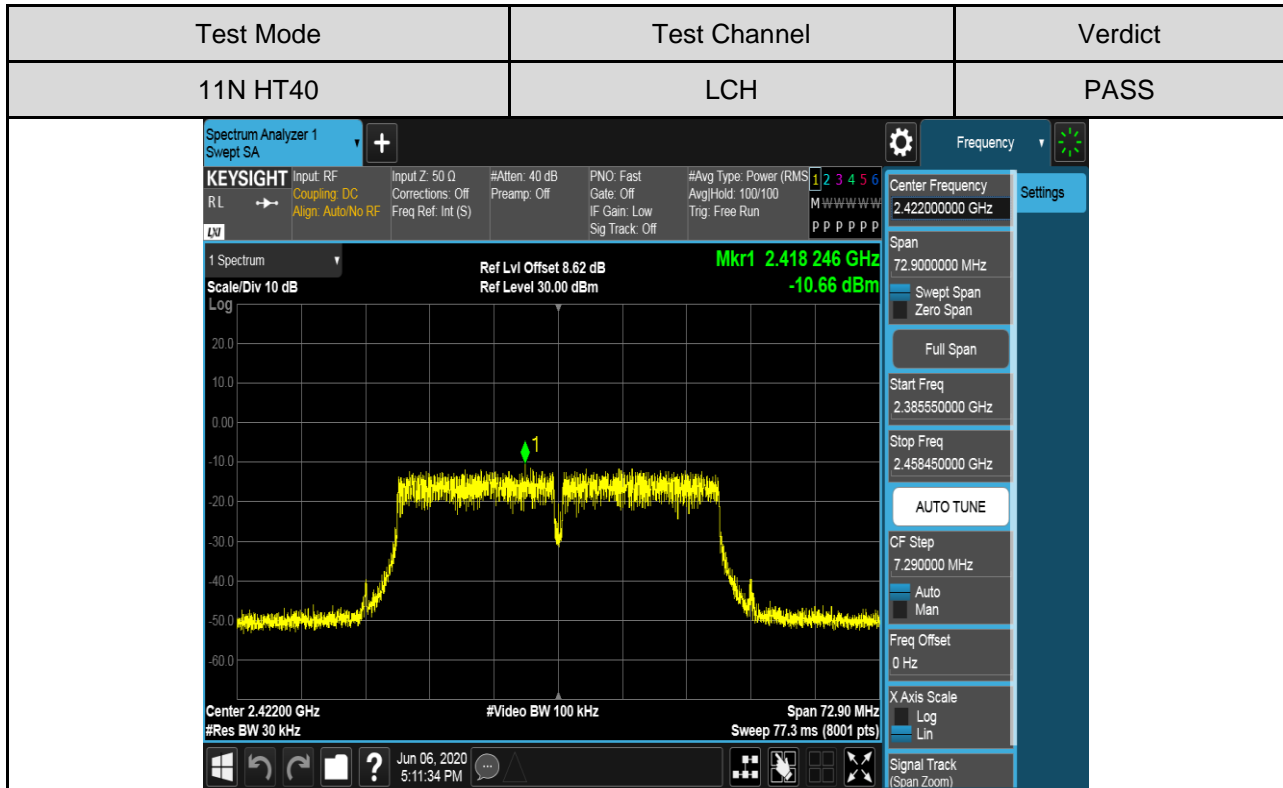
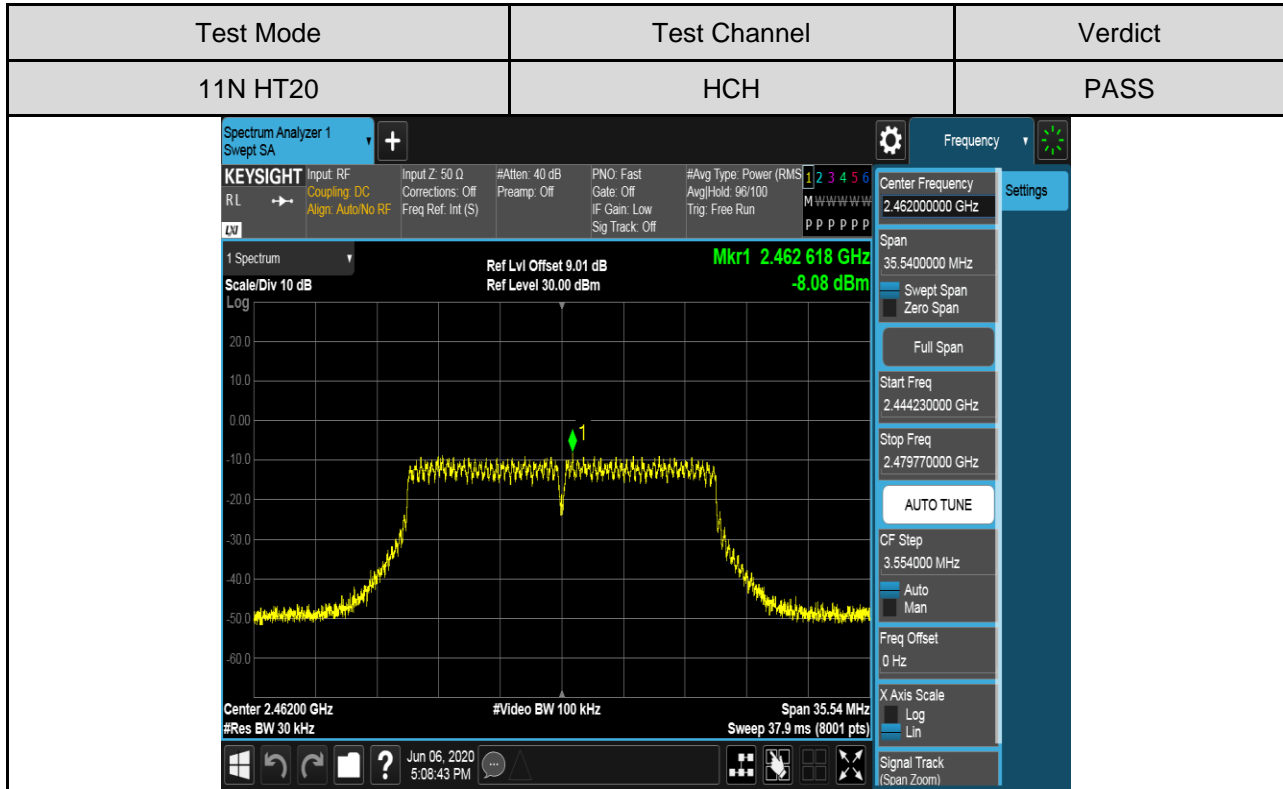
Test Graphs:

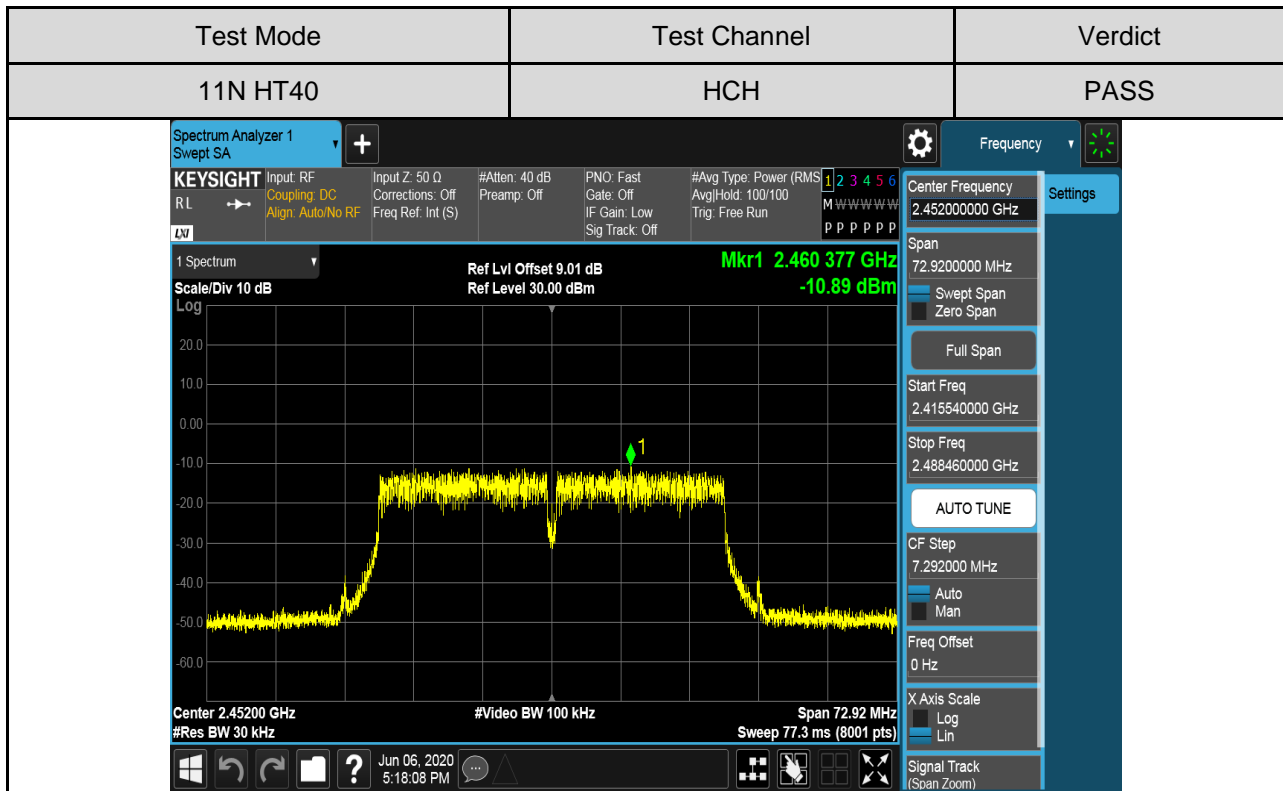
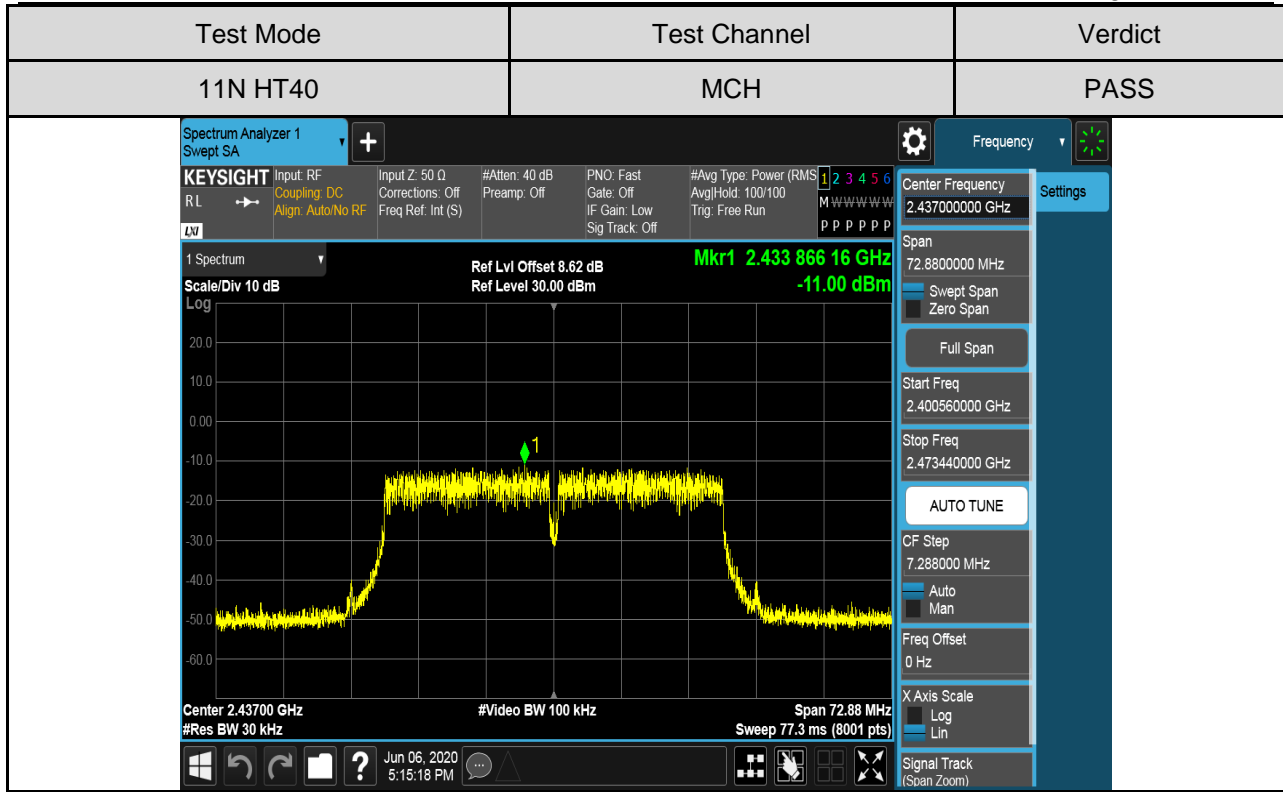














7.5. CONDUCTED BANDEGE AND SPURIOUS EMISSIONS

LIMITS

FCC Part15 (15.247) Subpart C		
Section	Test Item	Limit
FCC §15.247 (d)	Conducted Bandedge and Spurious Emissions	For 11B, 11G and 11N TH20 modes: At least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power For 11N TH40 mode: At least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

TEST PROCEDURE

Refer to FCC KDB 558074, connect the UUT to the spectrum analyser and use the following

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	100K
VBW	$\geq 3 \times \text{RBW}$
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

settings:

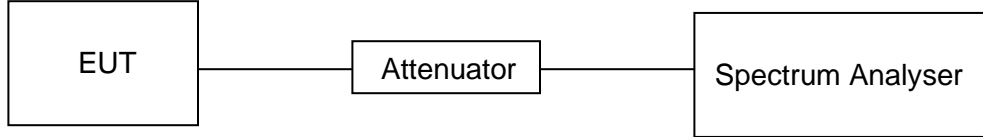
Use the peak marker function to determine the maximum PSD level.

Span	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100K
VBW	$\geq 3 \times \text{RBW}$
measurement points	$\geq \text{span}/\text{RBW}$
Trace	Max hold
Sweep time	Auto couple.

Use the peak marker function to determine the maximum amplitude level.



TEST SETUP



TEST ENVIRONMENT

Temperature	22°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	AC120V



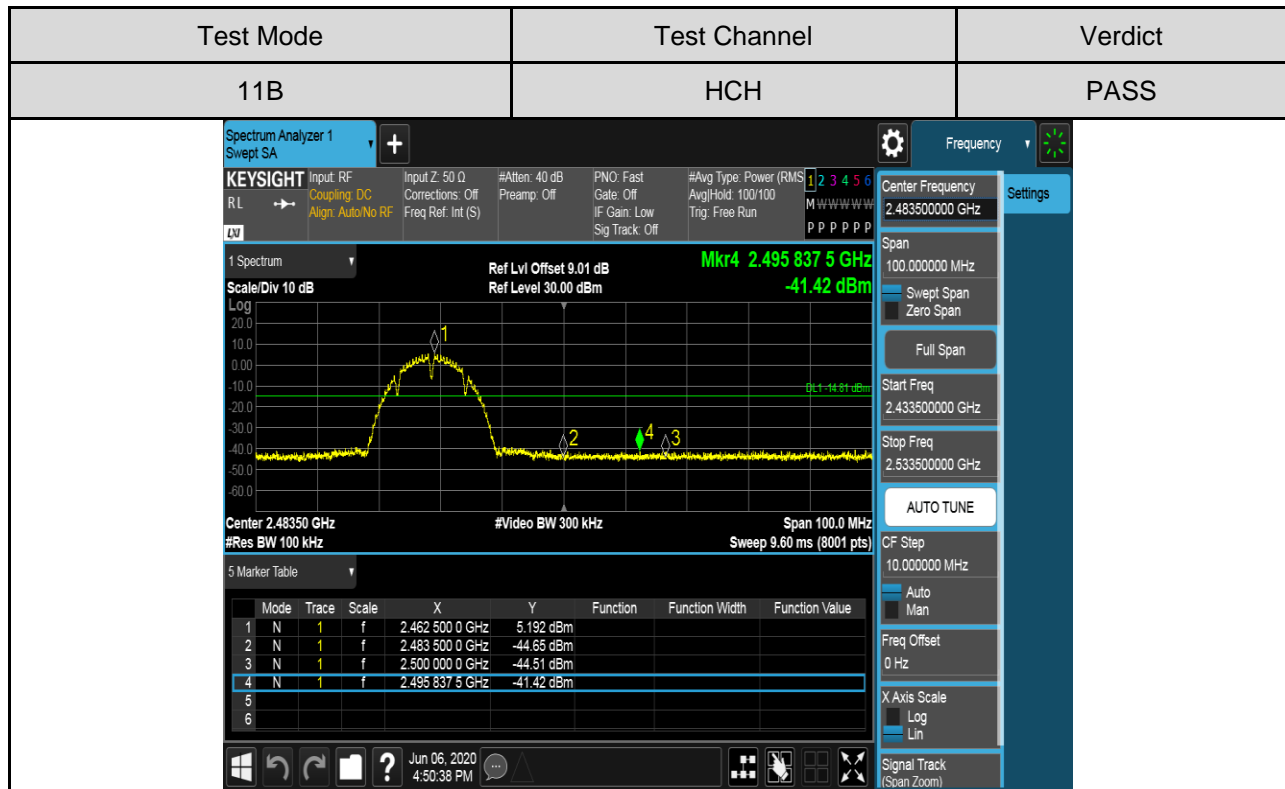
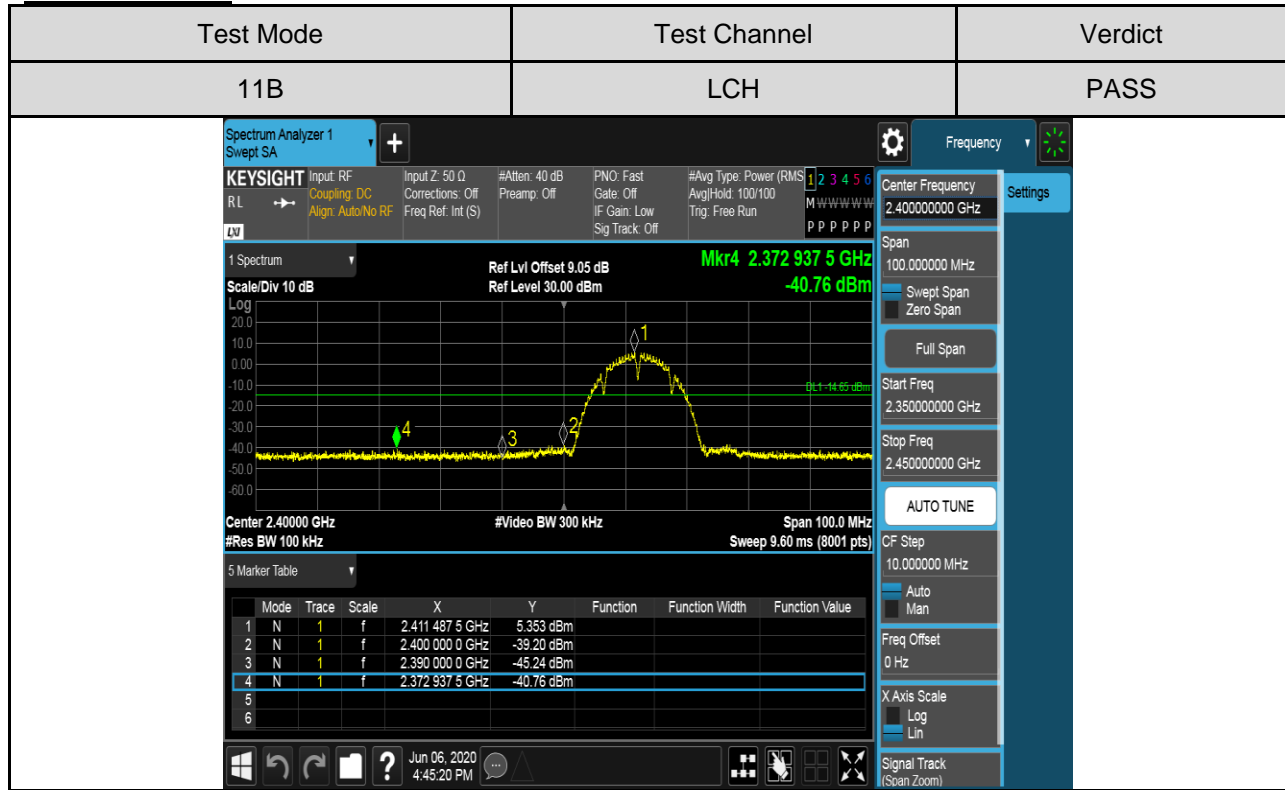
Part I :Conducted Bandedge

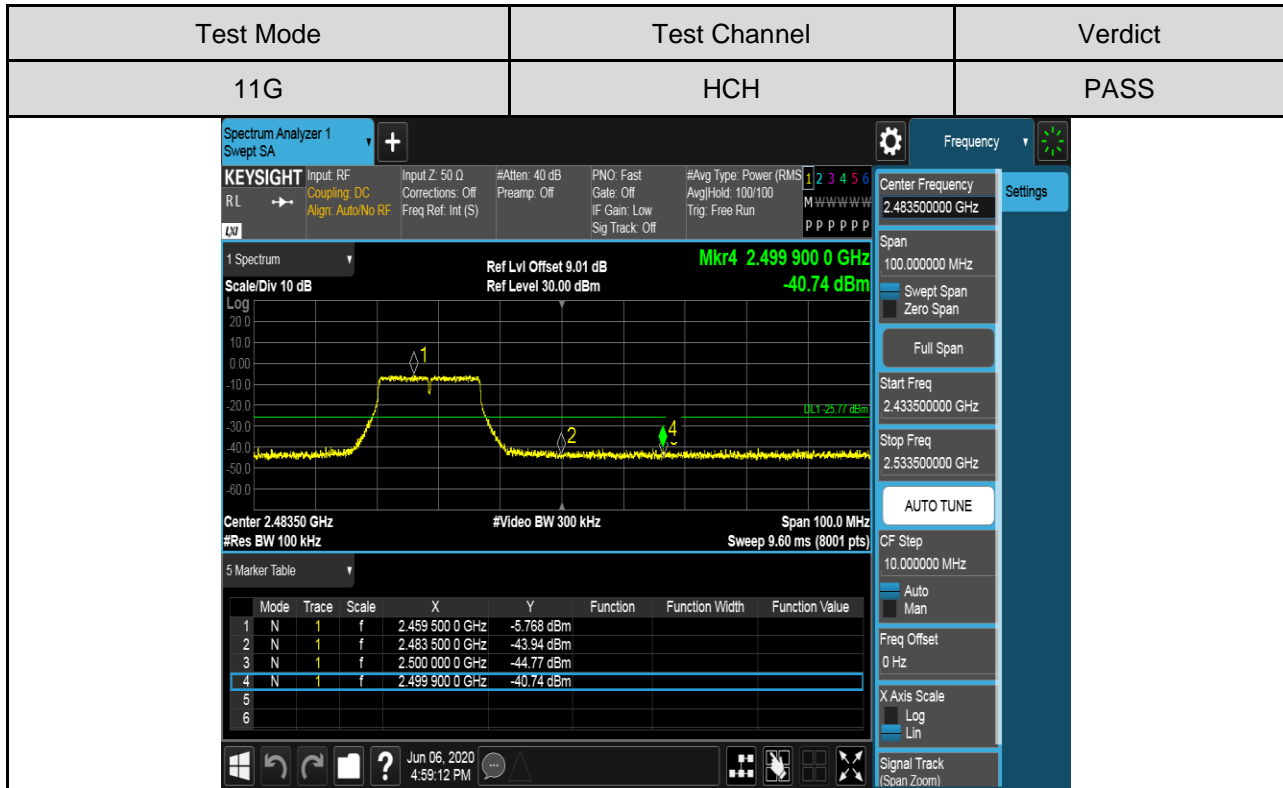
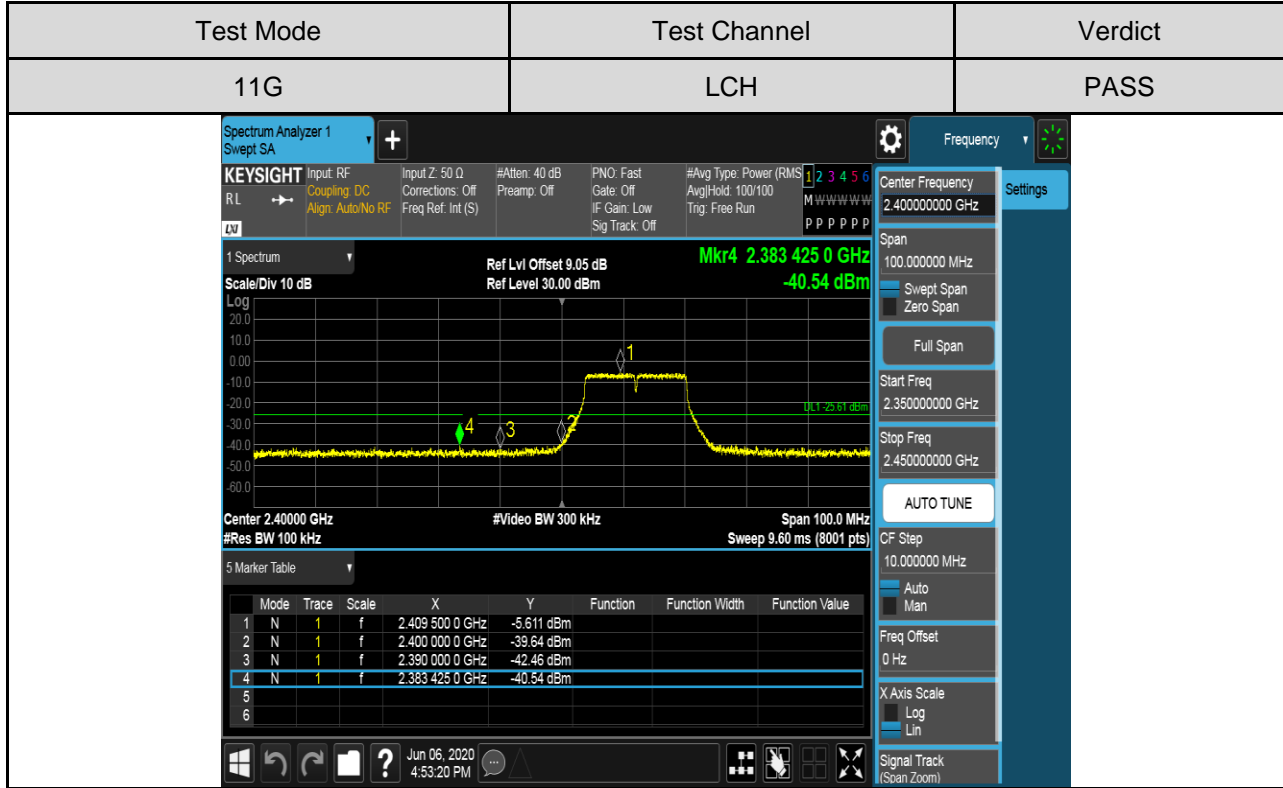
RESULTS TABLE

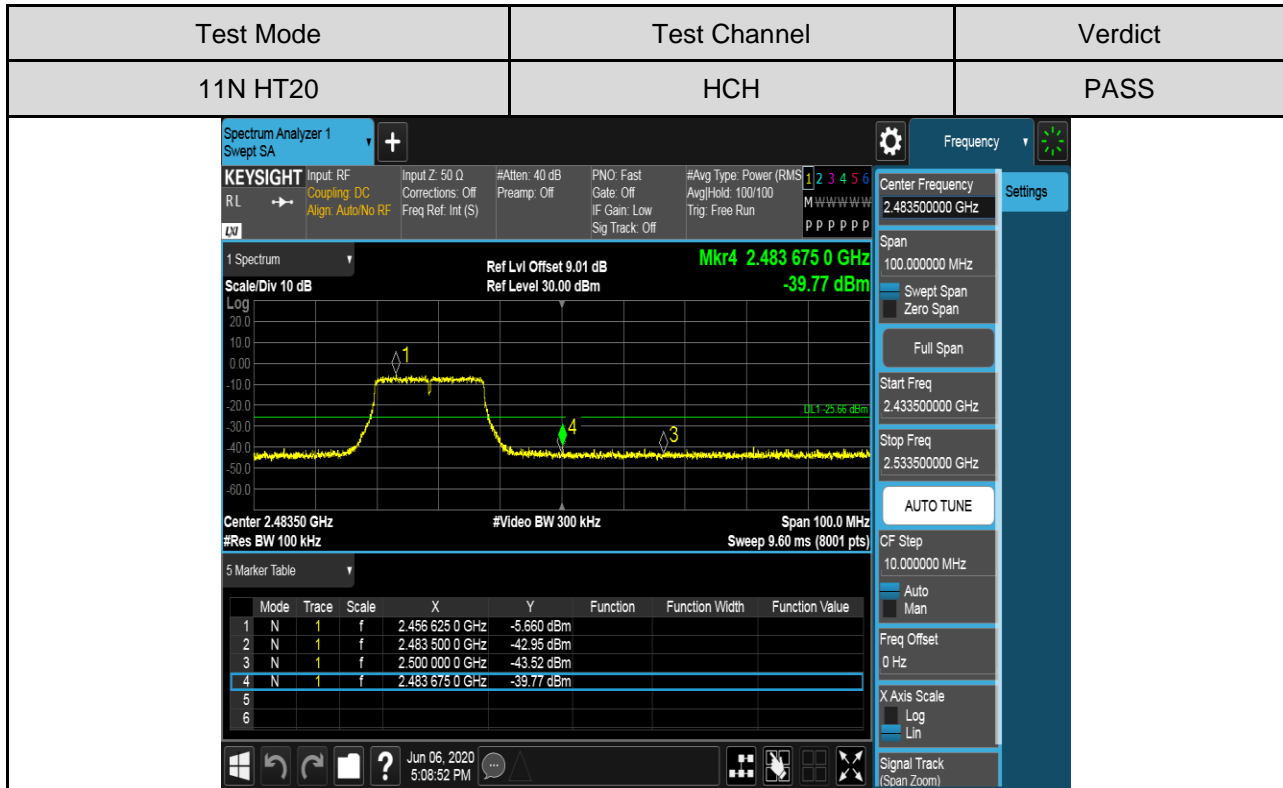
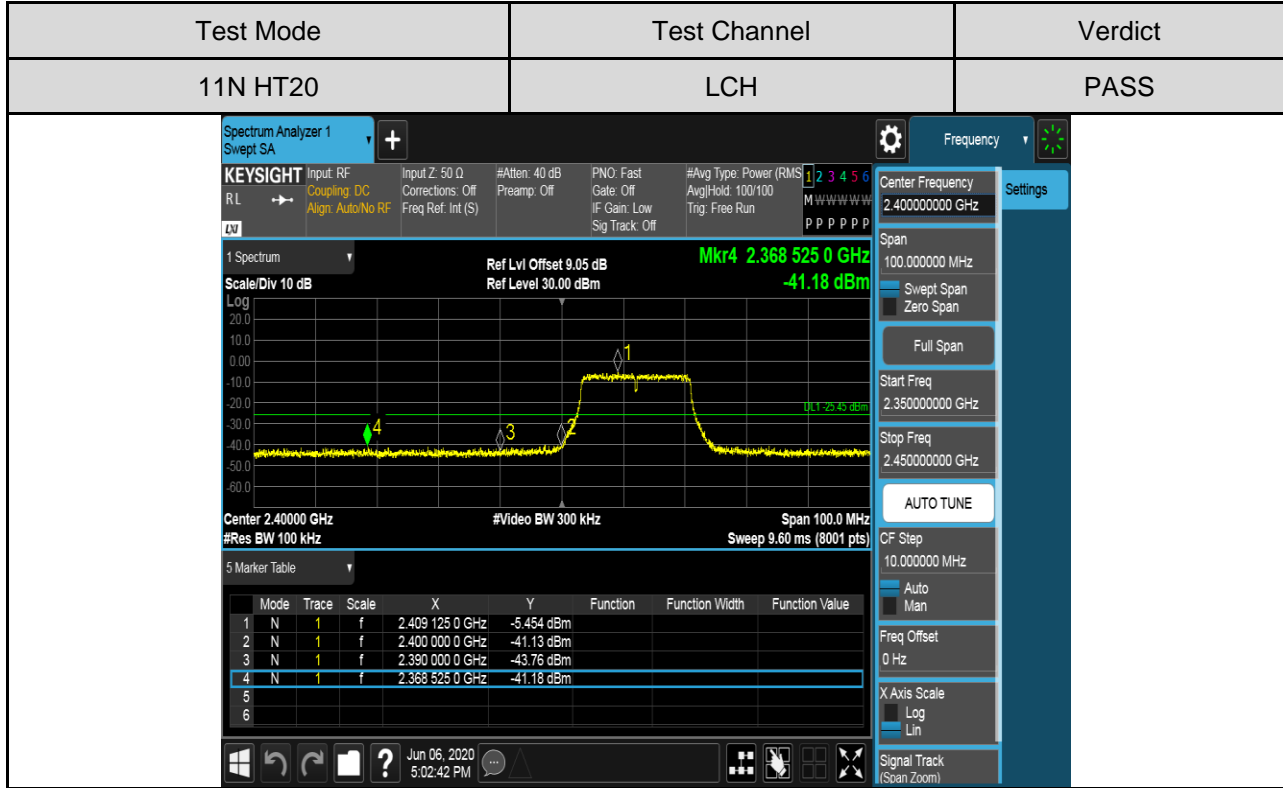
Test Mode	Test Antenna	Test Channel	Carrier Power[dBm]	Max. Spurious Level [dBm]	Limit [dBm]	Verdict
11B	Antenna 1	LCH	5.353	-40.765	-14.65	PASS
		HCH	5.192	-41.421	-14.81	PASS
11G	Antenna 1	LCH	-5.611	-40.542	-25.61	PASS
		HCH	-5.768	-40.744	-25.77	PASS
11N HT20	Antenna 1	LCH	-5.454	-41.180	-25.45	PASS
		HCH	-5.660	-39.767	-25.66	PASS
11N HT40	Antenna 1	LCH	-7.654	-41.538	-37.65	PASS
		HCH	-7.437	-39.821	-37.44	PASS

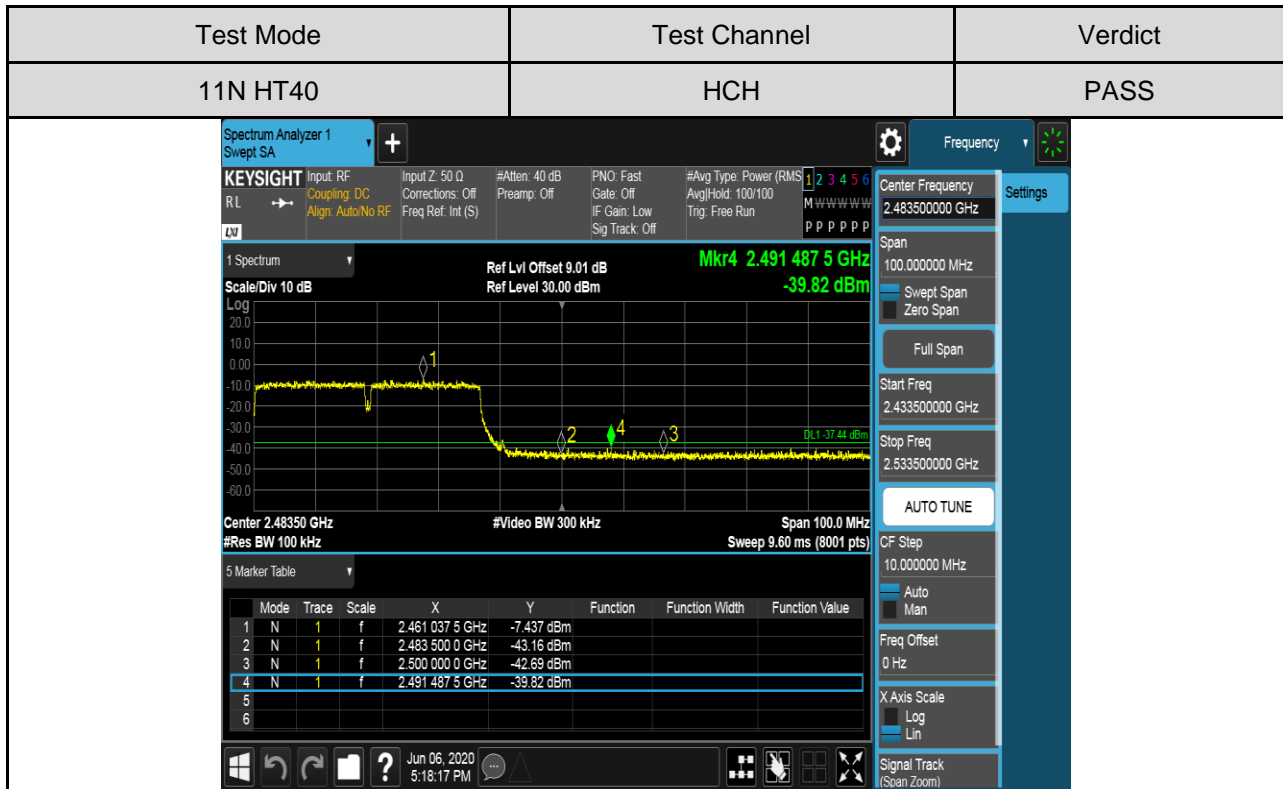
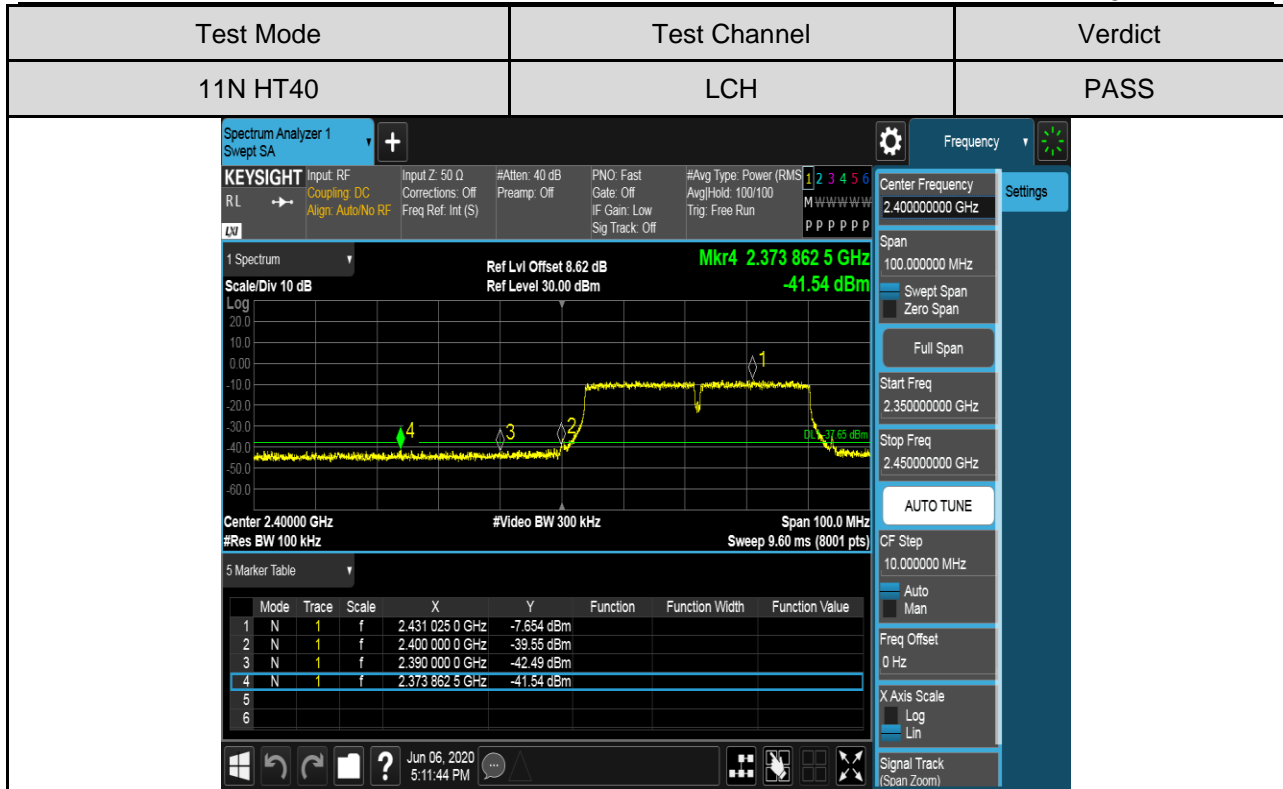


TEST GRAPHS











Part II :Conducted Emission

Test Result Table

Test Mode	Channel	Pref(dBm)	Puw(dBm)	Verdict
11B	LCH	5.30	<Limit	PASS
	MCH	4.94	<Limit	PASS
	HCH	5.10	<Limit	PASS
11G	LCH	-5.64	<Limit	PASS
	MCH	-5.97	<Limit	PASS
	HCH	-5.94	<Limit	PASS
11N HT20	LCH	-5.59	<Limit	PASS
	MCH	-5.85	<Limit	PASS
	HCH	-5.53	<Limit	PASS
11N HT40	LCH	-7.71	<Limit	PASS
	MCH	-7.63	<Limit	PASS
	HCH	-7.66	<Limit	PASS



Test Plots

Test Mode	Channel	Verdict
11B	LCH	PASS

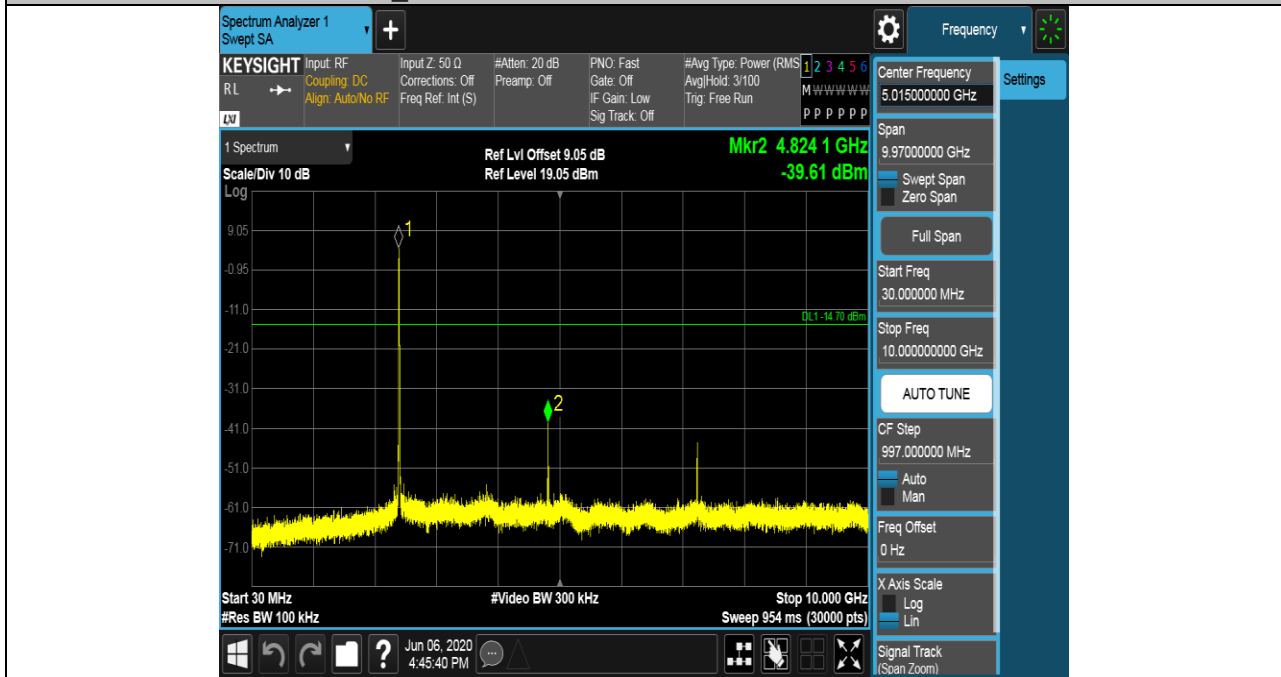
Pref test Plot



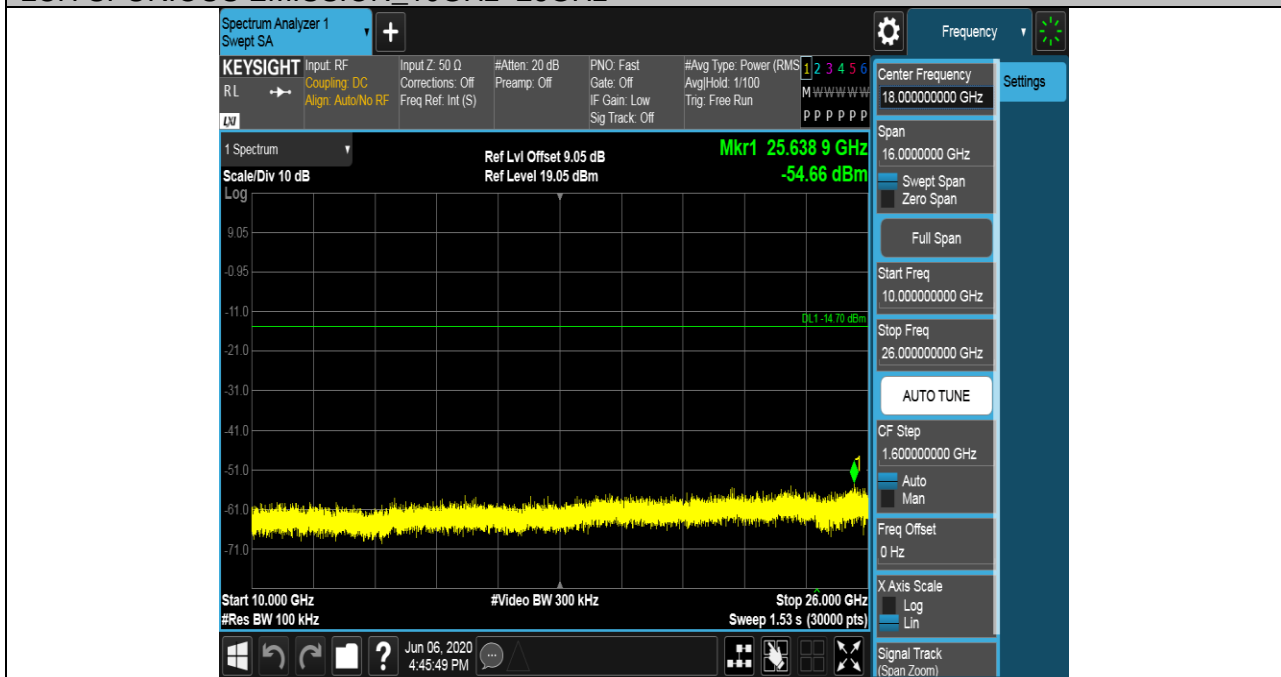


Puw test Plot

LCH SPURIOUS EMISSION_30MHz~10GHz



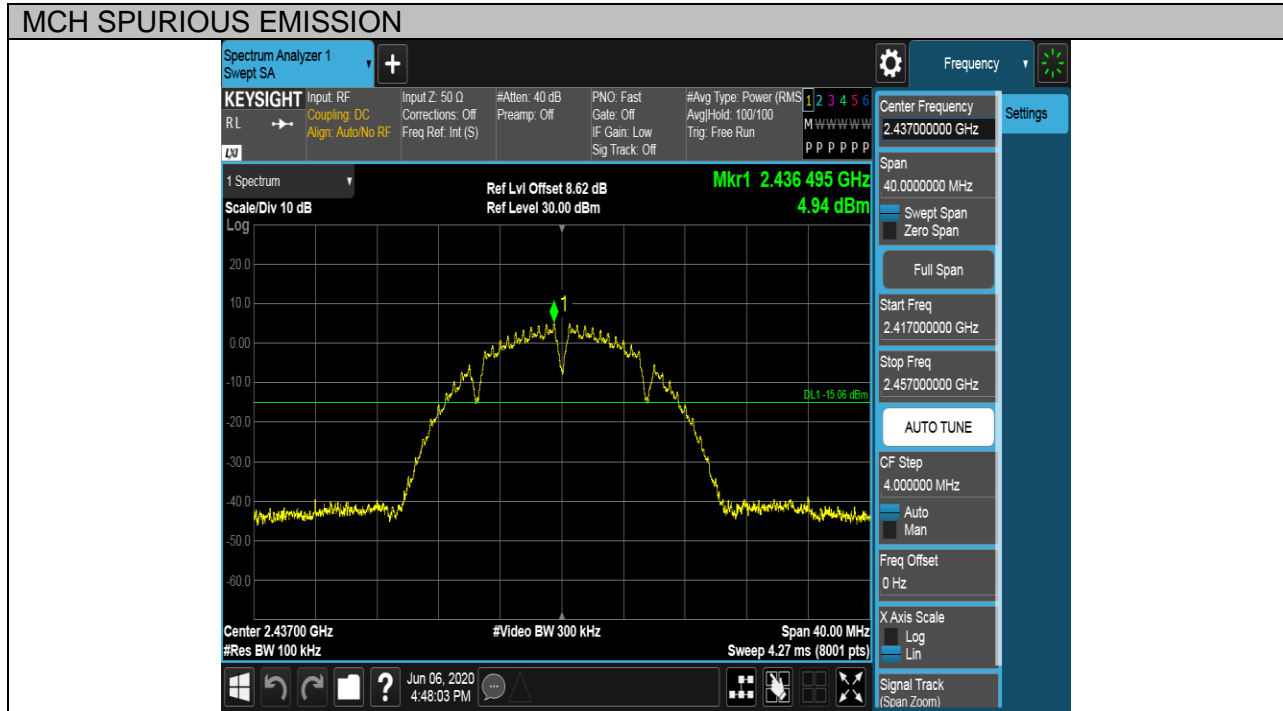
LCH SPURIOUS EMISSION_10GHz~26GHz





Test Mode	Channel	Verdict
11B	MCH	PASS

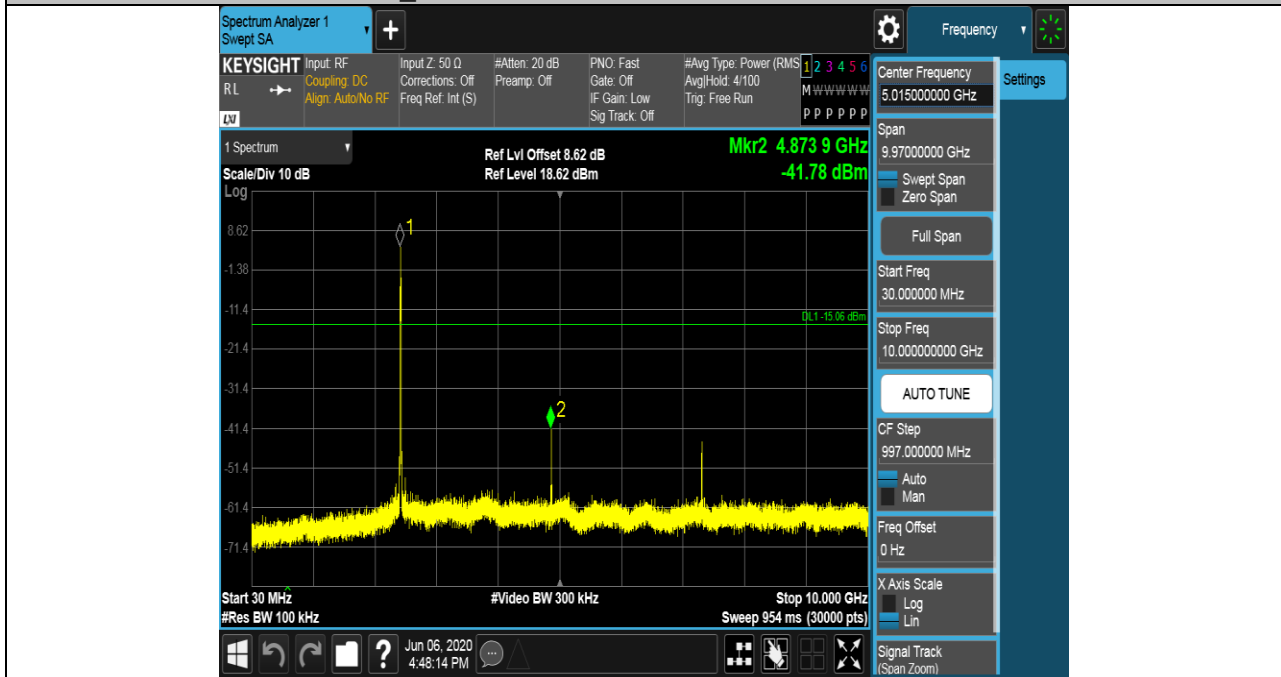
Pref test Plot



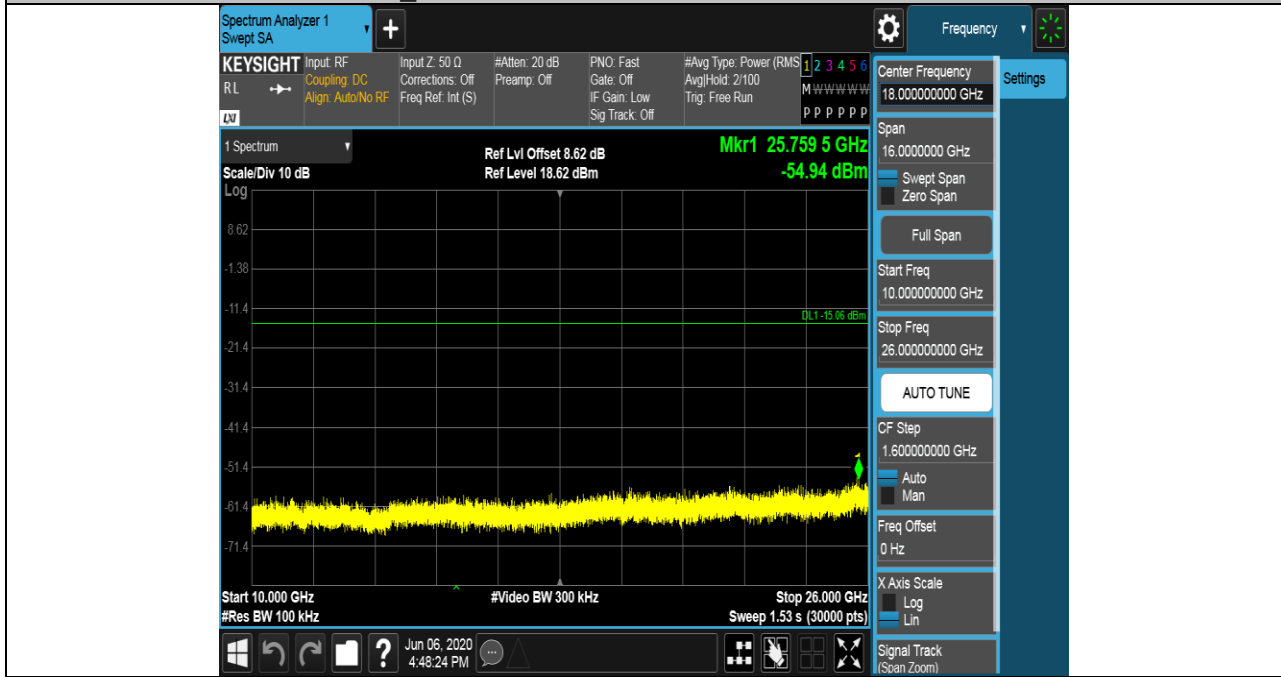


Puw test Plot

MCH SPURIOUS EMISSION_30MHz~10GHz



MCH SPURIOUS EMISSION_10GHz~26GHz





Test Mode	Channel	Verdict
11B	HCH	PASS

Pref test Plot

