



CFR 47 FCC PART 15 SUBPART C

TEST REPORT

For

Alarm Hub

MODEL NUMBER: H1G

**ADDITIONAL NUMBER: H1, H1F, ARC2000E-SW-imou, G2, DHI-ARC2000E-SW,
ARC2000E-SW, ARC2000E-SW-LC**

FCC ID: SVNH1G

REPORT NUMBER: 4788919558-1

ISSUE DATE: Nov. 20, 2019

Prepared for

ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD.

Prepared by

UL-CCIC COMPANY LIMITED

No. 2, Chengwan Road, Suzhou Industrial Park, People's Republic of China

Tel: +86 769 22038881

Fax: +86 769 33244054

Website: www.ul.com

Revision History

Rev.	Issue Date	Revisions	Revised By
V0	11/20/2019	Initial Issue	

Summary of Test Results			
Clause	Test Items	FCC/IC Rules	Test Results
1	6dB Bandwidth	FCC Part 15.247 (a) (2)	Pass
2	Conducted Output Power	FCC Part 15.247 (b) (3)	Pass
3	Power Spectral Density	FCC Part 15.247 (e)	Pass
4	Conducted Bandedge and Spurious Emission	FCC Part 15.247 (d)	Pass
5	Radiated Bandedge and Spurious Emission	FCC Part 15.247 (d) FCC Part 15.209 FCC Part 15.205	Pass
6	Conducted Emission Test For AC Power Port	FCC Part 15.207	Pass
7	Antenna Requirement	FCC Part 15.203	Pass

Note:
The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 15 SUBPART C> when <Accuracy Method> decision rule is applied.

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	6
2. TEST METHODOLOGY	8
3. FACILITIES AND ACCREDITATION	8
4. CALIBRATION AND UNCERTAINTY	9
4.1. <i>MEASURING INSTRUMENT CALIBRATION</i>	9
4.2. <i>MEASUREMENT UNCERTAINTY</i>	9
5. EQUIPMENT UNDER TEST	10
5.1. <i>DESCRIPTION OF EUT</i>	10
5.2. <i>MAXIMUM OUTPUT POWER</i>	11
5.3. <i>CHANNEL LIST</i>	11
5.4. <i>TEST CHANNEL CONFIGURATION</i>	11
5.5. <i>THE WORSE CASE CONFIGURATIONS</i>	11
5.6. <i>DESCRIPTION OF AVAILABLE ANTENNAS</i>	12
5.7. <i>THE WORSE CASE CONFIGURATIONS</i>	12
5.8. <i>DESCRIPTION OF TEST SETUP</i>	13
6. MEASURING INSTRUMENT AND SOFTWARE USED	14
7. MEASUREMENT METHODS	15
8. ANTENNA PORT TEST RESULTS	16
8.1. <i>ON TIME AND DUTY CYCLE</i>	16
8.2. <i>6 dB DTS BANDWIDTH</i>	19
8.3. <i>CONDUCTED OUTPUT POWER</i>	27
8.4. <i>POWER SPECTRAL DENSITY</i>	29
8.5. <i>CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS</i>	37
9. RADIATED TEST RESULTS	69
9.1. <i>RESTRICTED BANDEDGE</i>	75
9.1.1. 802.11b MODE	76
9.1.2. 802.11g MODE	80
9.1.3. 802.11n HT20 MODE	84
9.1.1. 802.11n HT40 MODE	88
9.2. <i>SPURIOUS EMISSIONS (1~18GHz)</i>	92
9.2.1. 802.11b MODE	92
9.2.2. 802.11g MODE	98
9.2.3. 802.11n HT20 MODE	104



802.11n HT40 MODE	110
9.3. SPURIOUS EMISSIONS (18~26GHz).....	116
9.3.1. 802.11g MODE	116
9.4. SPURIOUS EMISSIONS (0.03 ~ 1 GHz)	118
9.4.1. 802.11g MODE	118
9.5. SPURIOUS EMISSIONS BELOW 30M.....	120
9.5.1. 802.11g MODE	120
10. AC POWER LINE CONDUCTED EMISSIONS	123
10.1. 802.11g MODE.....	124
11. 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

EUT Name: Alarm Hub
Model: H1G
Additional Number: H1, H1F, ARC2000E-SW-imou, G2, DHI-ARC2000E-SW,
ARC2000E-SW, ARC2000E-SW-LC
Sample Number: 2236220
Sample Received Date: Apr. 22, 2019
Date of Tested: Jul. 16, 2019 ~ Jul. 16, 2020

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 FCC PART 15 SUBPART C	PASS

Prepared By:

Tom Tang

Tom Tang
Engineer Project Associate

Reviewed By:

Chris Zhong

Chris Zhong
Senior Project Engineer

Authorized By:

Scholl Zhang

Scholl Zhang
Laboratory Leader

2. TEST METHODOLOGY

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

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p>A2LA (Certificate No.: 4829.01) UL-CCIC COMPANY LIMITED has been assessed and proved to be in compliance with A2LA.</p> <p>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.</p> <p>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.</p>
---------------------------	---

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 recognize national standards.

4.2. MEASUREMENT UNCERTAINTY

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

Test Item	Uncertainty
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-26Gz)
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

EUT Name	Alarm Hub
Model	H1G
Radio Technology	IEEE802.11b/g/n HT20&HT40
Operation frequency	IEEE 802.11b: 2412MHz—2462MHz IEEE 802.11g: 2412MHz—2462MHz IEEE 802.11n HT20: 2412MHz—2462MHz IEEE 802.11n HT40: 2422MHz—2452MHz
Modulation	IEEE 802.11b: DSSS(CCK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20: OFDM (64QAM, 16QAM, QPSK,BPSK) IEEE 802.11n HT40: OFDM (64QAM, 16QAM, QPSK,BPSK)
Power Supply	DC 5V

Remark:

Model No.:

Number	Name	Number	Name	Number:	Name
1	H1	2	H1F	3	ARC2000E-SW-imou
4	G2	5	DHI-ARC2000E-SW	6	ARC2000E-SW
7	ARC2000E-SW-LC				

Only the main model H1G is tested and only the data of this model is shown in this test report. Since have the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction with H1G. The difference lies only for model designation, different sales markets and consumer.

5.2. MAXIMUM OUTPUT POWER

Number of Transmit Chains (NTX)	IEE Std. 802.11	Channel Number	Max Peak Conducted Power (dBm)	Max AVG Conducted Power (dBm)
1	IEEE 802.11B	1-11[11]	20.95	18.52
1	IEEE 802.11G	1-11[11]	21.87	14.03
1	IEEE 802.11nHT20	1-11[11]	20.54	12.84
1	IEEE 802.11nHT40	3-9[7]	N/A	11.09

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	Frequency
WiFi TX(802.11b)	CH 1, CH 6, CH 11	2412MHz, 2437MHz, 2462MHz
WiFi TX(802.11g)	CH 1, CH 6, CH 11	2412MHz, 2437MHz, 2462MHz
WiFi TX(802.11n HT20)	CH 1, CH 6, CH 11	2412MHz, 2437MHz, 2462MHz
WiFi TX(802.11n HT40)	CH 3, CH 6, CH 9	2422MHz, 2437MHz, 2452MHz

5.5. THE WORSE CASE CONFIGURATIONS

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band							
Test Software		SecureCRT					
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	31	31	31	/		
802.11g	1	24	24	24			
802.11n HT20	1	22	22	22			
802.11n HT40	1	/			20	20	20

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna	Frequency (MHz)	Antenna Type	MAX Antenna Gain (dBi)
1	2412-2462	External Antenna	3.95

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

5.7. THE WORSE CASE CONFIGURATIONS

For the product, there is only one transmission antenna, so only the worst 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. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
1	Laptop	ThinkPad	E550c	N/A

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	USB to TTL	SUB	1	N/A
2	USB	USB	USB	1	N/A

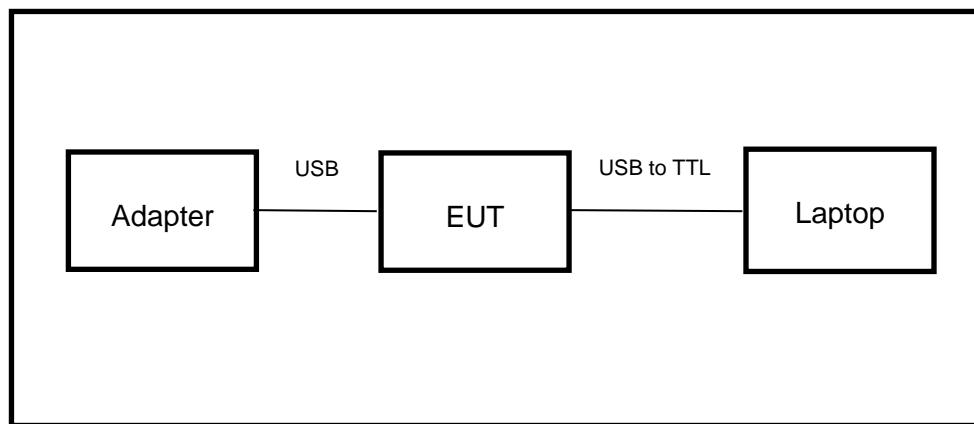
ACCESSORIES

Item	Accessory	Brand Name	Model Name	Description
1	Adapter	MASS POWER	NBS10B050200VEU	N/A

TEST SETUP

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

SETUP DIAGRAM FOR TESTS





6. 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	2018-12-08	2019-12-07	2020-12-06
<input checked="" type="checkbox"/>	Two-Line V-Network	R&S	ENV216	126701	2018-12-08	2019-12-07	2020-12-06
<input checked="" type="checkbox"/>	Artificial Mains Networks	R&S	ENY81	126711	2018-10-15	2019-10-14	2020-10-13
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	2019-05-11	2020-05-10	2021-05-09
<input checked="" type="checkbox"/>	EMI test receiver	R&S	ESR26	126703	2018-12-08	2019-12-07	2020-12-06
<input checked="" type="checkbox"/>	Receiver Antenna (9kHz-30MHz)	Schwarzbeck	FMZB 1513	513-265	2019-06-16	2020-06-15	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	2018-01-28	2019-01-27	2022-01-26
<input checked="" type="checkbox"/>	Receiver Antenna (18GHz-26.5GHz)	Schwarzbeck	BBHA9170	126706	2018-01-06	2019-01-05	2022-01-04
<input checked="" type="checkbox"/>	Receiver Antenna (26.5GHz-40GHz)	TOYO	HAP 26-40W	00000012	2018-07-24	2019-07-23	2020-07-22
<input checked="" type="checkbox"/>	Pre-amplification (To 1GHz)	R&S	SCU-03D	134666	2018-12-08	2019-12-07	2020-12-06
<input checked="" type="checkbox"/>	Pre-amplification (To 18GHz)	Compliance Direction System Inc.	PAP-1G18-50	14140-13467	2019-02-21	2020-02-20	2021-02-19
<input checked="" type="checkbox"/>	Pre-amplification (To 26.5GHz)	R&S	SCU-26D	134668	2019-01-03	2020-01-02	2021-01-01
<input checked="" type="checkbox"/>	Band Reject Filter	Wainwright	WRCJV8-2350-2400-2483.5-2533.5-40SS	1	2019-05-29	2020-05-28	2021-05-27
<input checked="" type="checkbox"/>	Highpass Filter	Wainwright	WHKX10-2700-3000-18000-40SS	2	2019-05-29	2020-05-28	2022-05-27
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	2019-05-11	2020-05-10	2021-05-09
<input checked="" type="checkbox"/>	Power Meter	Keysight	U2021XA	MY57110002	2019-05-11	2020-05-10	2021-05-09

7. MEASUREMENT METHODS

No.	Test Item	KDB Name	Section
1	6dB Bandwidth	KDB 558074 D01 15.247 Meas Guidance v05r02	8.2
2	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

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

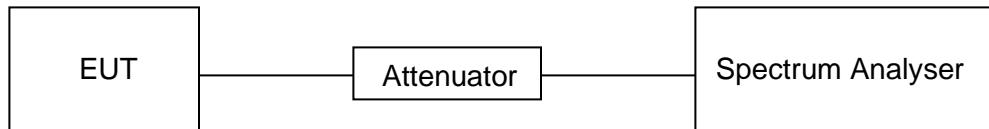
LIMITS

None; for reporting purposes only

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



TEST ENVIRONMENT

Temperature	20°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	DC 5V

RESULTS

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/T Minimum VBW (KHz)	Final setting For VBW (KHz)
11B	8.411	8.532	0.9858	98.58%	0.06	0.12	0.01
11G	1.395	1.584	0.8807	88.07%	0.55	0.72	1
11N HT20	1.308	1.460	0.8959	89.59%	0.48	0.72	1
11N HT40	0.6355	0.796	0.7984	79.84%	0.98	1.57	2

Note:

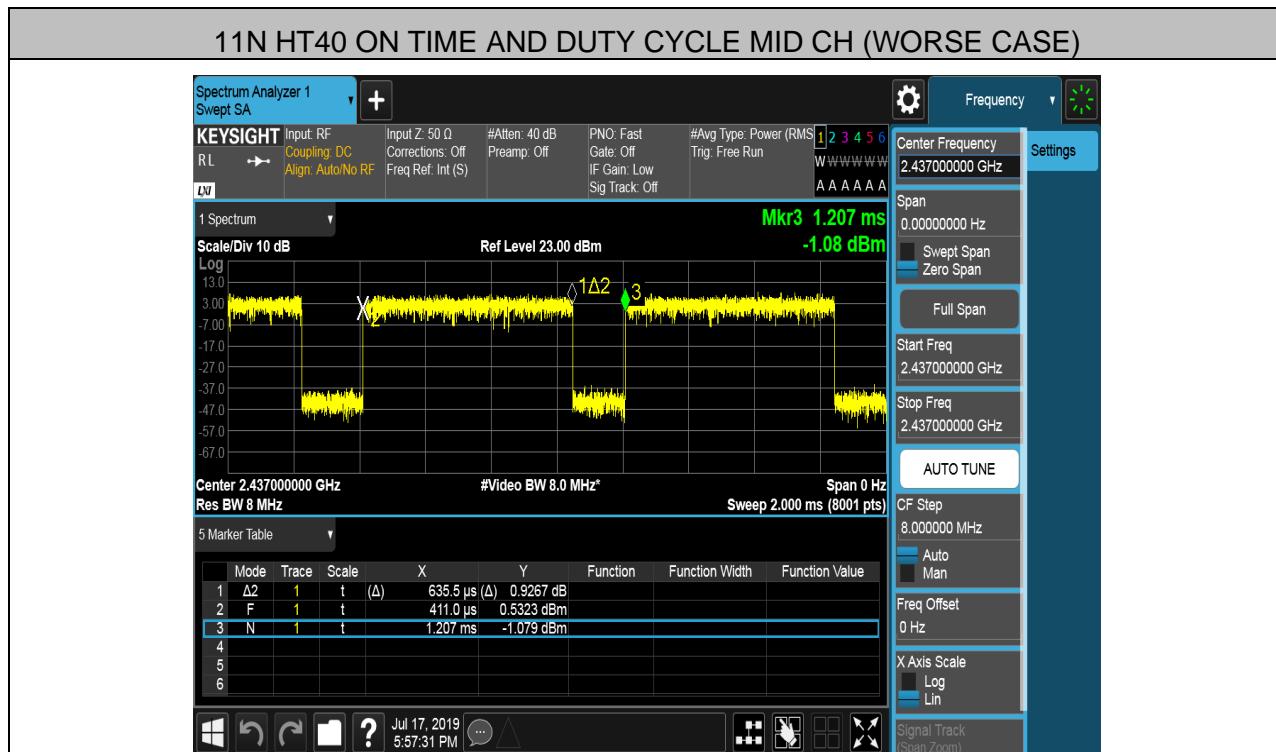
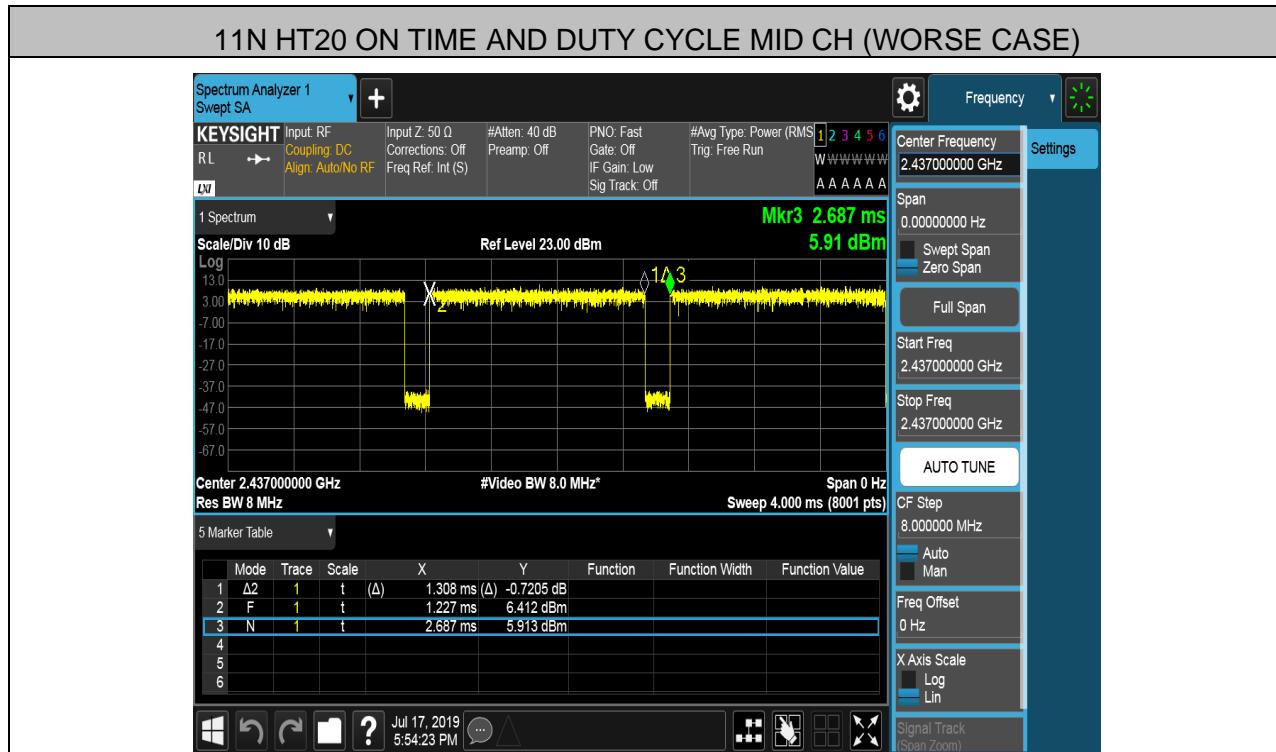
Duty Cycle Correction Factor=10log (1/x).

Where: x is Duty Cycle (Linear)

Where: T is On Time

If that calculated VBW is not available on the analyzer then the next higher value should be used.





8.2. 6 dB DTS BANDWIDTH

LIMITS

CFR 47 FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(a)(2)	6 dB Bandwidth	$\geq 500\text{KHz}$	2400-2483.5

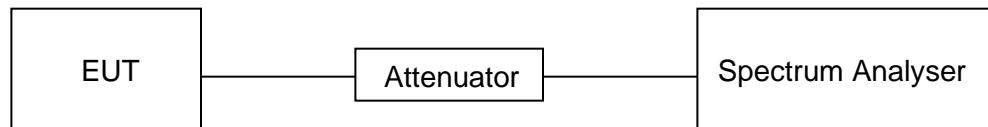
TEST PROCEDURE

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	100K
VBW	$\geq 3 \times \text{RBW}$
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 to the maximum level measured in the fundamental emission.

TEST SETUP



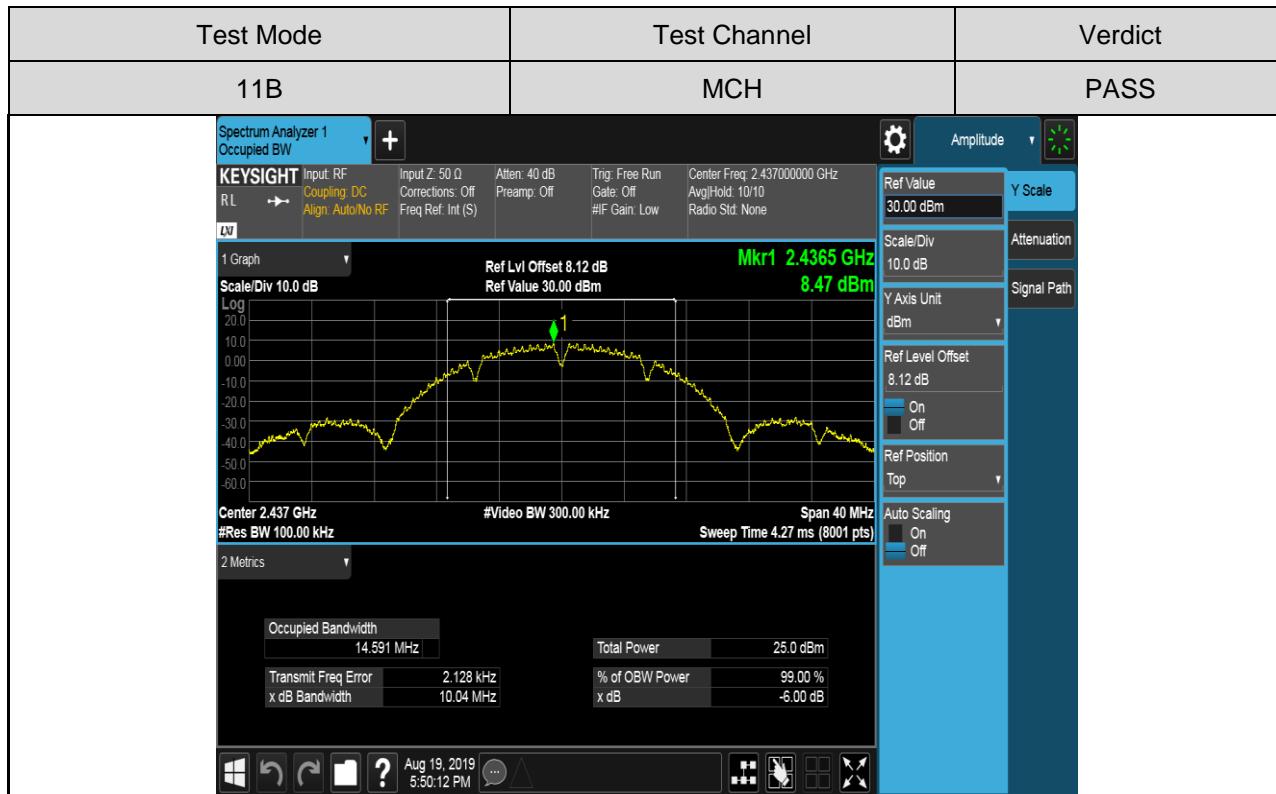
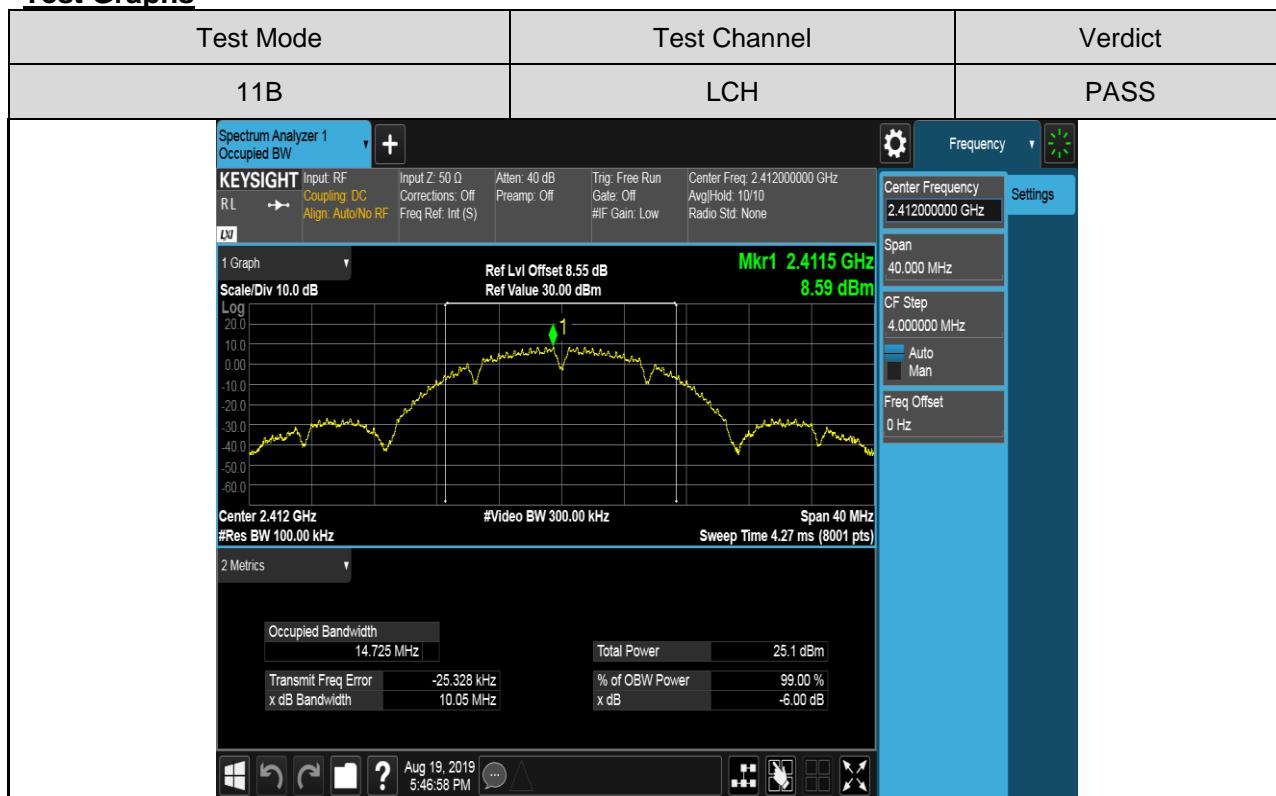
TEST ENVIRONMENT

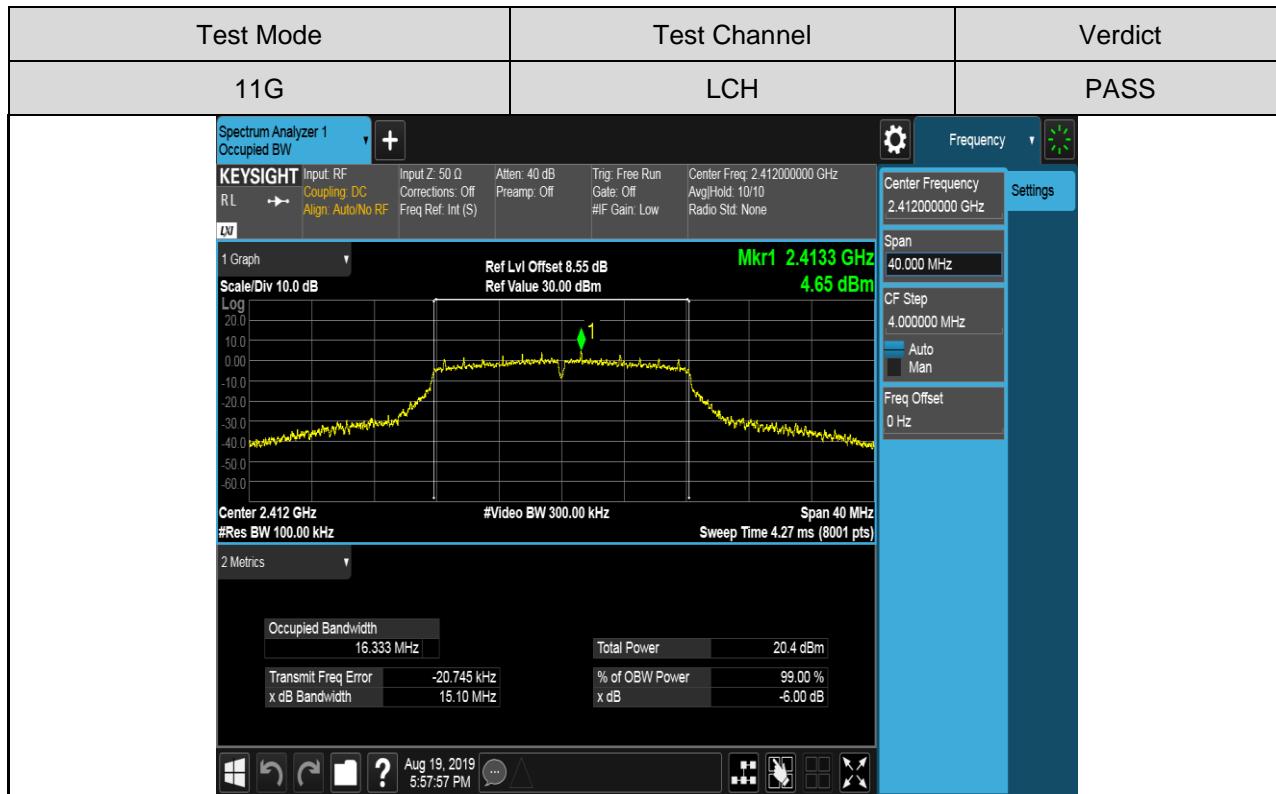
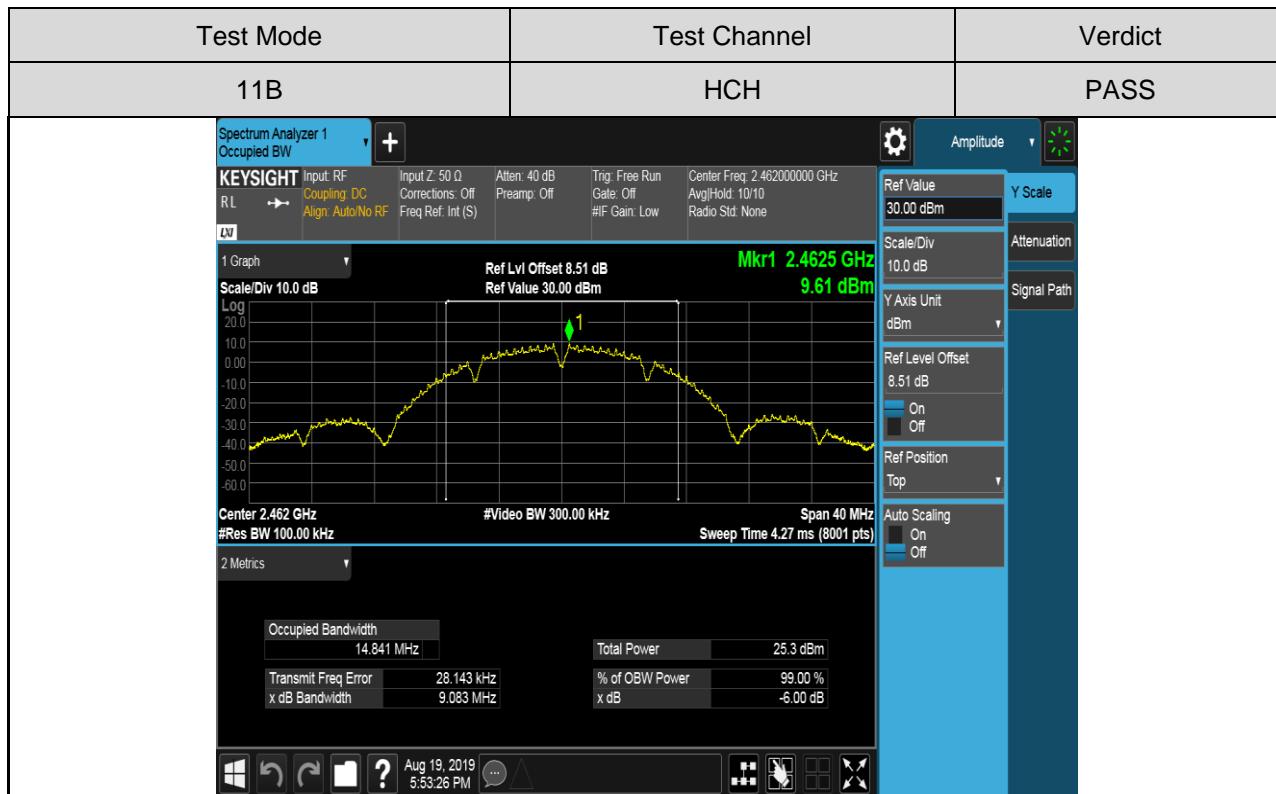
Temperature	20°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	DC 5V

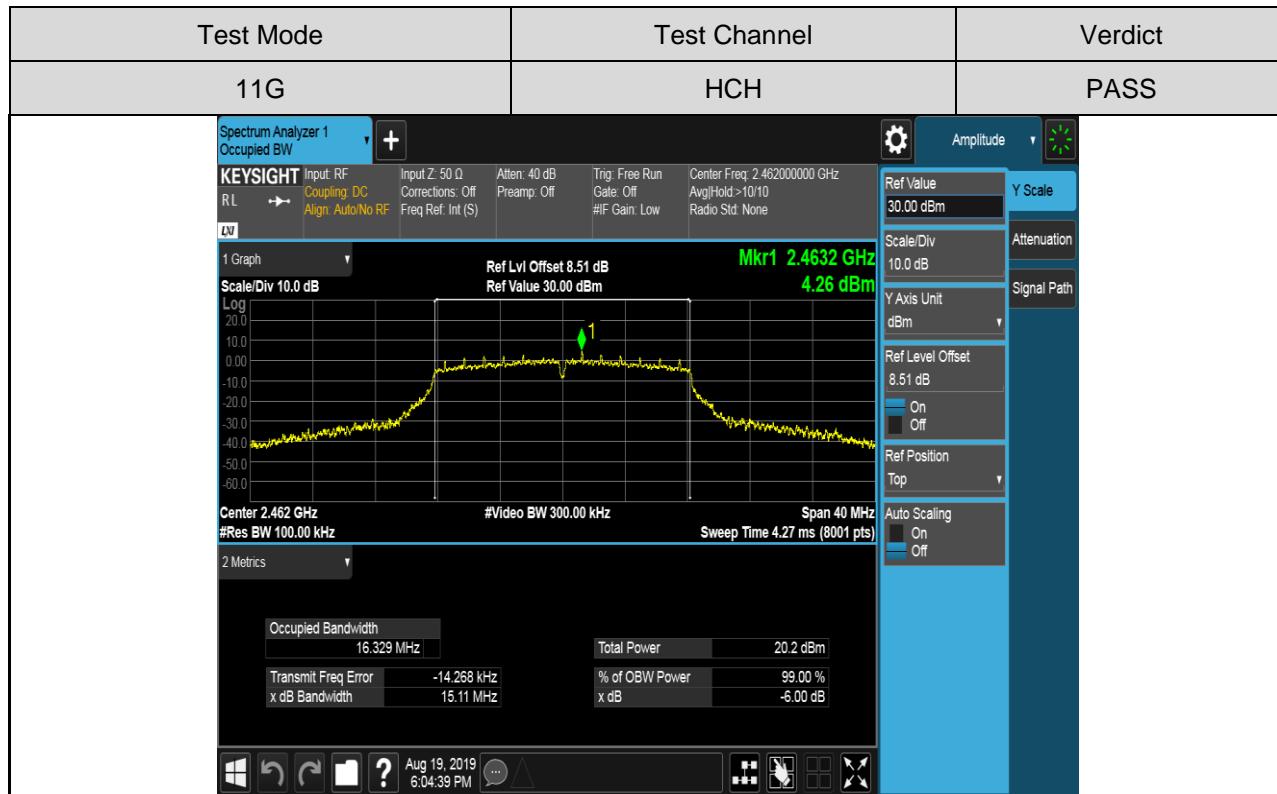
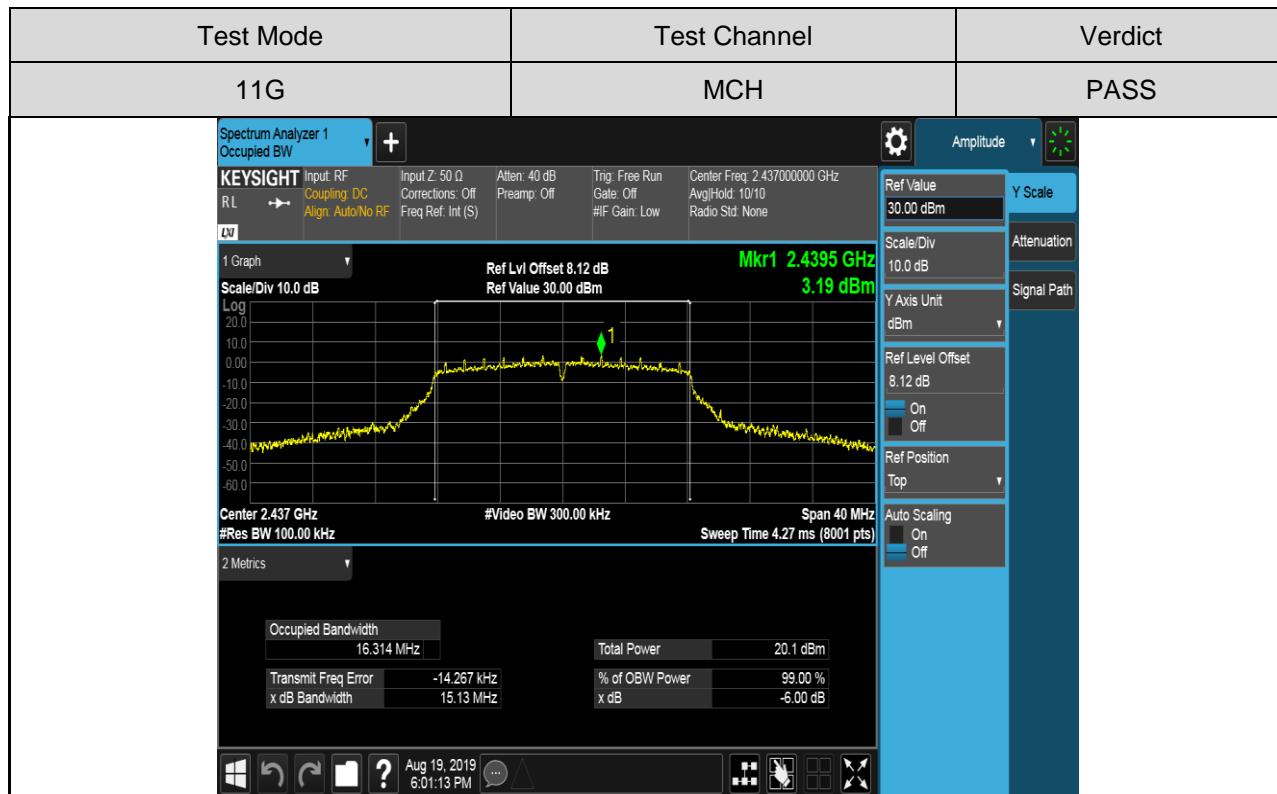
RESULTS

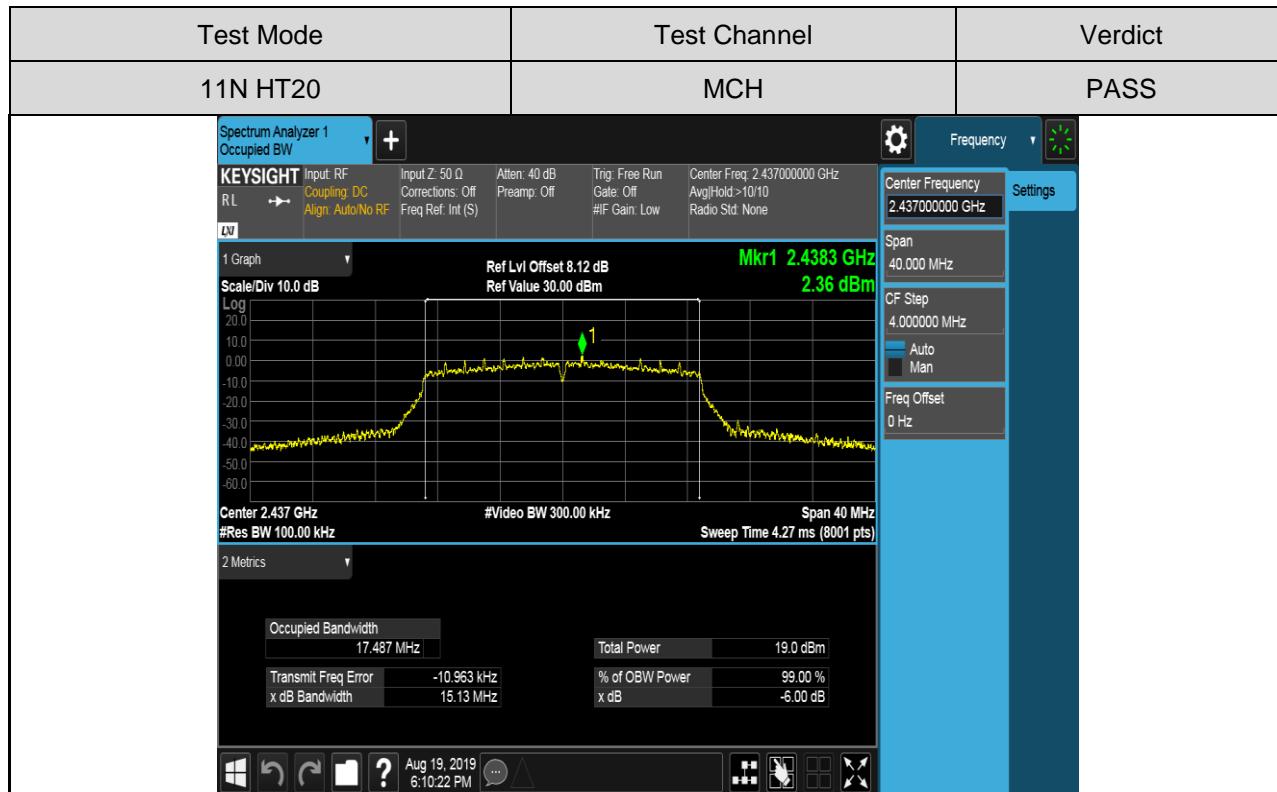
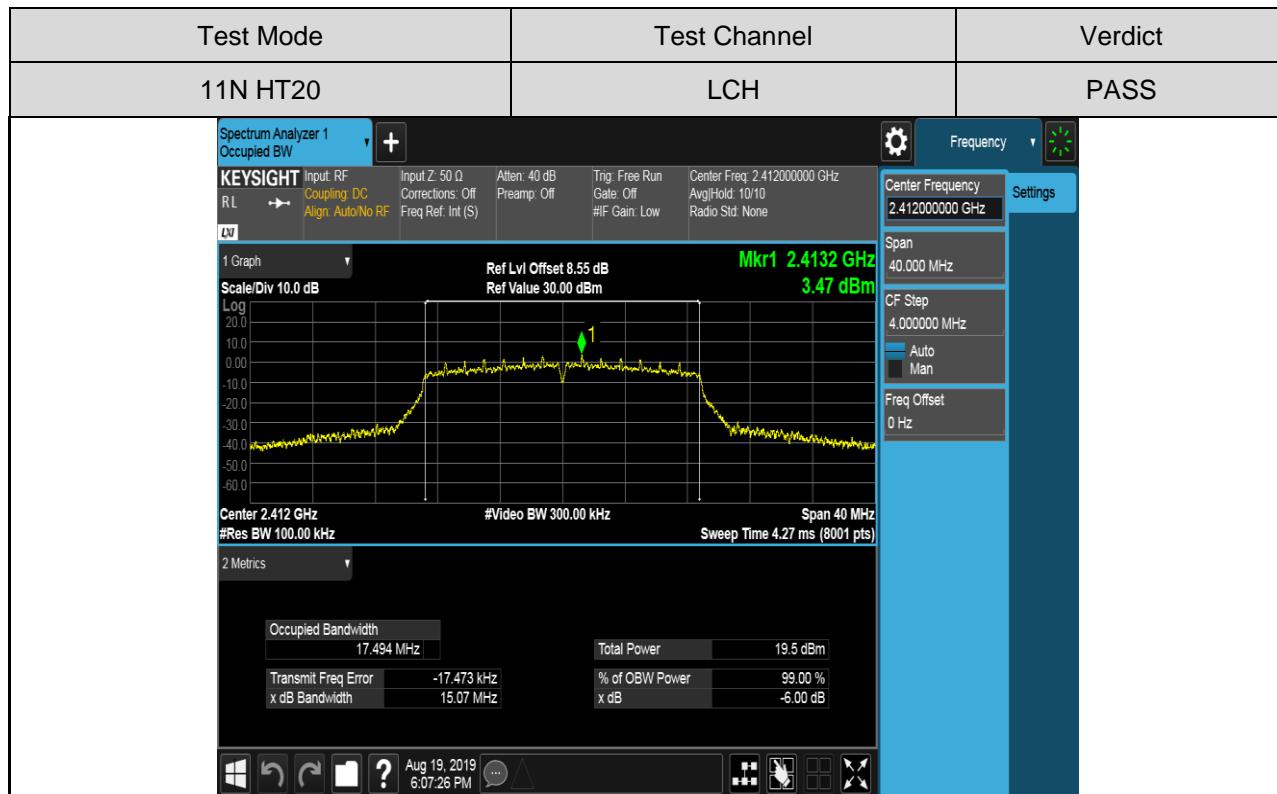
Test Mode	Test Channel	6dB bandwidth (MHz)	Result
11B	LCH	10.05	Pass
	MCH	10.04	Pass
	HCH	9.083	Pass
11G	LCH	15.10	Pass
	MCH	15.13	Pass
	HCH	15.11	Pass
11N HT20	LCH	15.07	Pass
	MCH	15.13	Pass
	HCH	13.88	Pass
11N HT40	LCH	35.06	Pass
	MCH	35.03	Pass
	HCH	35.09	Pass

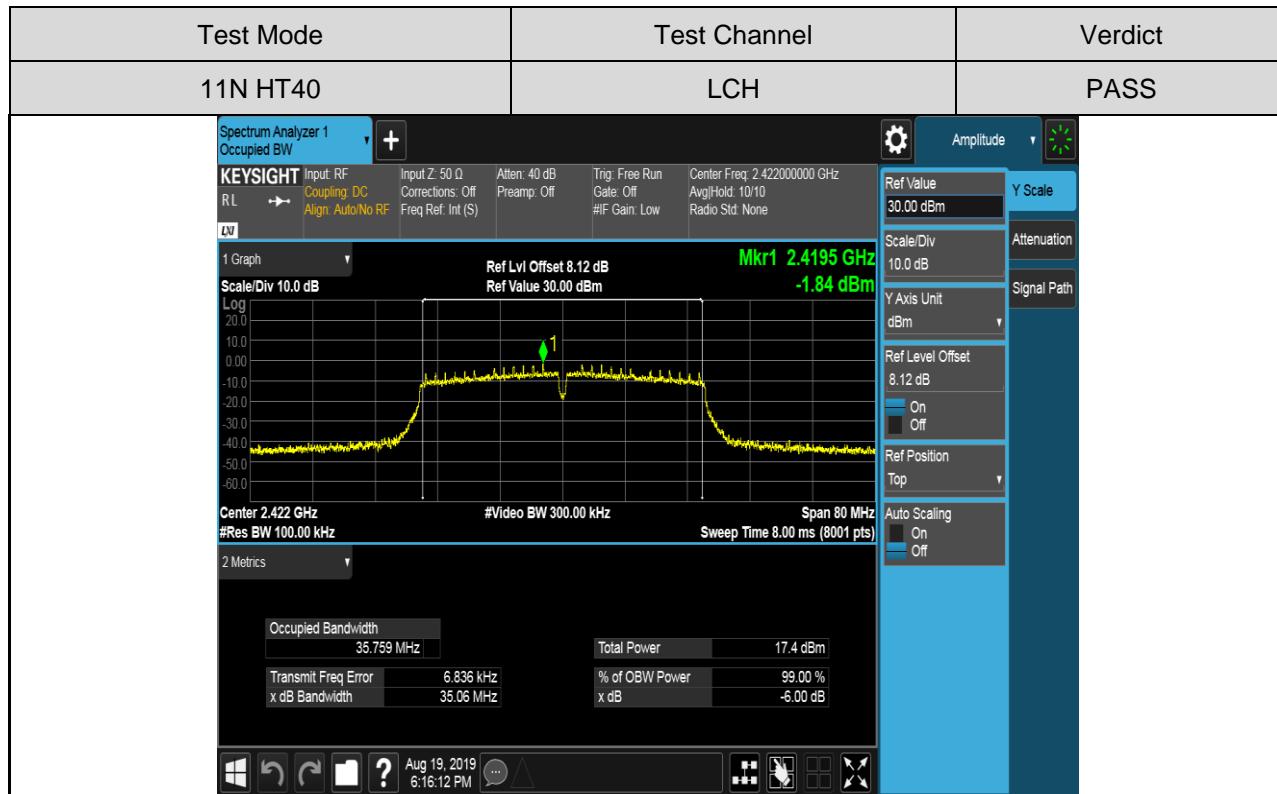
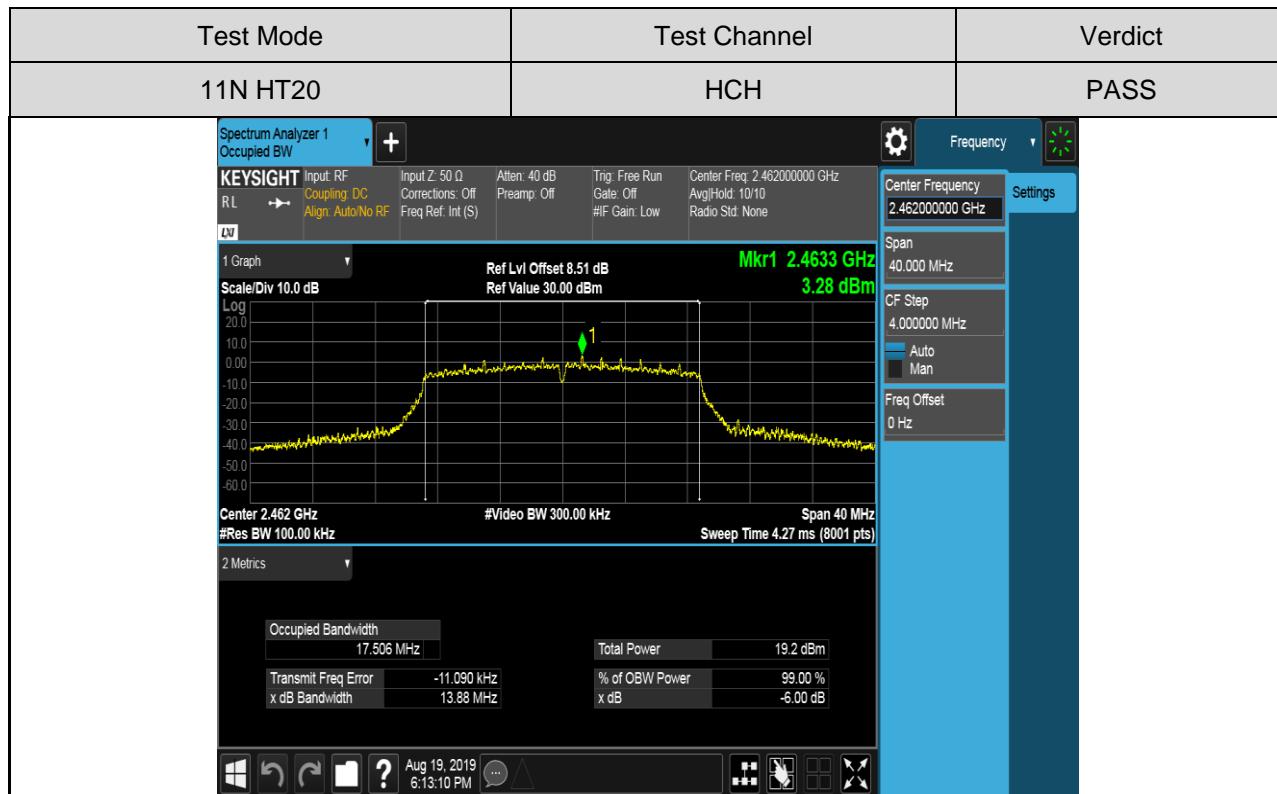
Test Graphs

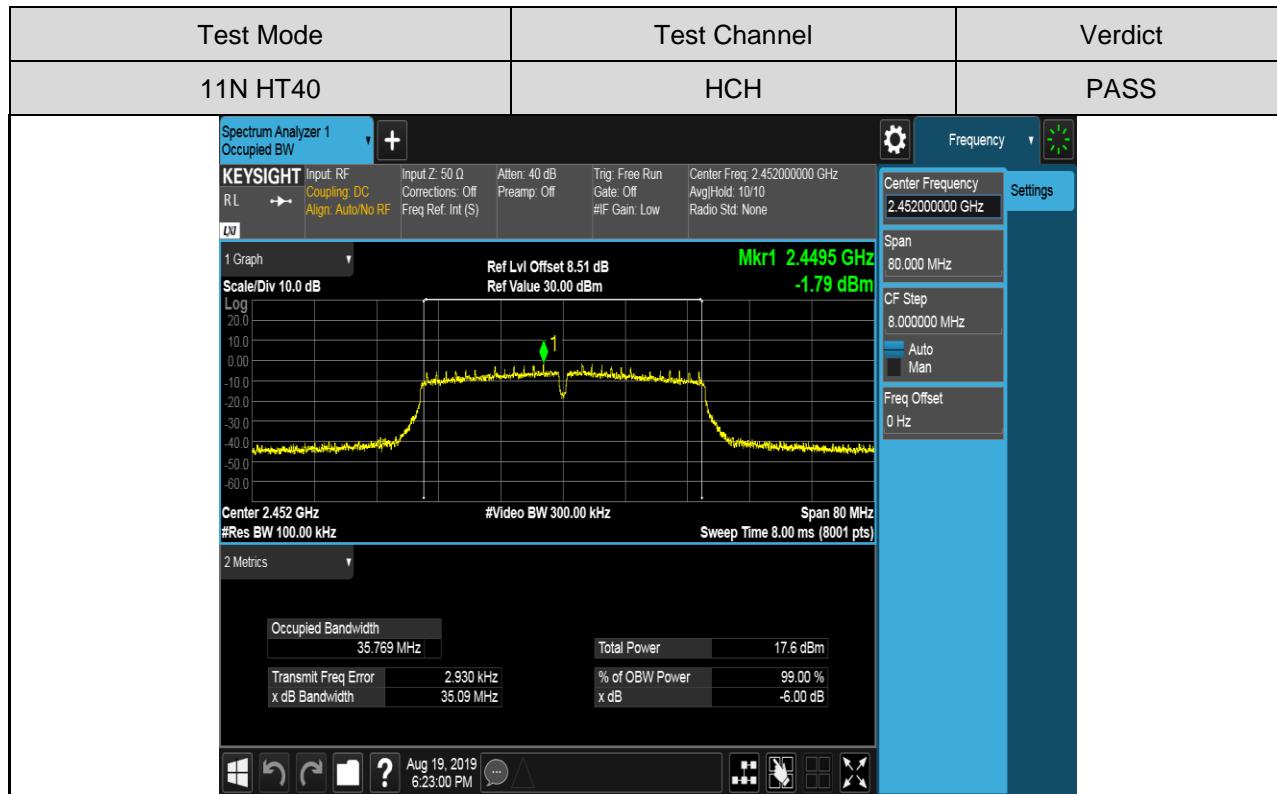
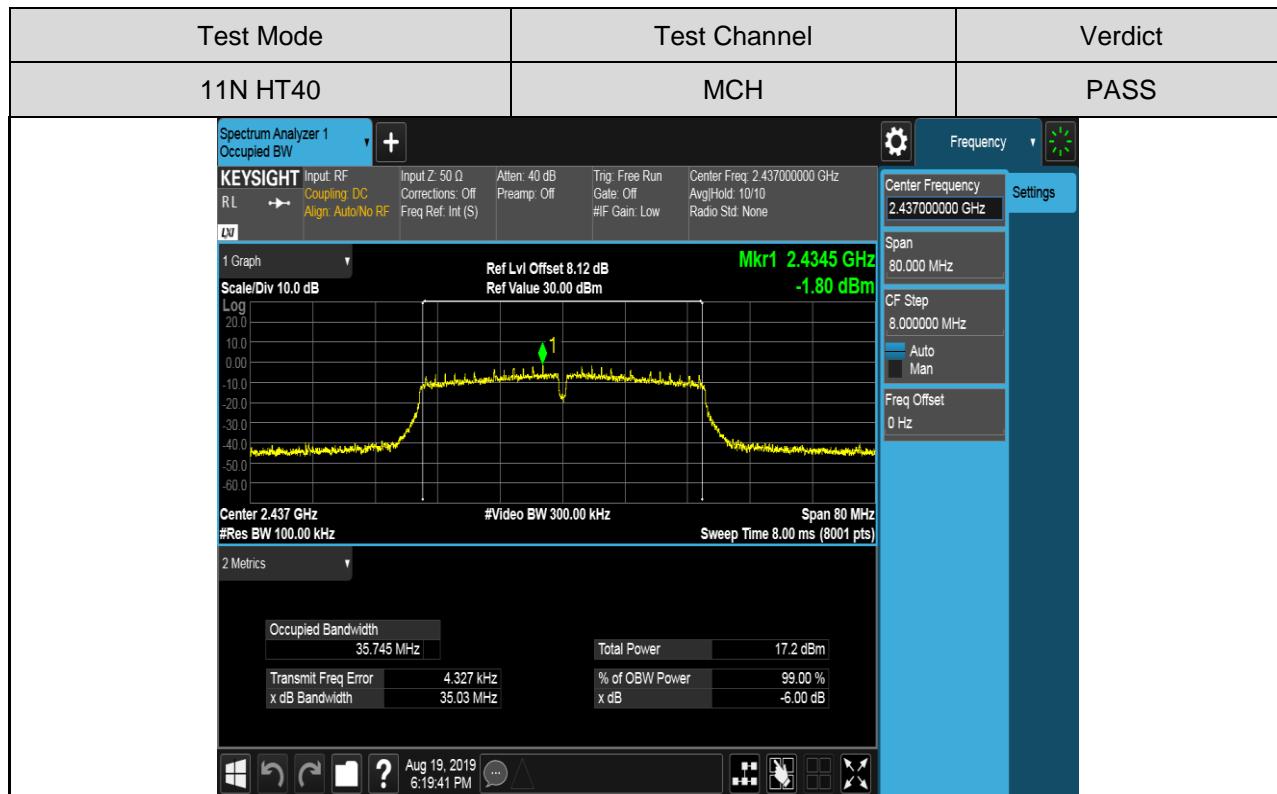












8.3. CONDUCTED OUTPUT POWER

LIMITS

CFR 47 FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(b)(3)	Output Power	1 watt or 30dBm (See note1)	2400-2483.5
Note: 1. 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 6dBi.			

TEST PROCEDURE

Place the EUT on the table and set it in the transmitting mode.

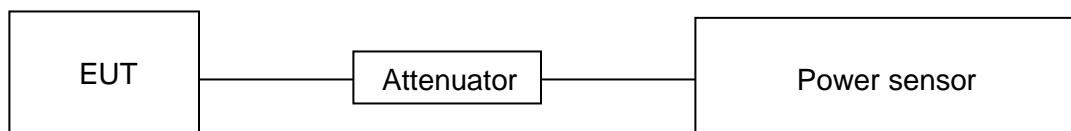
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power sensor.

Measure the power of each channel.

Peak Detector use for Peak result.

AVG Detector use for AVG result.

TEST SETUP



TEST ENVIRONMENT

Temperature	20°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	DC 5V

RESULTS

Test Mode	Test Channel	Maximum Conducted Output Power (PK)	Maximum Conducted Output Power (AV)	LIMIT
		dBm	dBm	dBm
11B	LCH	20.95	18.52	30
	MCH	20.76	18.27	30
	HCH	20.71	18.26	30
11G	LCH	21.87	14.03	30
	MCH	21.57	13.85	30
	HCH	21.68	13.67	30
11n HT20	LCH	20.54	12.84	30
	MCH	20.18	12.82	30
	HCH	20.12	12.56	30
11n HT40	LCH	N/A	11.09	30
	MCH	N/A	10.88	30
	HCH	N/A	10.99	30

8.4. POWER SPECTRAL DENSITY

LIMITS

CFR 47 FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC §15.247 (e)	Power Spectral Density	8 dBm/3 kHz (See note1)	2400-2483.5
Note: 1. 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 6dBi.			

TEST PROCEDURE

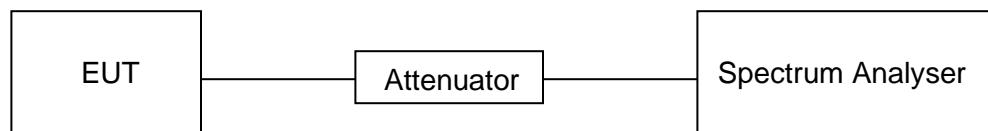
Connect the UUT to the spectrum analyser and use the following settings:

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	$1.5 \times \text{DTS bandwidth}$
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 SETUP

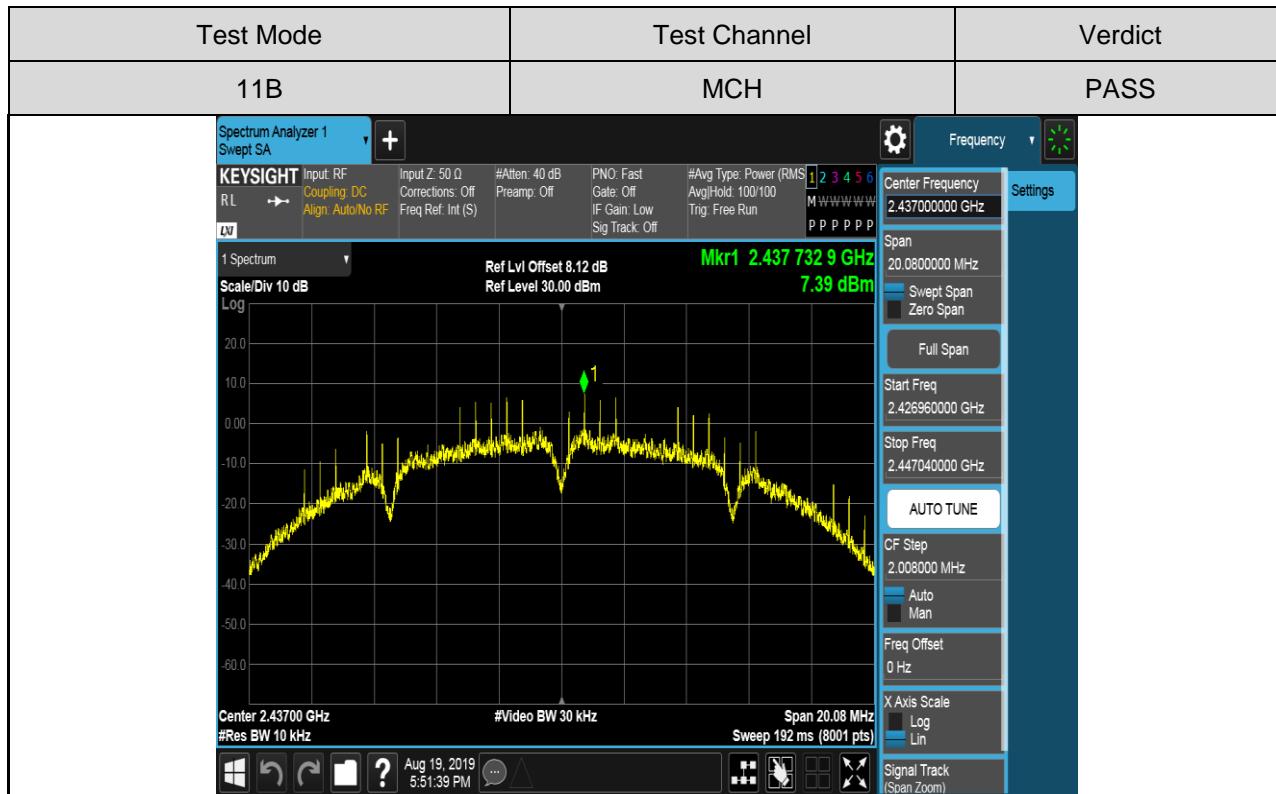
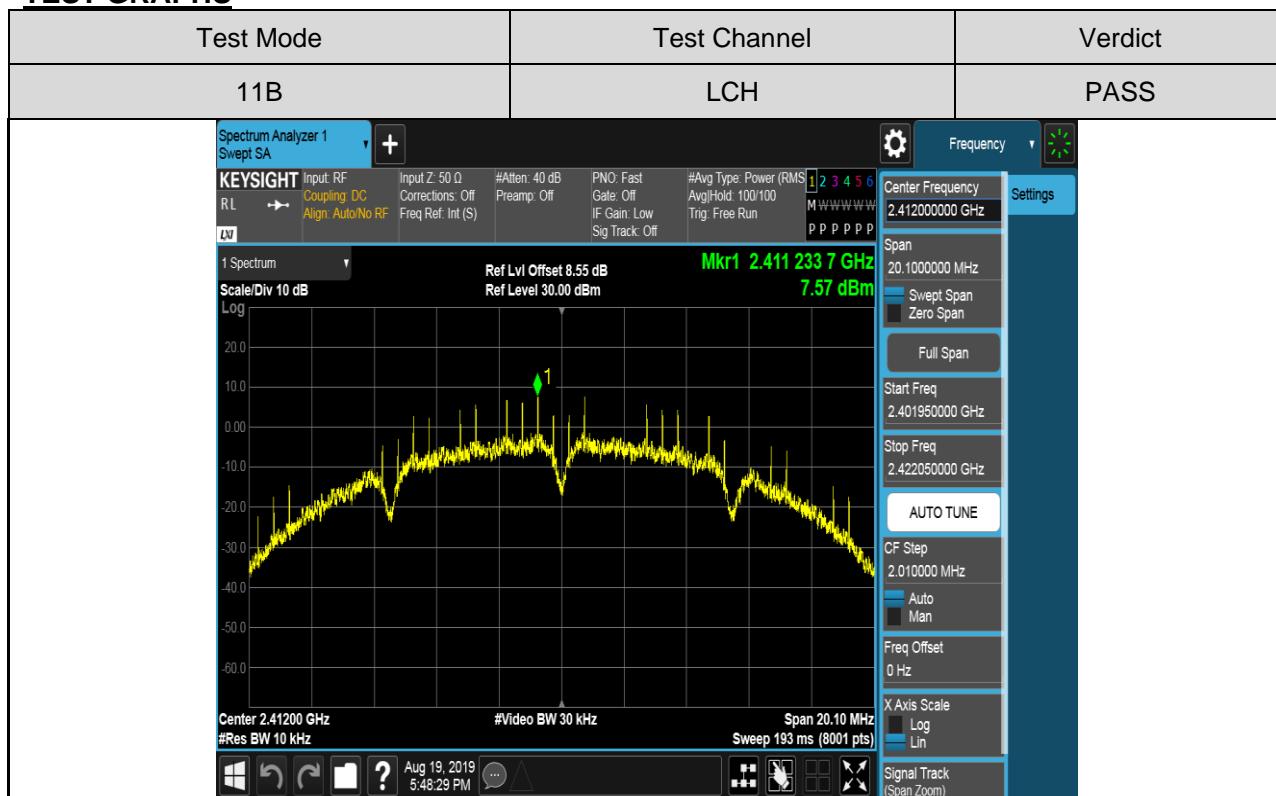


TEST ENVIRONMENT

Temperature	20°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	DC 5V

RESULTS

Test Mode	Test Channel	Maximum Peak power spectral density (dBm/10K)	Result
11B	LCH	7.57	Pass
	MCH	7.39	Pass
	HCH	7.48	Pass
11G	LCH	-5.62	Pass
	MCH	-5.40	Pass
	HCH	-4.71	Pass
11N HT20	LCH	-5.29	Pass
	MCH	-4.37	Pass
	HCH	-5.17	Pass
11N HT40	LCH	-11.16	Pass
	MCH	-11.70	Pass
	HCH	-11.21	Pass

TEST GRAPHS


Test Mode	Test Channel	Verdict
11B	HCH	PASS

Spectrum Analyzer 1
Swept SA

KEYSIGHT Input: RF
Coupling: DC
RL → Align: Auto/No RF
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
#Atten: 40 dB
Preamp: Off
PNO: Best Wide
Gate: Off
Avg/Hold: 100/100
IF Gain: Low
Trig: Free Run
Sig Track: Off

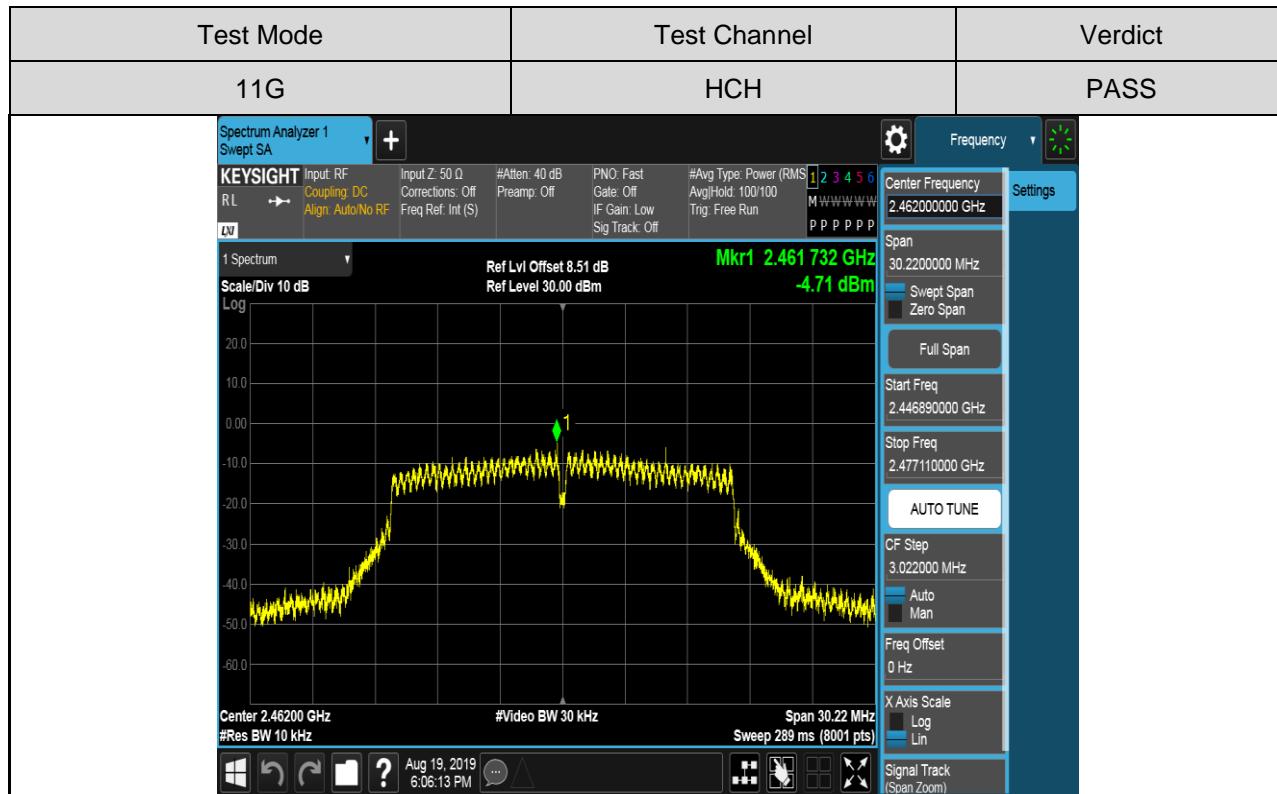
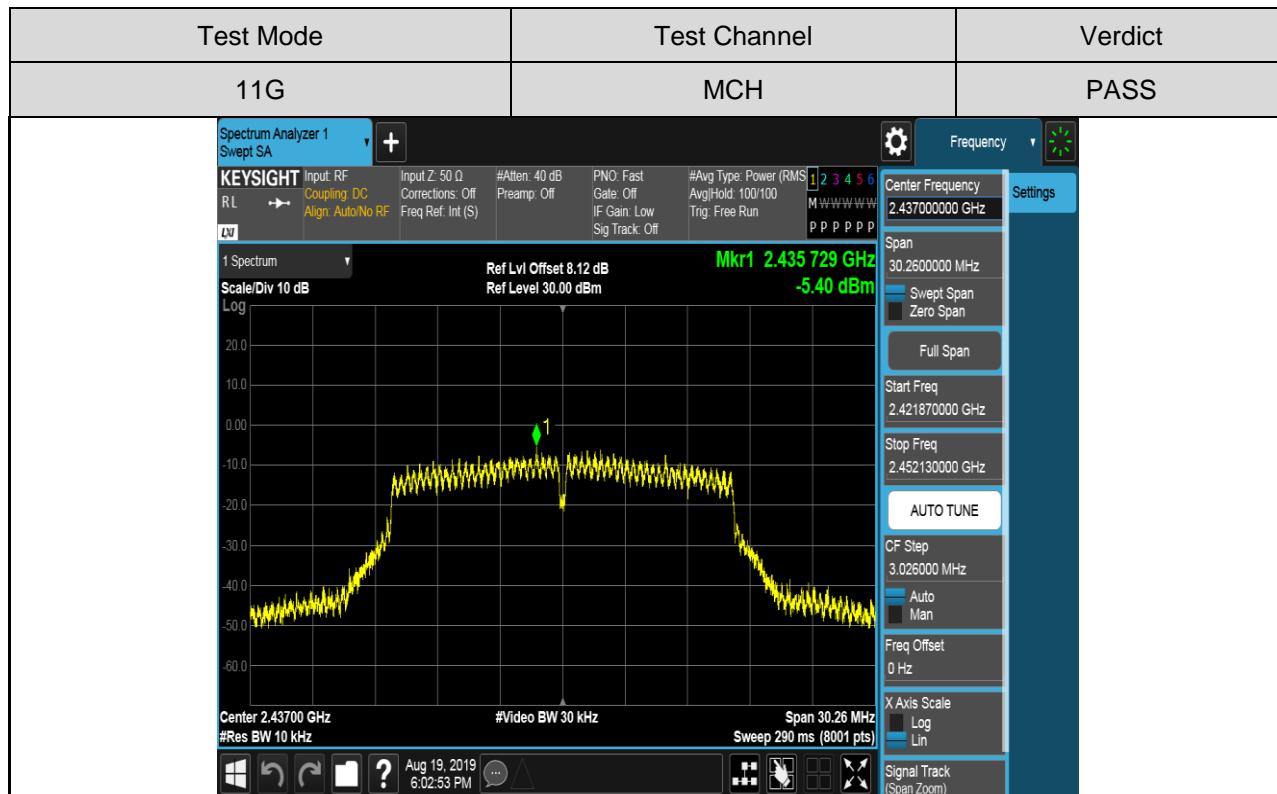
Mkr1 2.462 733 5 GHz
7.48 dBm

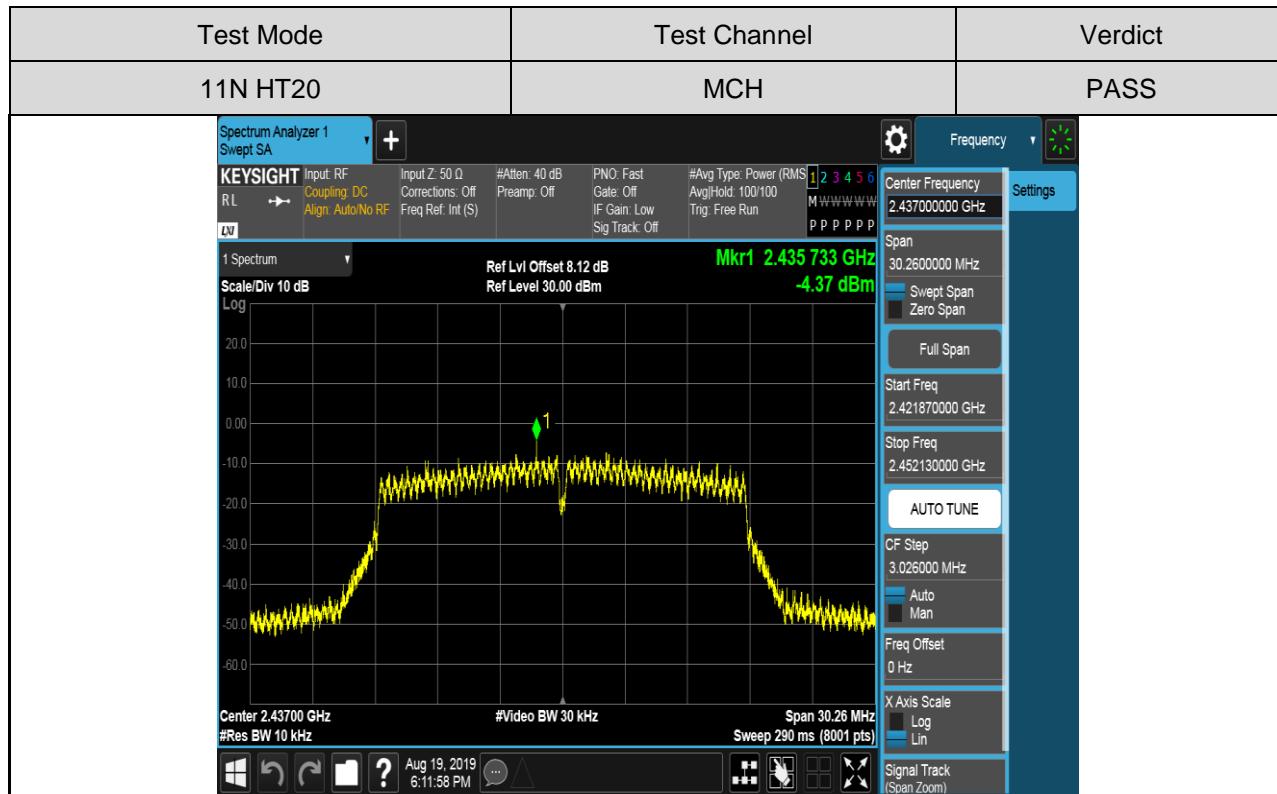
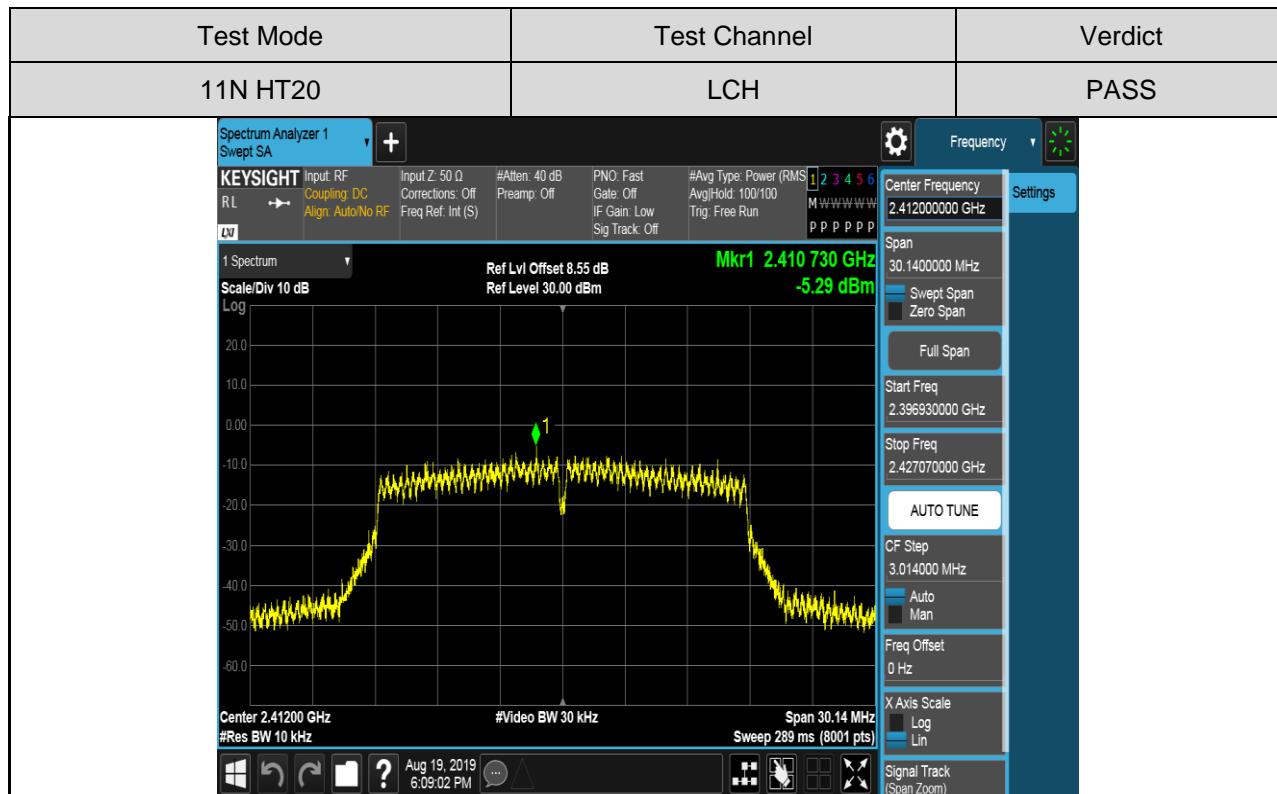
1 Spectrum
Ref Lvl Offset 8.51 dB
Ref Level 30.00 dBm
Scale/Div 10 dB
Log

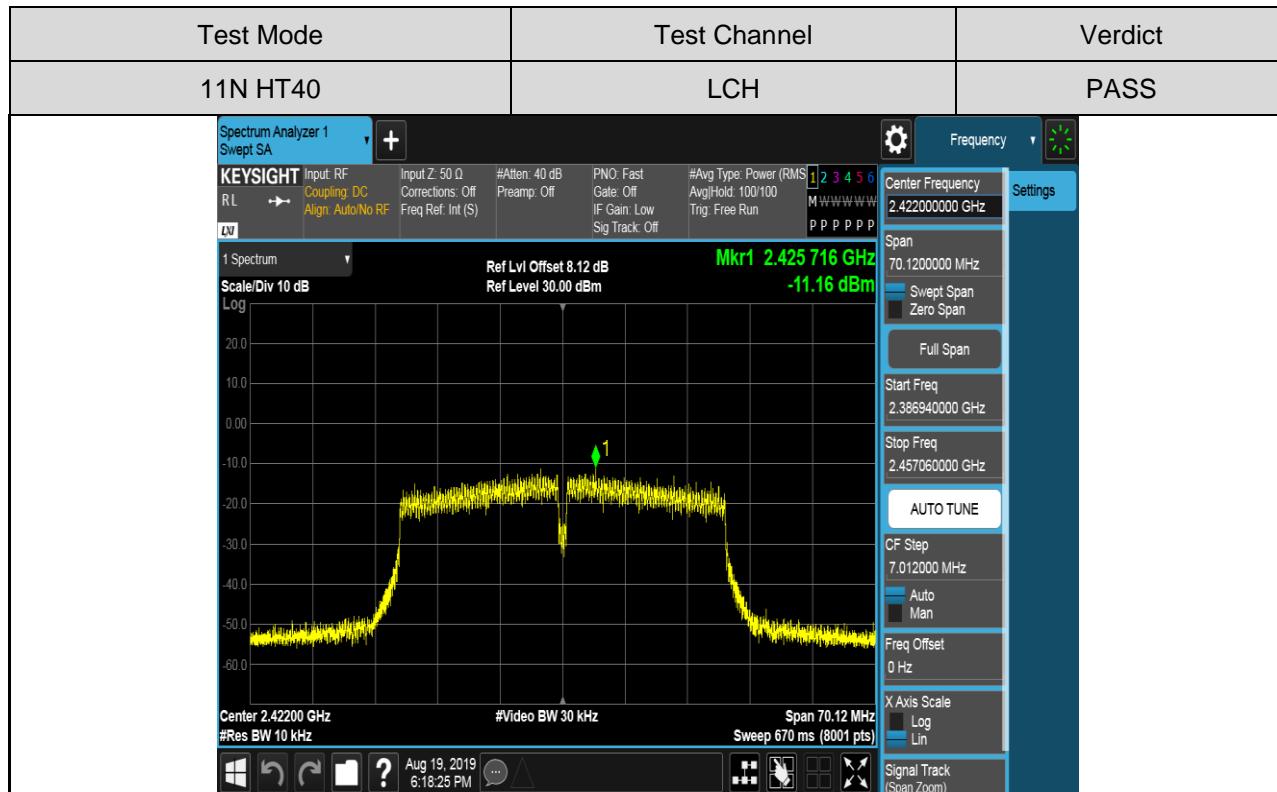
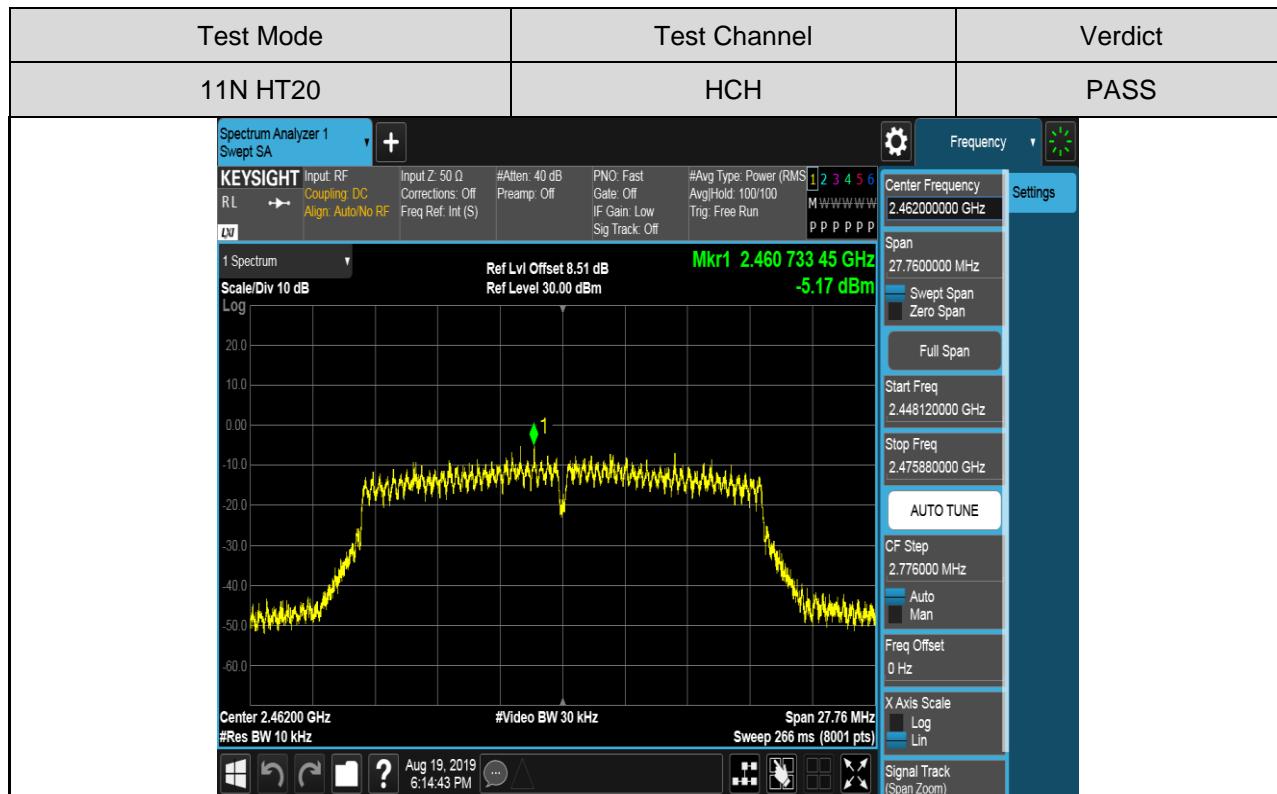
20.00
10.00
0.00
-10.00
-20.00
-30.00
-40.00
-50.00
-60.00

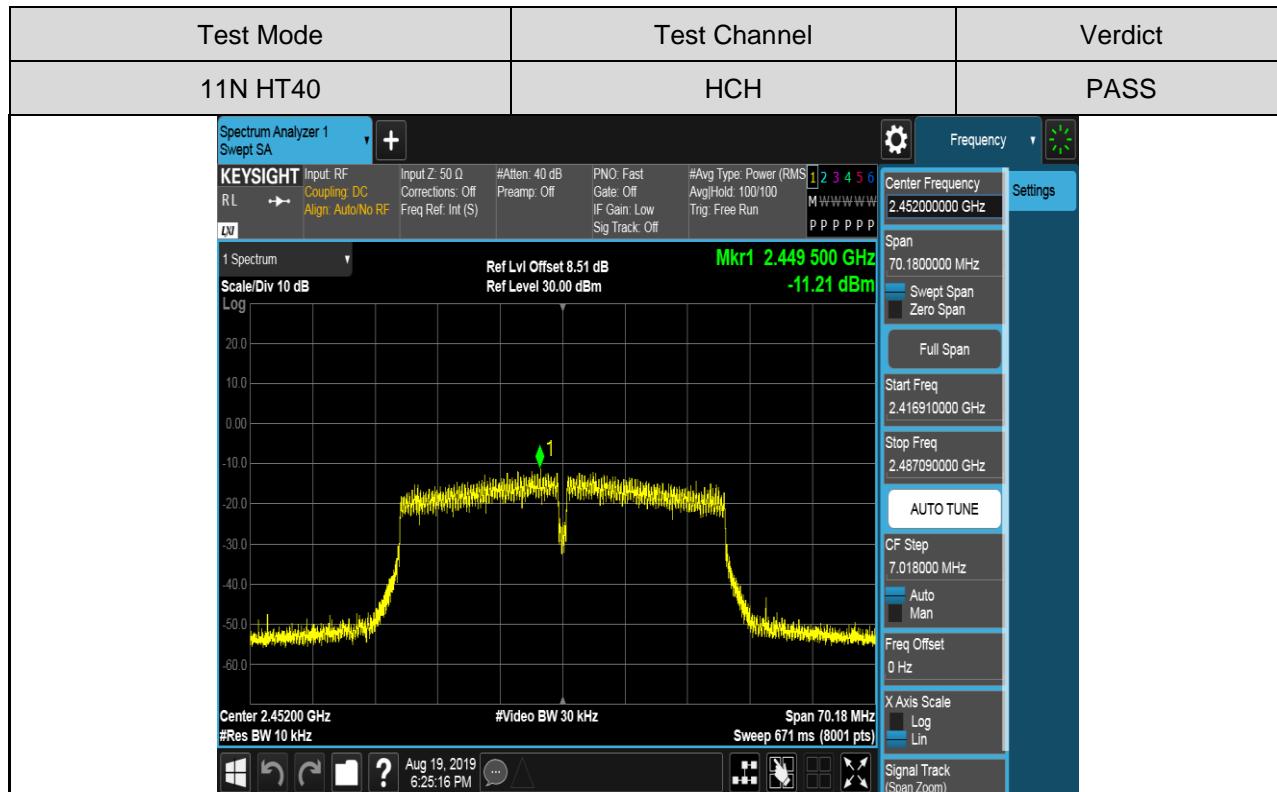
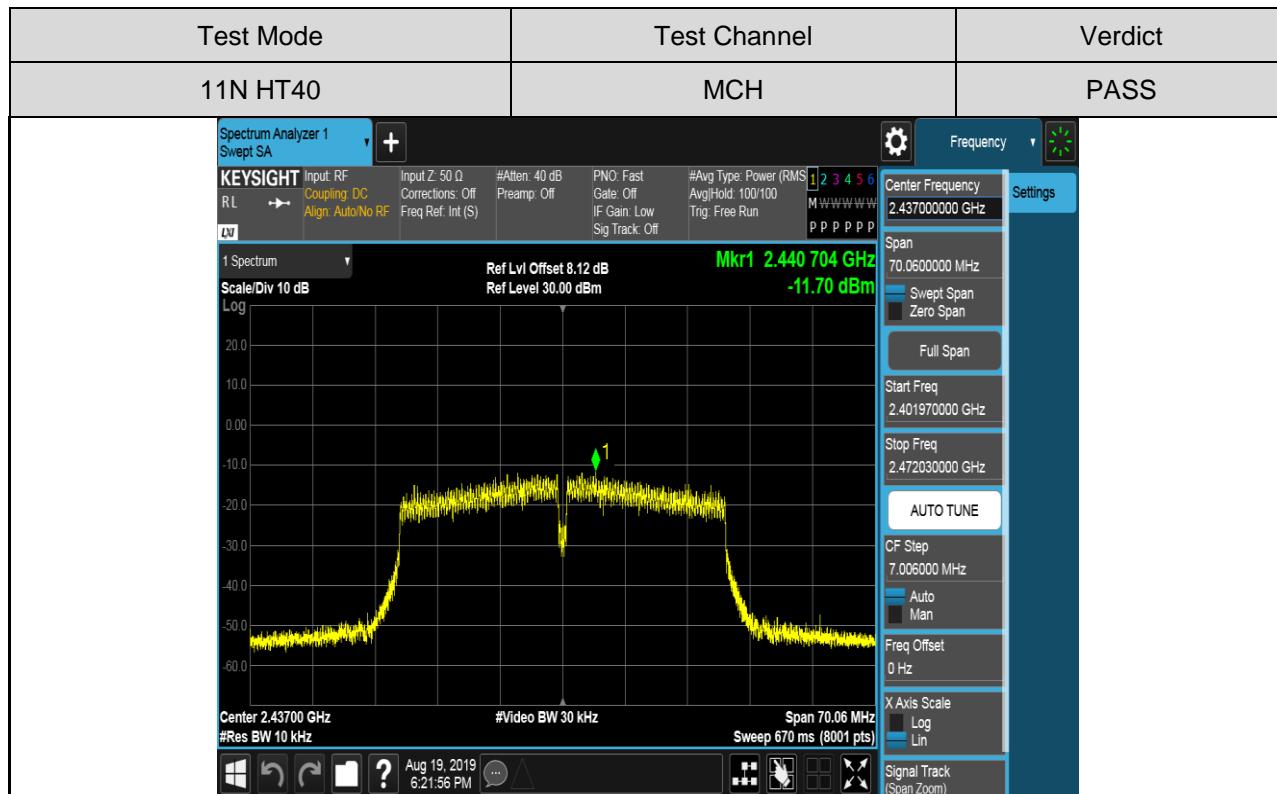
Center 2.462000 GHz #Video BW 30 kHz Span 18.17 MHz
#Res BW 10 kHz Sweep 174 ms (8001 pts)

Frequency
2.462000000 GHz
Settings
Span
18.1660000 MHz
Swept Span
Zero Span
Full Span
Start Freq
2.452917000 GHz
Stop Freq
2.471083000 GHz
AUTO TUNE
CF Step
1.816600 MHz
Auto
Man
Freq Offset
0 Hz
X Axis Scale
Log
Lin
Signal Track
(Span Zoom)









8.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

CFR 47 FCC Part15 (15.247) Subpart C		
Section	Test Item	Limit
CFR 47 FCC §15.247 (d)	Conducted Bandedge and Spurious Emissions	at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

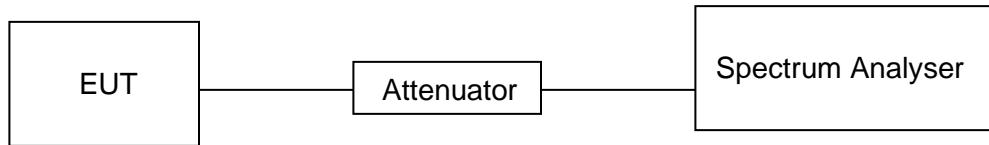
Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	100K
VBW	$\geq 3 \times$ RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

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	$\geq 3 \times$ RBW
measurement points	\geq span/RBW
Trace	Max hold
Sweep time	Auto couple.

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

TEST SETUP



TEST ENVIRONMENT

Temperature	20°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	DC 5V

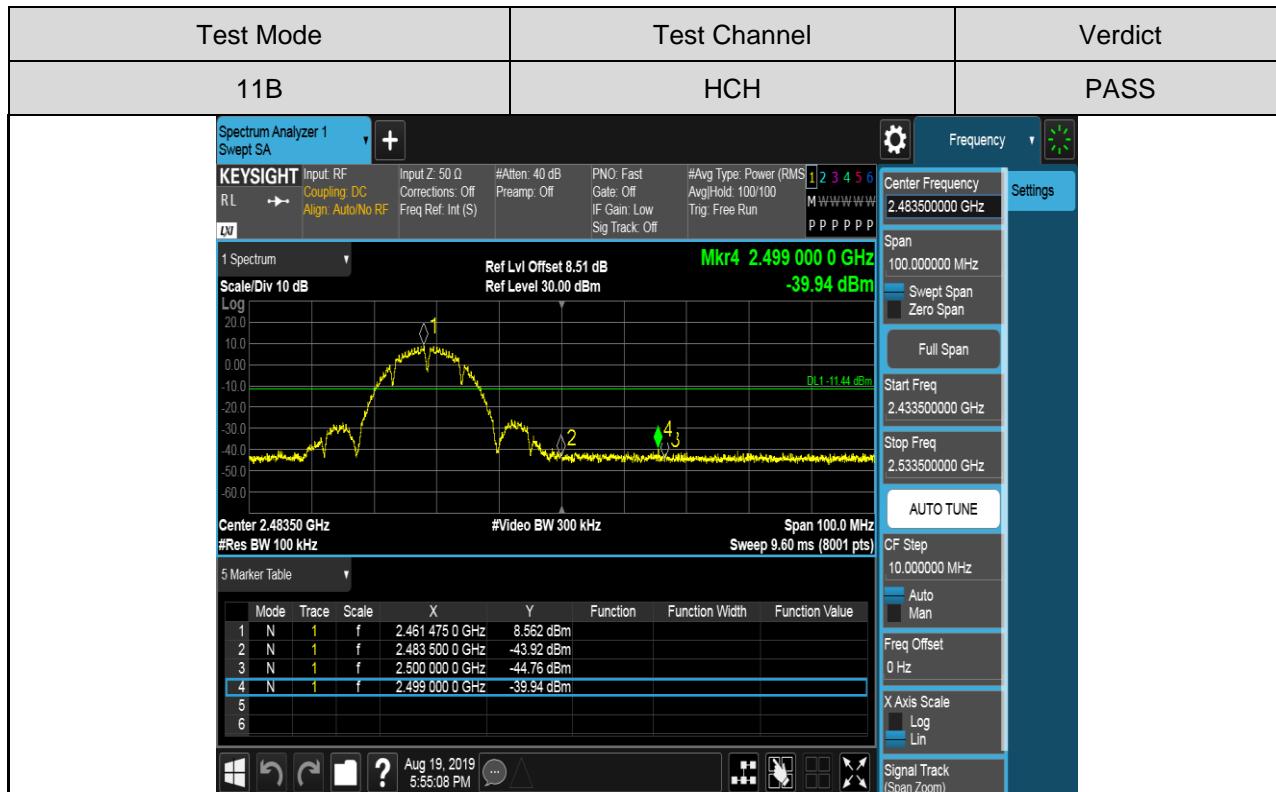
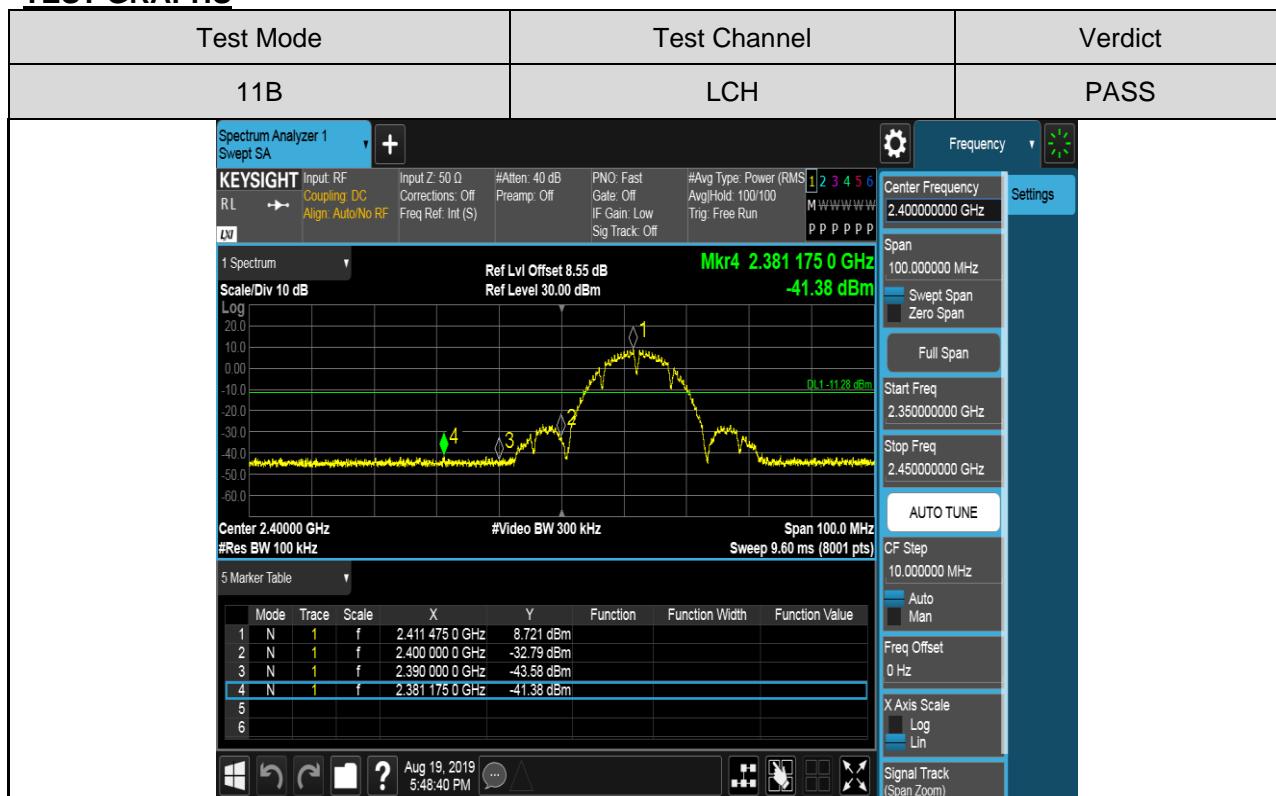
RESULTS

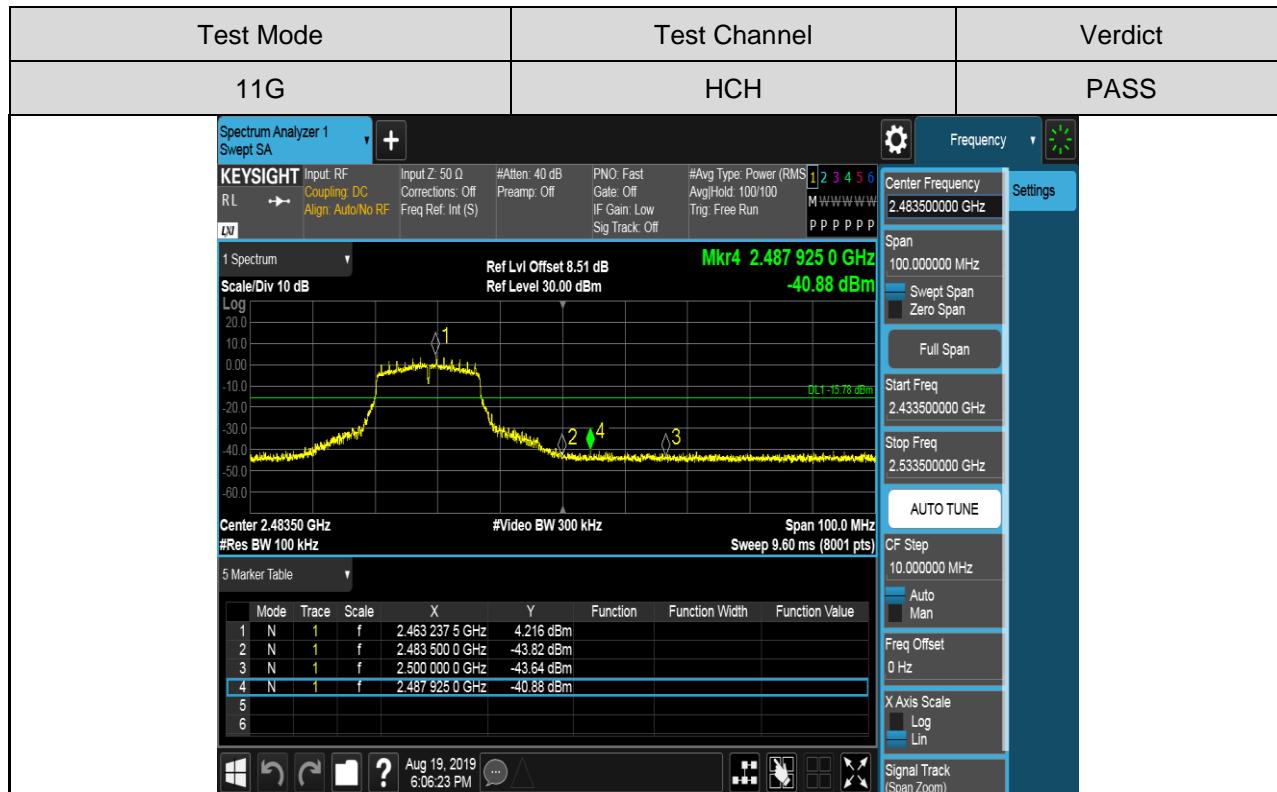
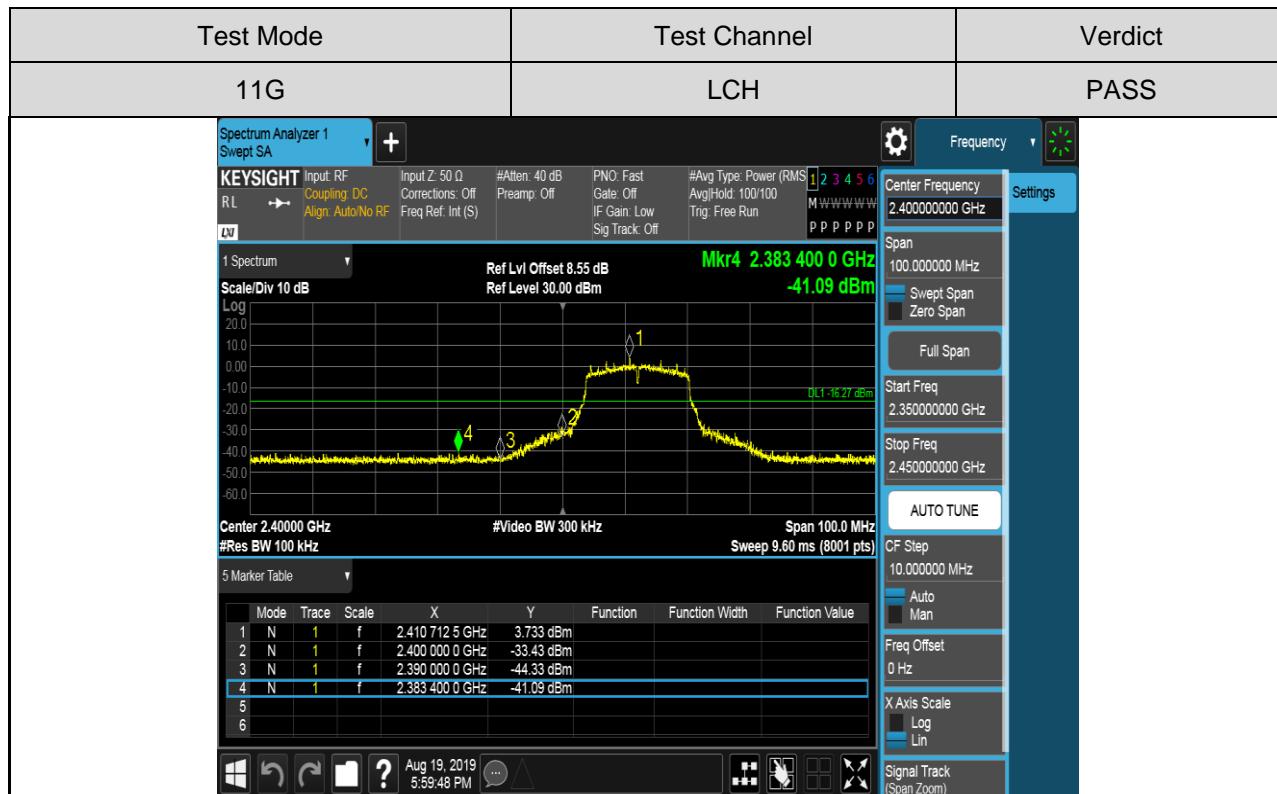
Part I: CONDUCTED BANDEDGE

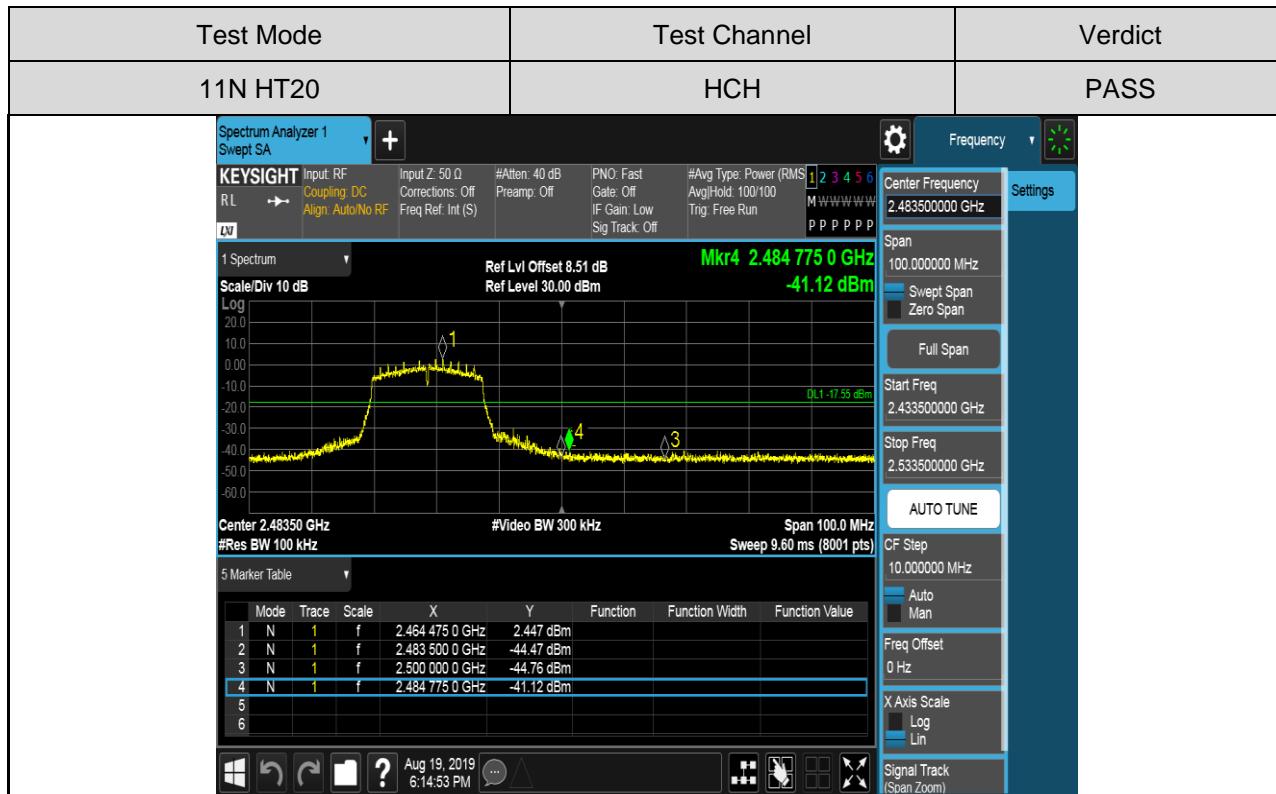
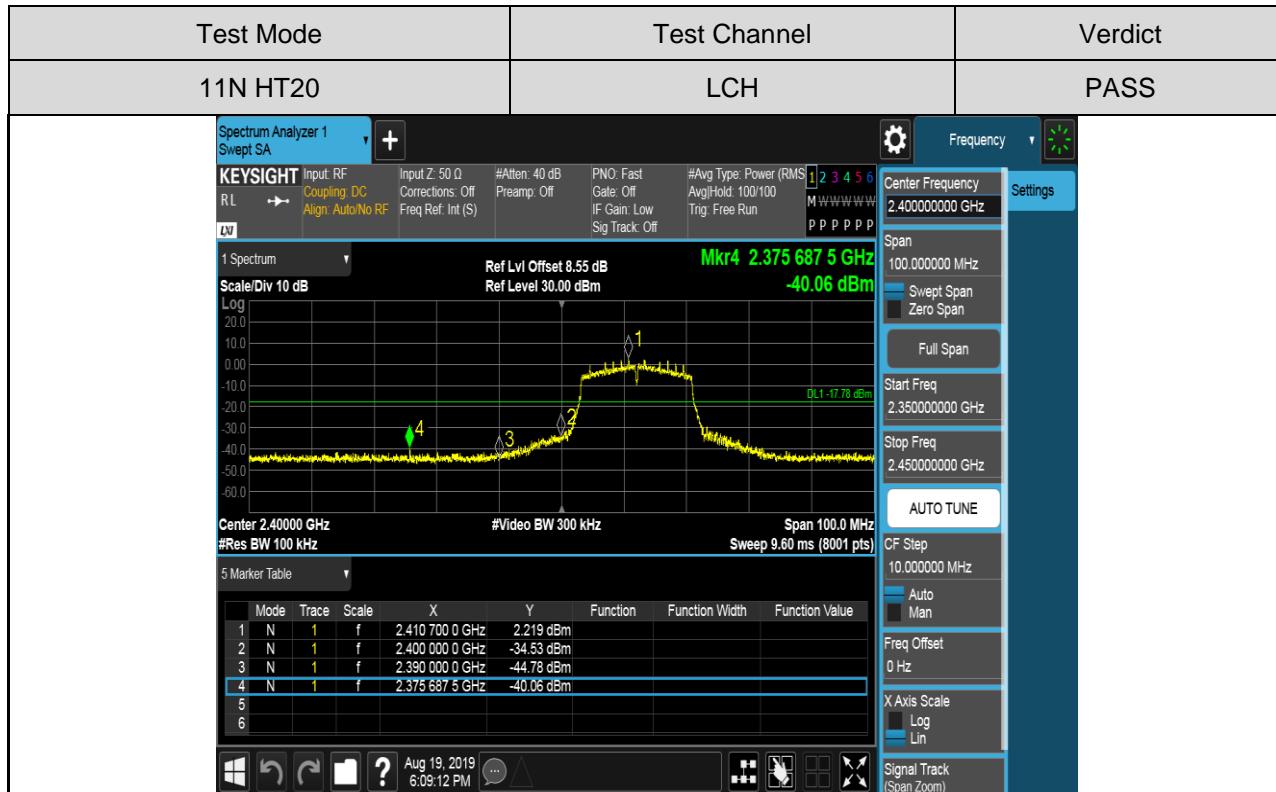
RESULTS TABLE

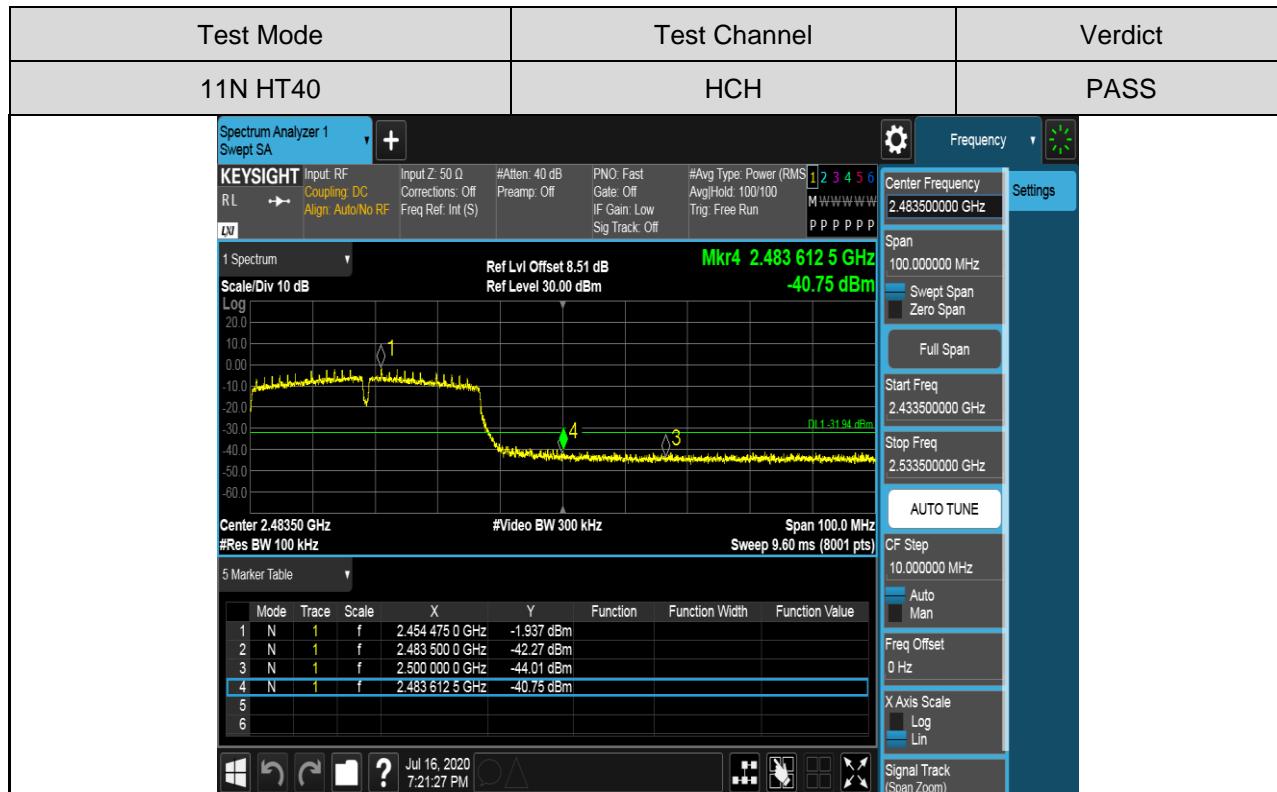
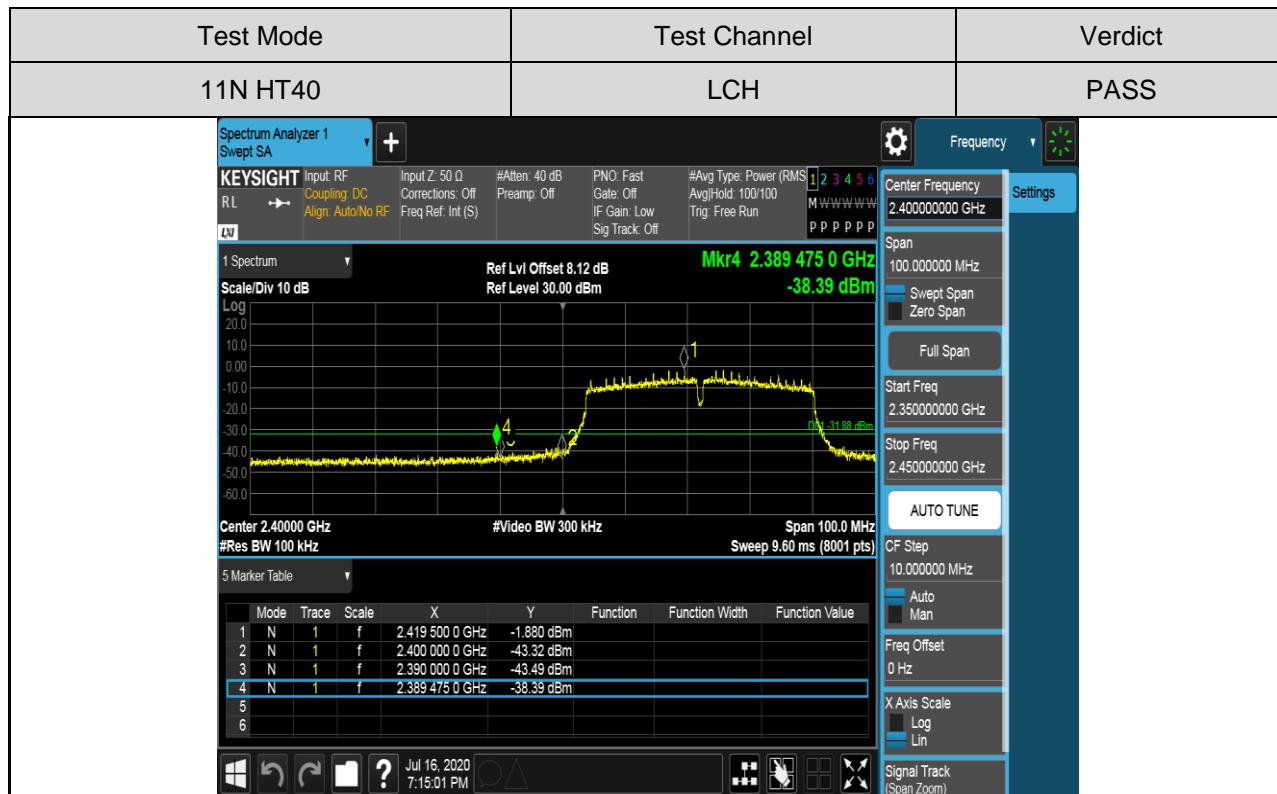
Test Mode	Test Channel	Carrier Power[dBm]	Max. Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	8.721	-41.38	-10.82	PASS
	HCH	8.562	-39.94	-11.64	PASS
11G	LCH	3.733	-41.09	-12.99	PASS
	HCH	4.216	-40.88	-12.30	PASS
11N HT20	LCH	2.219	-40.06	-12.20	PASS
	HCH	2.447	-41.12	-12.29	PASS
11N HT40	LCH	-2.119	-39.67	-16.67	PASS
	HCH	-1.556	-40.63	-16.25	PASS

TEST GRAPHS









Part II: Conducted Spurious Emissions**TEST RESULT TABLE**

Test Mode	Channel	Pref(dBm)	Puw(dBm)	Verdict
11B	LCH	8.65	<Limit	PASS
	MCH	8.30	<Limit	PASS
	HCH	8.29	<Limit	PASS
11G	LCH	7.26	<Limit	PASS
	MCH	7.07	<Limit	PASS
	HCH	7.56	<Limit	PASS
11N HT20	LCH	7.85	<Limit	PASS
	MCH	7.36	<Limit	PASS
	HCH	7.63	<Limit	PASS
11N HT40	LCH	3.61	<Limit	PASS
	MCH	3.82	<Limit	PASS
	HCH	4.01	<Limit	PASS

TEST GRAPHS

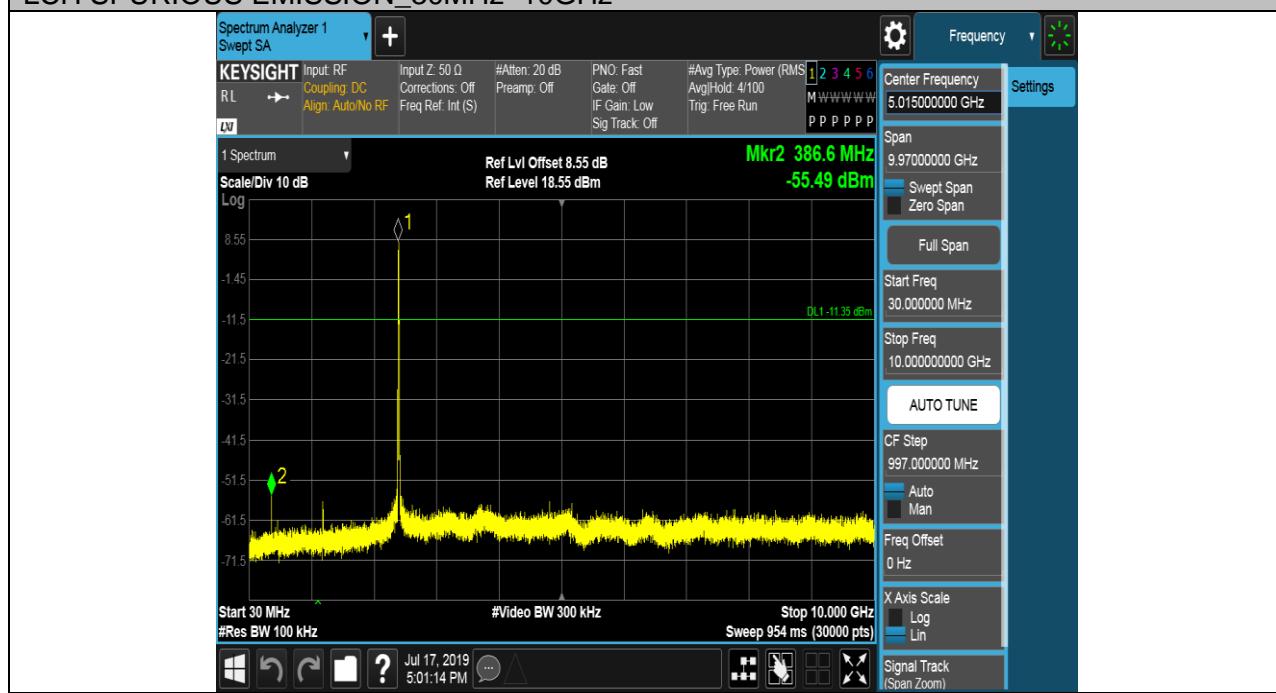
Test Mode	Channel	Verdict
11B	LCH	PASS

Pref test Plot

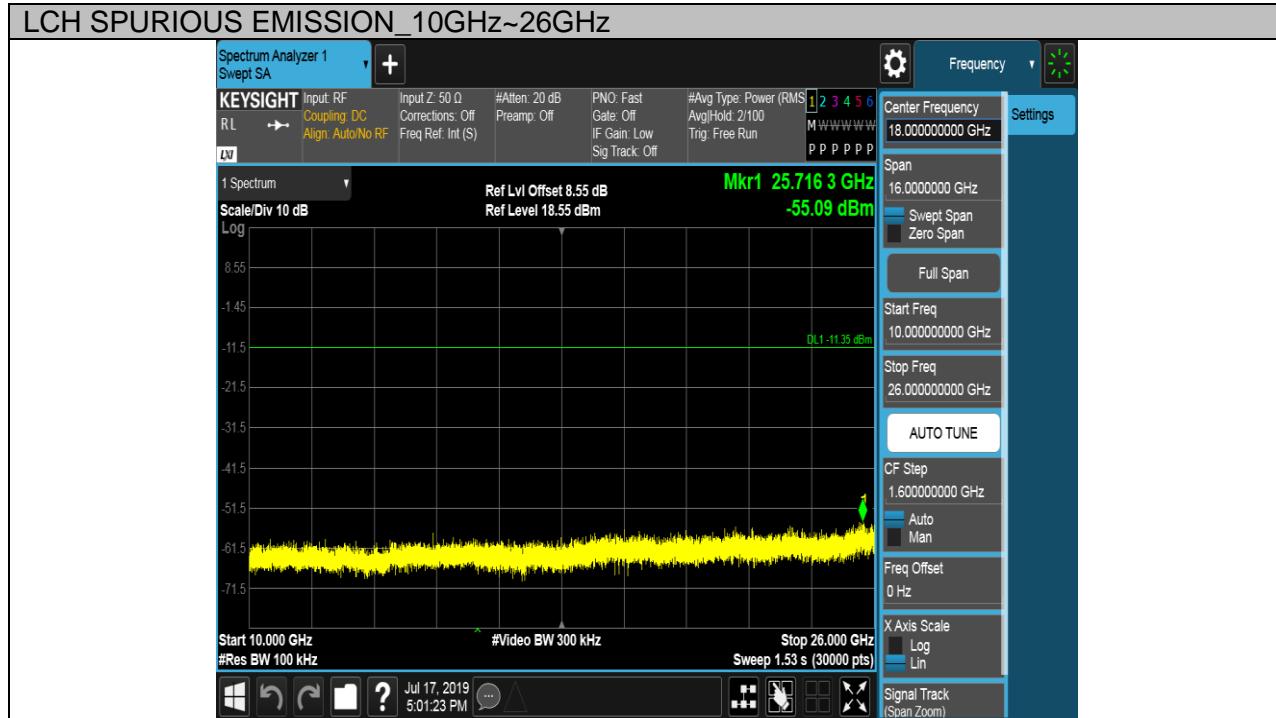


Puw test Plot

LCH SPURIOUS EMISSION_30MHz~10GHz



LCH SPURIOUS EMISSION_10GHz~26GHz



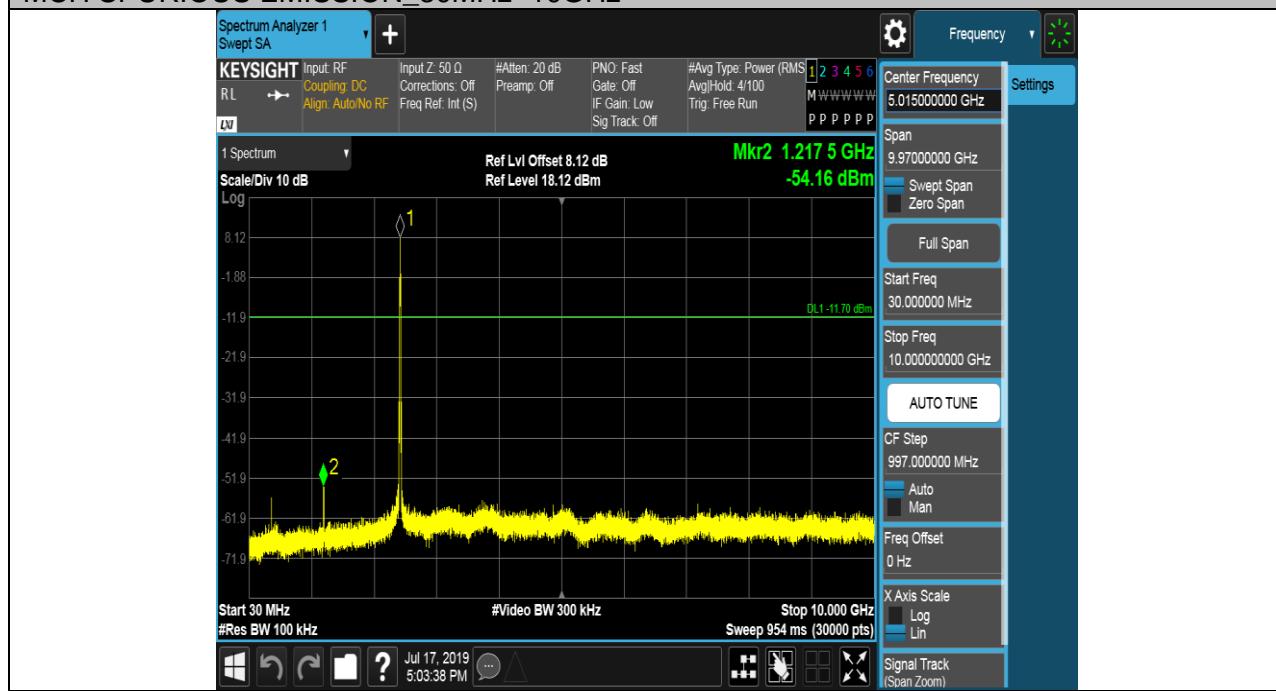
Test Mode	Channel	Verdict
11B	MCH	PASS

Pref test Plot

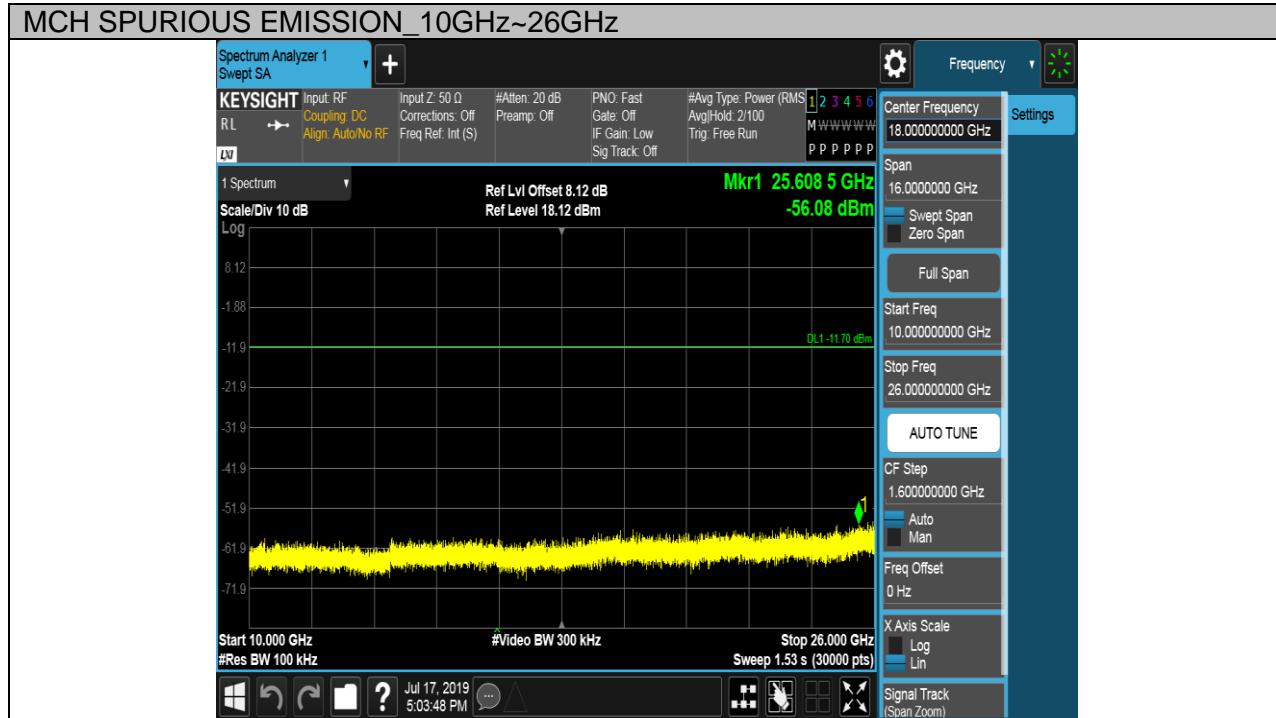


Puw test Plot

MCH SPURIOUS EMISSION_30MHz~10GHz



MCH SPURIOUS EMISSION_10GHz~26GHz



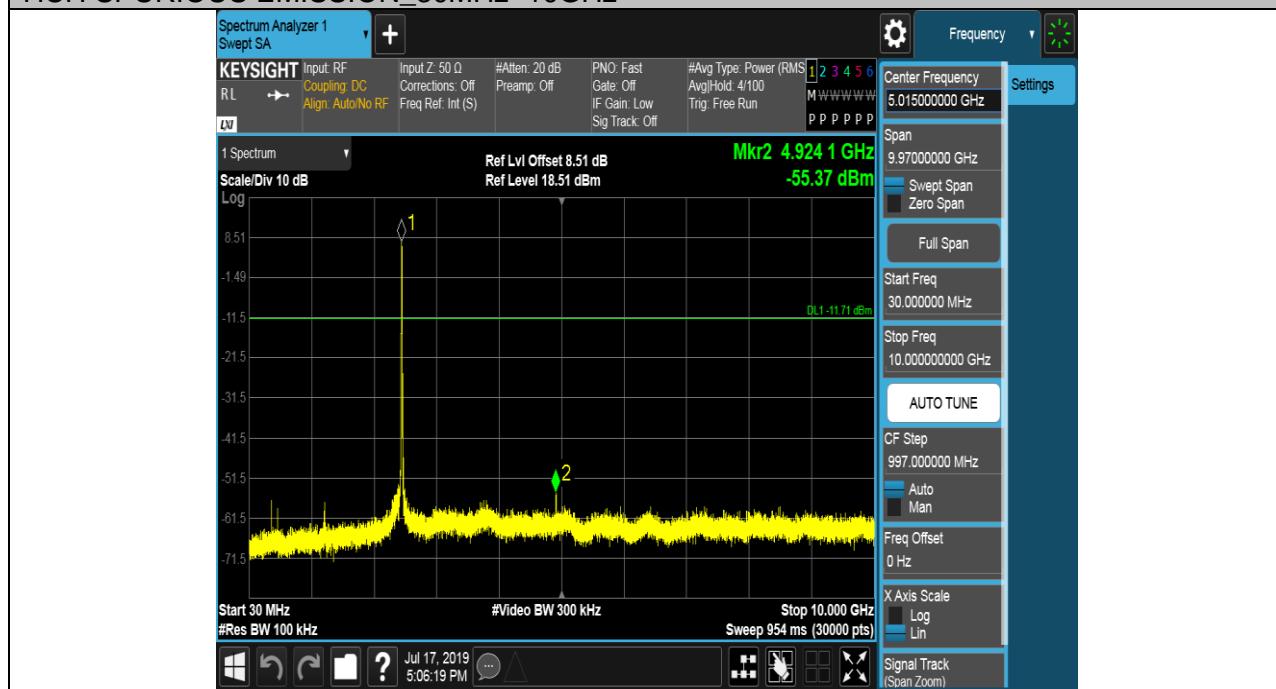
Test Mode	Channel	Verdict
11B	HCH	PASS

Pref test Plot

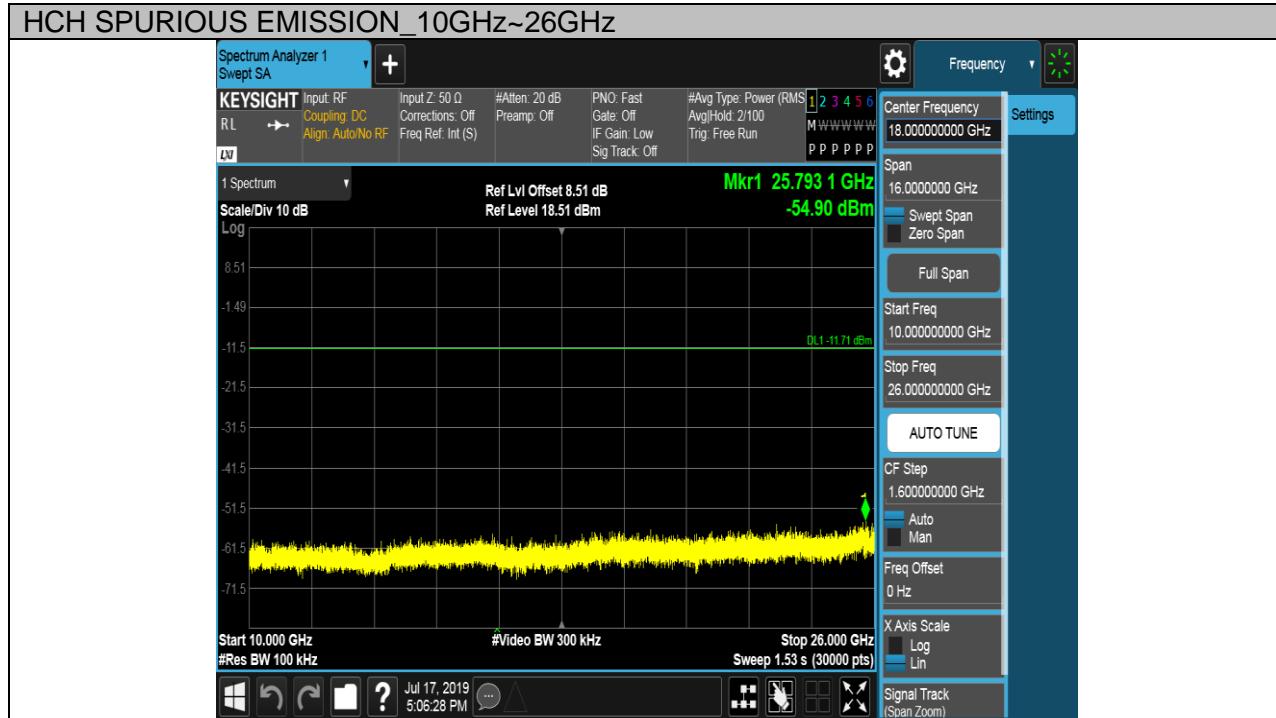


Puw test Plot

HCH SPURIOUS EMISSION_30MHz~10GHz



HCH SPURIOUS EMISSION_10GHz~26GHz



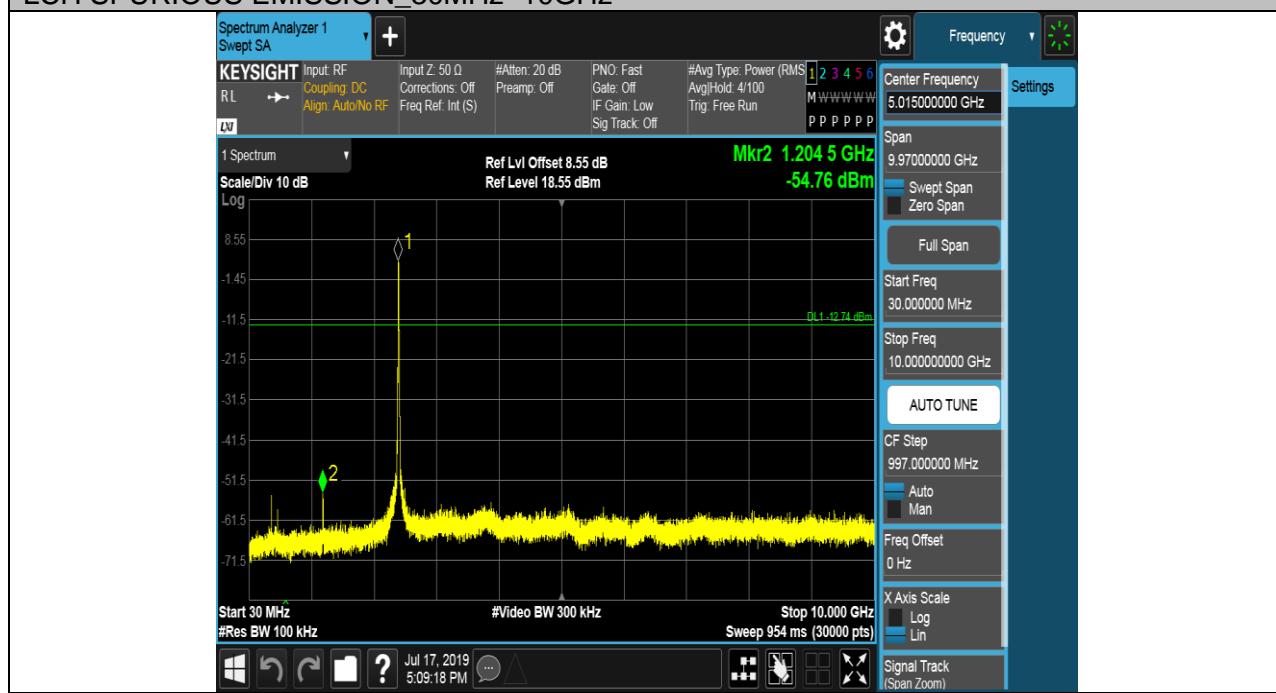
Test Mode	Channel	Verdict
11G	LCH	PASS

Pref test Plot

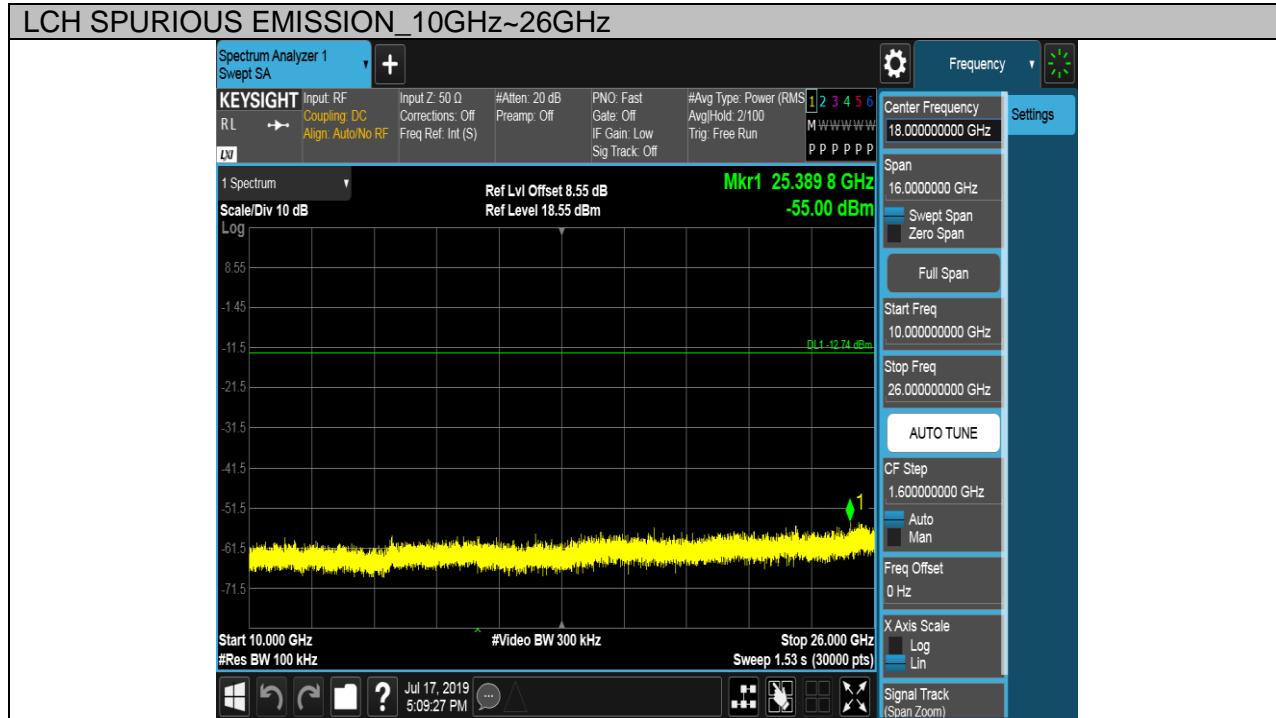


Puw test Plot

LCH SPURIOUS EMISSION_30MHz~10GHz



LCH SPURIOUS EMISSION_10GHz~26GHz



Test Mode	Channel	Verdict
11G	MCH	PASS

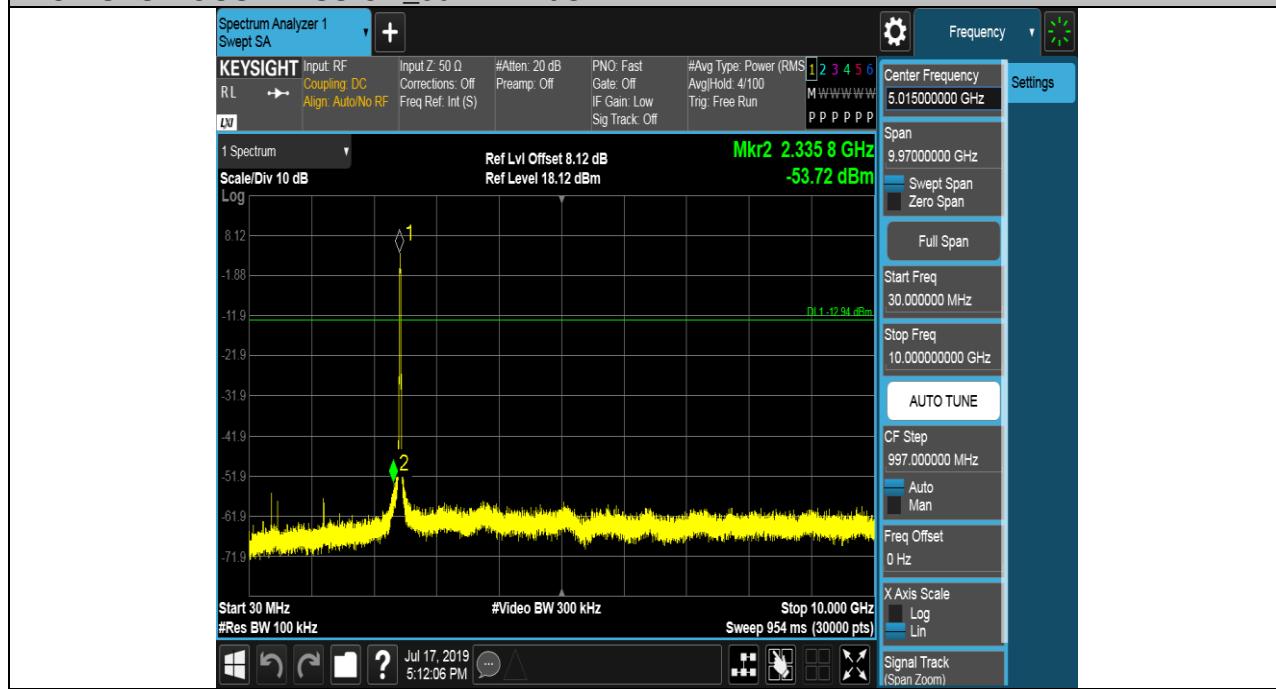
Pref test Plot

MCH SPURIOUS EMISSION

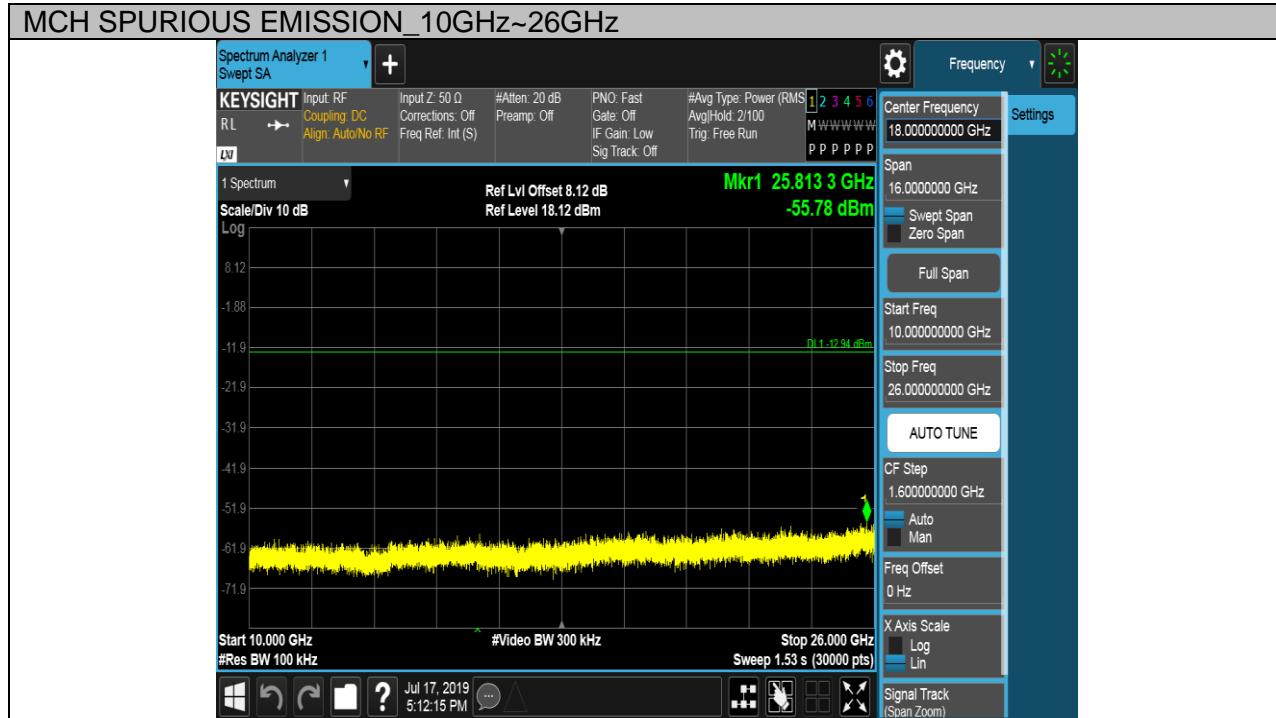


Puw test Plot

MCH SPURIOUS EMISSION_30MHz~10GHz



MCH SPURIOUS EMISSION_10GHz~26GHz



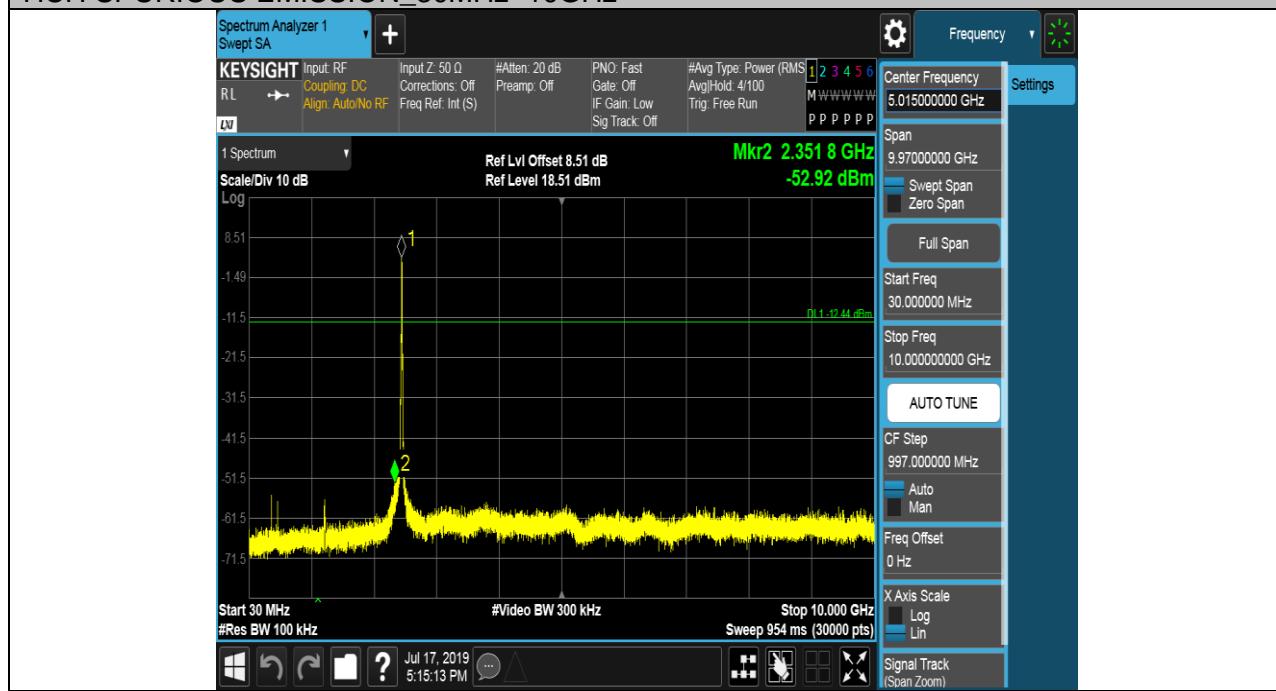
Test Mode	Channel	Verdict
11G	HCH	PASS

Pref test Plot

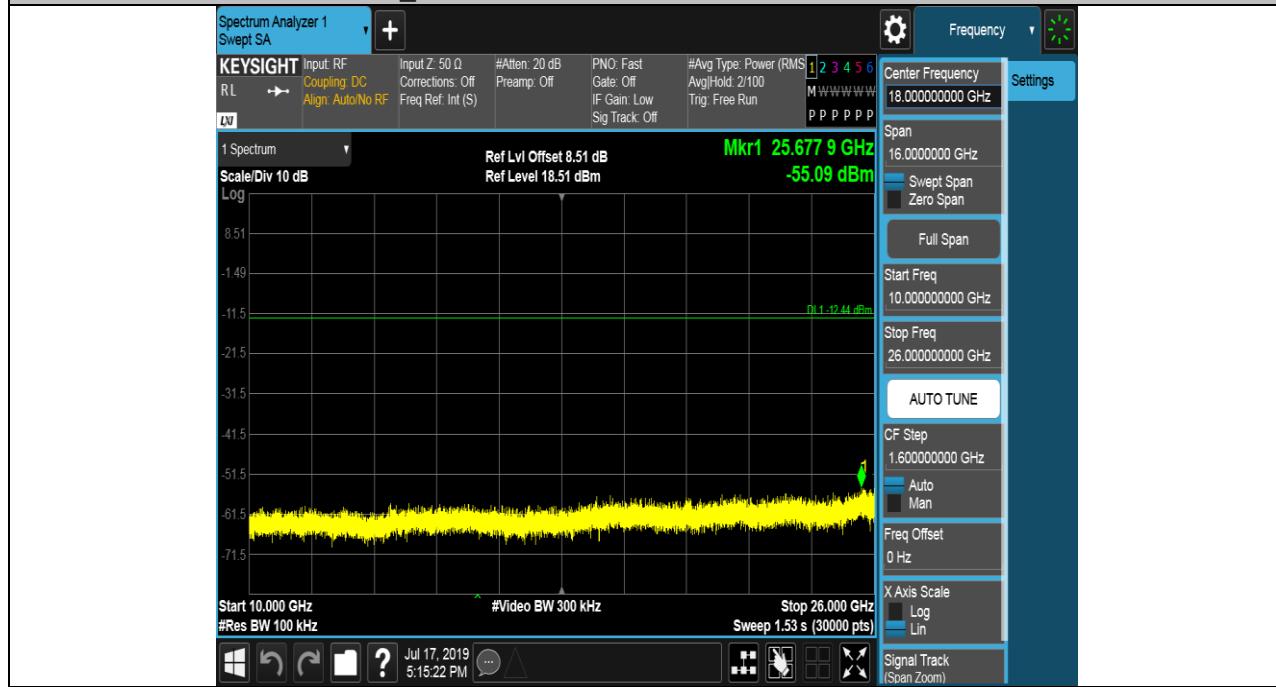


Puw test Plot

HCH SPURIOUS EMISSION_30MHz~10GHz



HCH SPURIOUS EMISSION_10GHz~26GHz



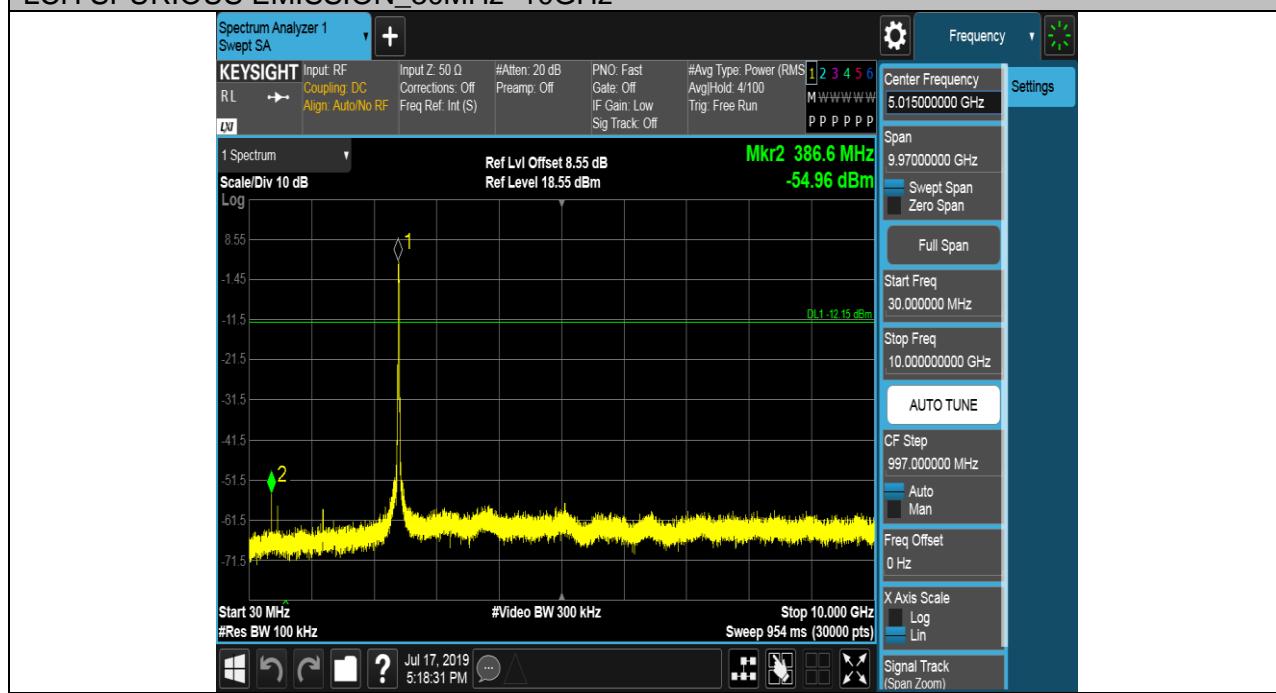
Test Mode	Channel	Verdict
11N HT20	LCH	PASS

Pref test Plot

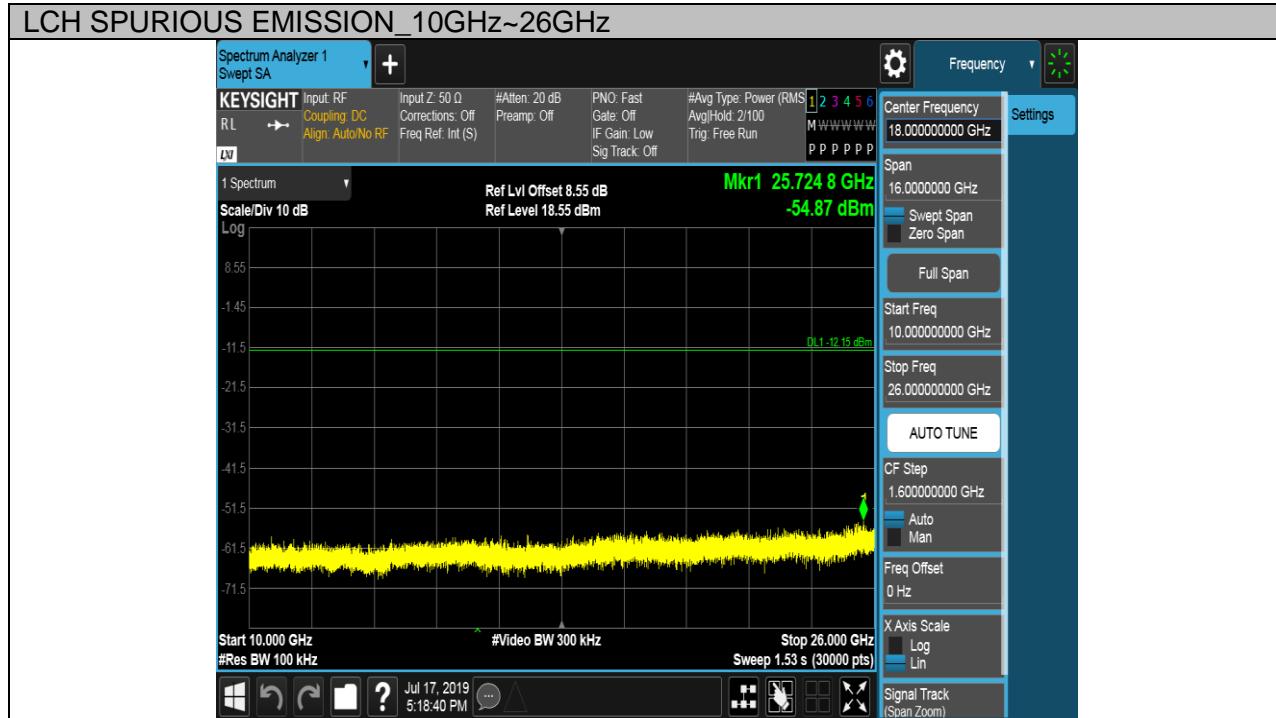


Puw test Plot

LCH SPURIOUS EMISSION_30MHz~10GHz



LCH SPURIOUS EMISSION_10GHz~26GHz



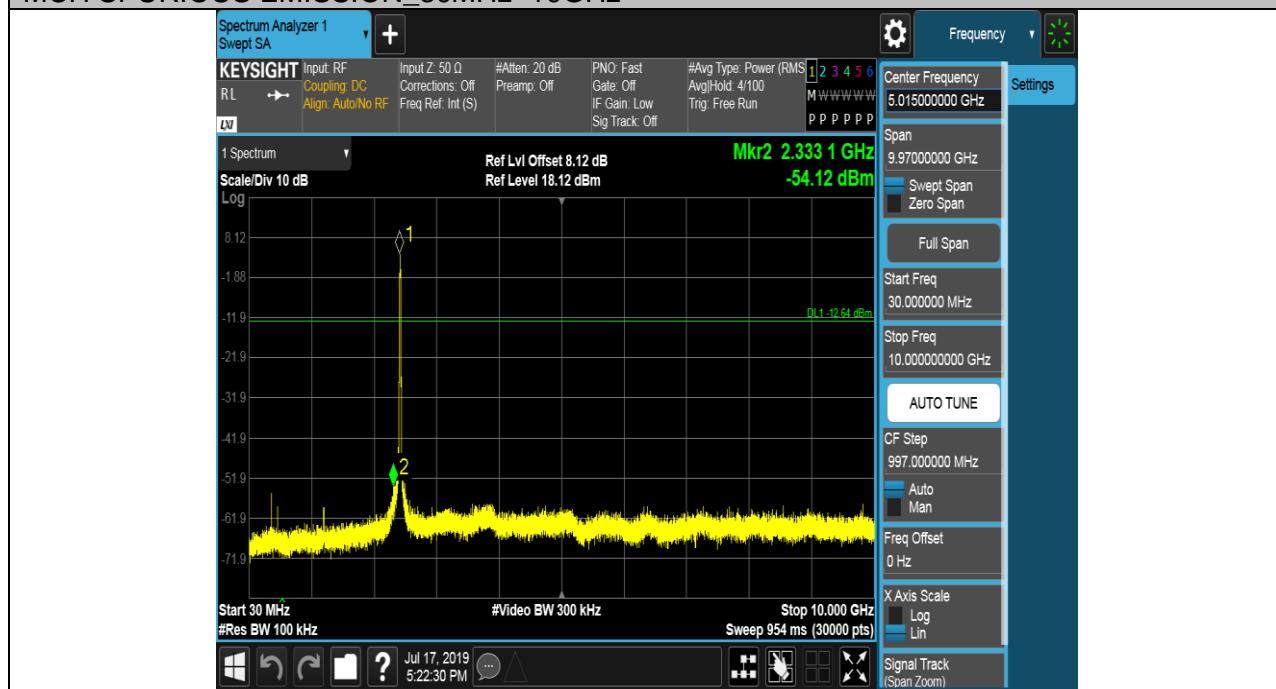
Test Mode	Channel	Verdict
11N HT20	MCH	PASS

Pref test Plot



Puw test Plot

MCH SPURIOUS EMISSION_30MHz~10GHz



MCH SPURIOUS EMISSION_10GHz~26GHz

