



FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

For

CONSUMER CAMERA

MODEL NUMBER:

DH-IPC-C12P, IPC-C12P, IPC-C22P, IPC-C12N, IPC-C22N, DH-IPC-C12P,
DH-IPC-C22P, DH-IPC-C12N, DH-IPC-C22N, TC7, TC7C, IPC-C12, IPC-C22,
DH-IPC-C12, DH-IPC-C22

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Prepared for

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Revision History

| Rev. | Issue Date | Revisions | Revised By |
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| -- | 12/15/2017 | Initial Issue | |

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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.

Factory Information

Company Name: ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD

Address: No.1199, Bin'an road, Binjiang District, Hangzhou, P.R.China.

Company Name:

ZHEJIANG DAHUA ZHILIAN CO.,LTD.

Address:

No.28, Dongqiao Road, Dongzhou Street, Fuyang District, Hangzhou,P.R.China.

EUT Description

Product Name CONSUMER CAMERA

Model Name DH-IPC-C12P

Additional No. IPC-C12P, IPC-C22P, IPC-C12N, IPC-C22N, DH-IPC-C12P, DH-IPC-C22P, DH-IPC-C12N, DH-IPC-C22N, TC7, TC7C, IPC-C12, IPC-C22, DH-IPC-C12, DH-IPC-C22

Sample Number 1142351-001

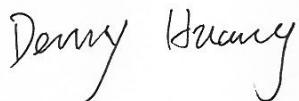
Data of Receipt Sample Sep 8, 2017

Date Tested Sep 8, 2017 ~ Dec. 14, 2017

| 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 |

Tested By:



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Check By:



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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC KDB 558074 D01 DTS Meas Guidance v04, 414788 D01 Radiated Test Site v01, ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

| | |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Location | UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. |
| Address | Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China |
| Accreditation Certificate | <p>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. The Certificate Registration Number is 4102.01.</p> <p>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The Designation Number is CN1187.</p> <p>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been registered and fully described in a report filed with Industry Canada. The Company Number is 21320.</p> |

Note: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worse 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 |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Uncertainty for Conduction emission test | 2.90dB |
| Uncertainty for Radiation Emission test(include Fundamental emission) (9KHz-30MHz) | 2.00dB |
| Uncertainty for Radiation Emission test(include Fundamental emission) (30MHz-1GHz) | 4.52dB |
| Uncertainty for Radiation Emission test (1GHz to 26GHz)(include Fundamental emission) | 5.04dB(1-6GHz) 5.30dB (6GHz-18Gz) 5.23dB (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

| | | | |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|--|
| Product Name: | CONSUMER CAMERA | | |
| Model No.: | DH-IPC-C12P | | |
| 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) | | |
| Channel Number: | IEEE 802.11b/g, IEEE 802.11n(HT20): 11 Channels IEEE 802.11n(HT40): 7 Channels | | |
| Channels Step: | Channels with 5MHz step | | |
| Sample Type: | Fixed production | | |
| Test power grade: | 44 (manufacturer declare) | | |
| Test software of EUT: | Secure CRT (manufacturer declare) | | |
| Antenna Type: | Internal Antenna | | |
| Antenna Gain: | 3dBi | | |
| Power Supply | Adapter 1 | Model:NBS05B050100VUU INPUT:100-240V~, 50/60Hz, 0.2A OUTPUT:5.0V 1.0A | |
| | Adapter 2 | Model:ED1-050100UA INPUT:100-240V~50/60Hz, 0.2A OUTPUT:5.0V 1.0A | |

Remark:

Model No.:

| Number: | Name: | Number: | Name: | Number: | Name: |
|---------|-------------|---------|-------------|---------|-------------|
| 1 | DH-IPC-C12P | 2 | IPC-C12P | 3 | IPC-C22P |
| 4 | IPC-C12N | 5 | IPC-C22N | 6 | DH-IPC-C12P |
| 7 | DH-IPC-C22P | 8 | DH-IPC-C12N | 9 | DH-IPC-C22N |
| 10 | TC7 | 11 | TC7C | 12 | IPC-C12 |
| 13 | IPC-C22 | 14 | DH-IPC-C12 | 15 | DH-IPC-C22 |

Only the main model **DH-IPC-C12P** was tested and only the data of this model is shown in this test report. Since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being of **only the sales area**.

5.2. MAXIMUM OUTPUT POWER

| Frequency Range (MHz) | Number of Transmit Chains (NTX) | IEE Std. 802.11 | Frequency (MHz) | Channel Number | Max PK Conducted Power (dBm) |
|-----------------------|---------------------------------|------------------|-----------------|----------------|------------------------------|
| 2400-2483.5 | 1 | IEEE 802.11b | 2412-2462 | 1-11[11] | 18.69 |
| 2400-2483.5 | 1 | IEEE 802.11g | 2412-2462 | 1-11[11] | 17.15 |
| 2400-2483.5 | 1 | IEEE 802.11nHT20 | 2412-2462 | 1-11[11] | 17.33 |
| 2400-2483.5 | 1 | IEEE 802.11nHT40 | 2422-2452 | 3-7 | 17.50 |

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 | 5 | 2432 | 9 | 2452 | | |
| 2 | 2417 | 6 | 2437 | 10 | 2457 | | |
| 3 | 2422 | 7 | 2442 | 11 | 2462 | | |
| 4 | 2427 | 8 | 2447 | | | | |

| 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 |

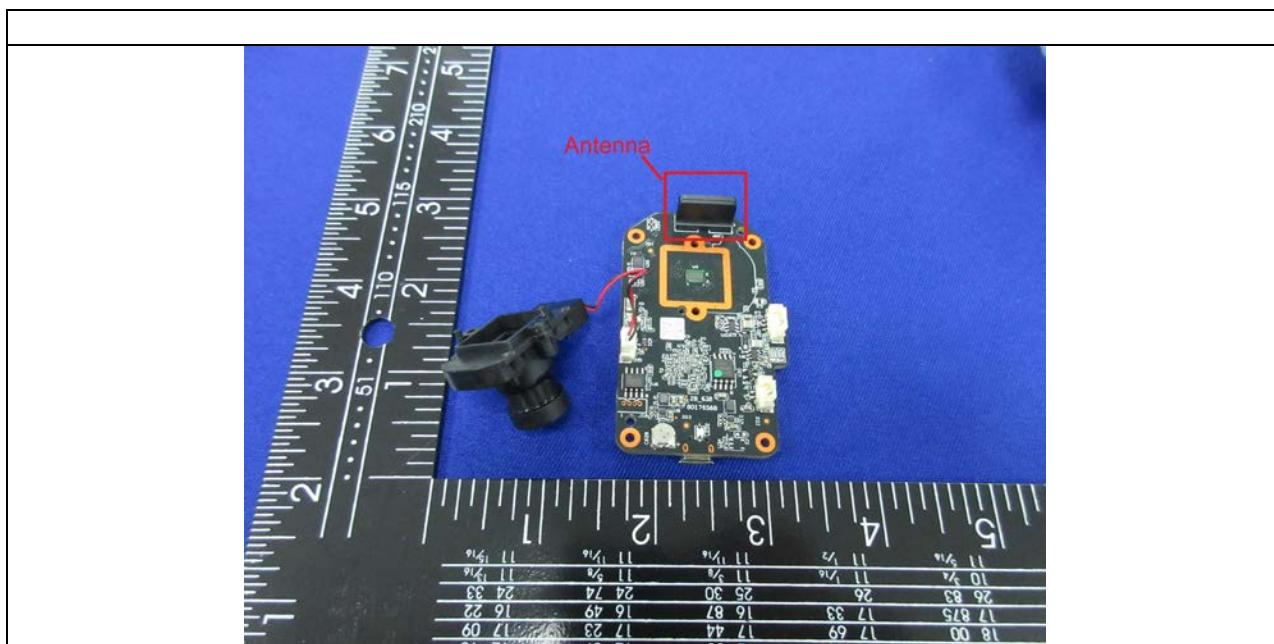
5.5. THE WORSE CASE POWER SETTING PARAMETER

| Test Software Version | SecureCRT8.1 | | |
|-----------------------|--------------|------------------|--------------------------|
| Test Mode | Test Channel | Setting TX Power | Setting data rate (Mbps) |
| IEEE 802.11b | LCH | 44 | CCK_1Mbps |
| | MCH | 44 | CCK_1Mbps |
| | HCH | 44 | CCK_1Mbps |
| IEEE 802.11g | LCH | 44 | NO HT_6Mbps |
| | MCH | 44 | NO HT_6Mbps |
| | HCH | 44 | NO HT_6Mbps |
| IEEE 802.11n HT20 | LCH | 44 | HT20_MCS_0_20 |
| | MCH | 44 | HT20_MCS_0_20 |
| | HCH | 44 | HT20_MCS_0_20 |
| IEEE 802.11n HT40 | LCH | 44 | HT40+MCS_0_40 |
| | MCH | 44 | HT40+MCS_0_40 |
| | HCH | 44 | HT40+MCS_0_40 |

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

| Ant. | Frequency (MHz) | Antenna Type | Antenna Gain (dBi) |
|------|-----------------|------------------|--------------------|
| 1 | 2400-2483.5 | External Antenna | 3.0 |

| Test Mode | Transmit and Receive Mode | Description |
|-----------|----------------------------------------------|----------------------------------------------------------|
| WIFI | <input checked="" type="checkbox"/> 1TX, 1RX | Antenna 1 can be used as transmitting/receiving antenna. |



5.7. TEST ENVIRONMENT

| Environment Parameter | Selected Values During Tests | |
|-----------------------|------------------------------|-----------|
| Relative Humidity | 55 ~ 65% | |
| Atmospheric Pressure: | 1025Pa | |
| Temperature | TN | 23 ~ 28°C |
| Voltage : | VL | N/A |
| | VN | DC 5.0V |
| | VH | N/A |

Note: VL= Lower Extreme Test Voltage

VN= Nominal Voltage

VH= Upper Extreme Test Voltage

TN= Normal Temperature

5.8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

| Item | Equipment | Brand Name | Model Name | FCC ID |
|------|-----------|------------|------------|--------|
| 1 | Laptop | ThinkPad | T410 | N/A |

I/O PORT

| Cable No | Port | Connector Type | Cable Type | Cable Length(m) | Remarks |
|----------|------|----------------|------------|-----------------|---------|
| 1 | LAN | LAN | N/A | N/A | N/A |

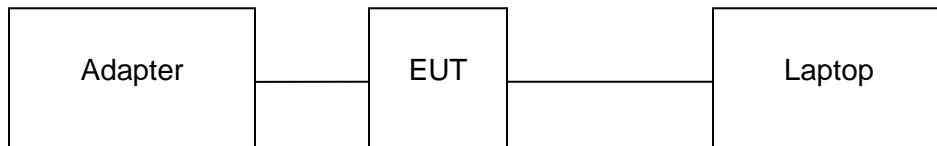
ACCESSORY

| Item | Accessory | Brand Name | Model Name | Description |
|------|-----------|------------|------------|-------------|
| 1 | N/A | N/A | N/A | N/A |

TEST SETUP

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

SETUP DIAGRAM FOR TESTS



5.9. MEASURING INSTRUMENT AND SOFTWARE USED

| Conducted Emissions(Instrument) | | | | | | |
|-------------------------------------|-----------------------------------------|--------------|-------------------------------------|---------------|---------------|---------------|
| Used | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
| <input checked="" type="checkbox"/> | EMI Test Receiver | R&S | ESR3 | 101961 | Dec.20, 2016 | Dec.19, 2017 |
| <input checked="" type="checkbox"/> | Two-Line V-Network | R&S | ENV216 | 101983 | Dec.20, 2016 | Dec.19, 2017 |
| <input checked="" type="checkbox"/> | Artificial Mains Networks | Schwarzbeck | NSLK 8126 | 8126465 | Feb.10, 2017 | Feb.10, 2018 |
| Software | | | | | | |
| Used | Description | | Manufacturer | Name | | Version |
| <input checked="" type="checkbox"/> | Test Software for Conducted disturbance | | UL | Antenna port | | Ver. 7.2 |
| Radiated Emissions(Instrument) | | | | | | |
| Used | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
| <input checked="" type="checkbox"/> | MXE EMI Receiver | KESIGHT | N9038A | MY56400 036 | Feb. 24, 2017 | Feb. 24, 2018 |
| <input checked="" type="checkbox"/> | Hybrid Log Periodic Antenna | TDK | HLP-3003C | 130960 | Jan.09, 2016 | Jan.09, 2019 |
| <input checked="" type="checkbox"/> | Preamplifier | HP | 8447D | 2944A090 99 | Feb. 13, 2017 | Feb. 13, 2018 |
| <input checked="" type="checkbox"/> | EMI Measurement Receiver | R&S | ESR26 | 101377 | Dec. 20, 2016 | Dec. 20, 2017 |
| <input checked="" type="checkbox"/> | Horn Antenna | TDK | HRN-0118 | 130939 | Jan. 09, 2016 | Jan. 09, 2019 |
| <input checked="" type="checkbox"/> | High Gain Horn Antenna | Schwarzbeck | BBHA-9170 | 691 | Jan.06, 2016 | Jan.06, 2019 |
| <input checked="" type="checkbox"/> | Preamplifier | TDK | PA-02-0118 | TRS-305-00066 | Jan. 14, 2017 | Jan. 14, 2018 |
| <input checked="" type="checkbox"/> | Preamplifier | TDK | PA-02-2 | TRS-307-00003 | Dec. 20, 2016 | Dec. 20, 2017 |
| <input checked="" type="checkbox"/> | Loop antenna | Schwarzbeck | 1519B | 00008 | Mar. 26, 2016 | Mar. 26, 2019 |
| <input checked="" type="checkbox"/> | Band Reject Filter | Wainwright | WRCJV8-2350-2400-2483.5-2533.5-40SS | 4 | Dec. 20, 2016 | Dec. 20, 2017 |
| Software | | | | | | |
| Used | Description | | Manufacturer | Name | | Version |
| <input checked="" type="checkbox"/> | Test Software for Radiated disturbance | | Farad | EZ-EMC | | Ver. UL-3A1 |
| Other instruments | | | | | | |
| Used | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
| <input checked="" type="checkbox"/> | Spectrum Analyzer | Keysight | N9030A | MY55410 512 | Dec. 20, 2016 | Dec. 20, 2017 |
| <input checked="" type="checkbox"/> | Power Meter | Keysight | N9031A | MY55416 024 | Feb. 13, 2017 | Feb. 13, 2018 |
| <input checked="" type="checkbox"/> | Power Sensor | Keysight | N9323A | MY55440 013 | Feb. 13, 2017 | Feb. 13, 2018 |

6. ANTENNA PORT TEST RESULTS

6.1. ON TIME AND DUTY CYCLE

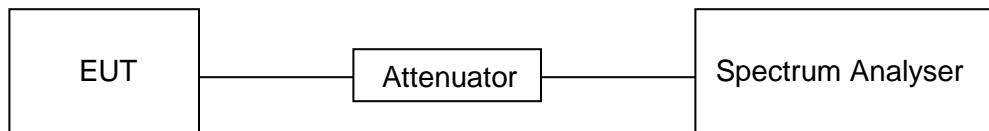
LIMITS

None; for reporting purposes only

PROCEDURE

FCC KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



RESULTS

| Mode | On Time (msec) | Period (msec) | Duty Cycle x (Linear) | Duty Cycle (%) | Duty Cycle Correction Factor (db) | 1/T Minimum VBW (KHz) |
|-----------|----------------|---------------|-----------------------|----------------|-----------------------------------|-----------------------|
| 11B | 100 | 100 | 1 | 100 | 0 | 0.01 |
| 11G | 100 | 100 | 1 | 100 | 0 | 0.01 |
| 11NSISO20 | 100 | 100 | 1 | 100 | 0 | 0.01 |
| 11NSISO40 | 100 | 100 | 1 | 100 | 0 | 0.01 |

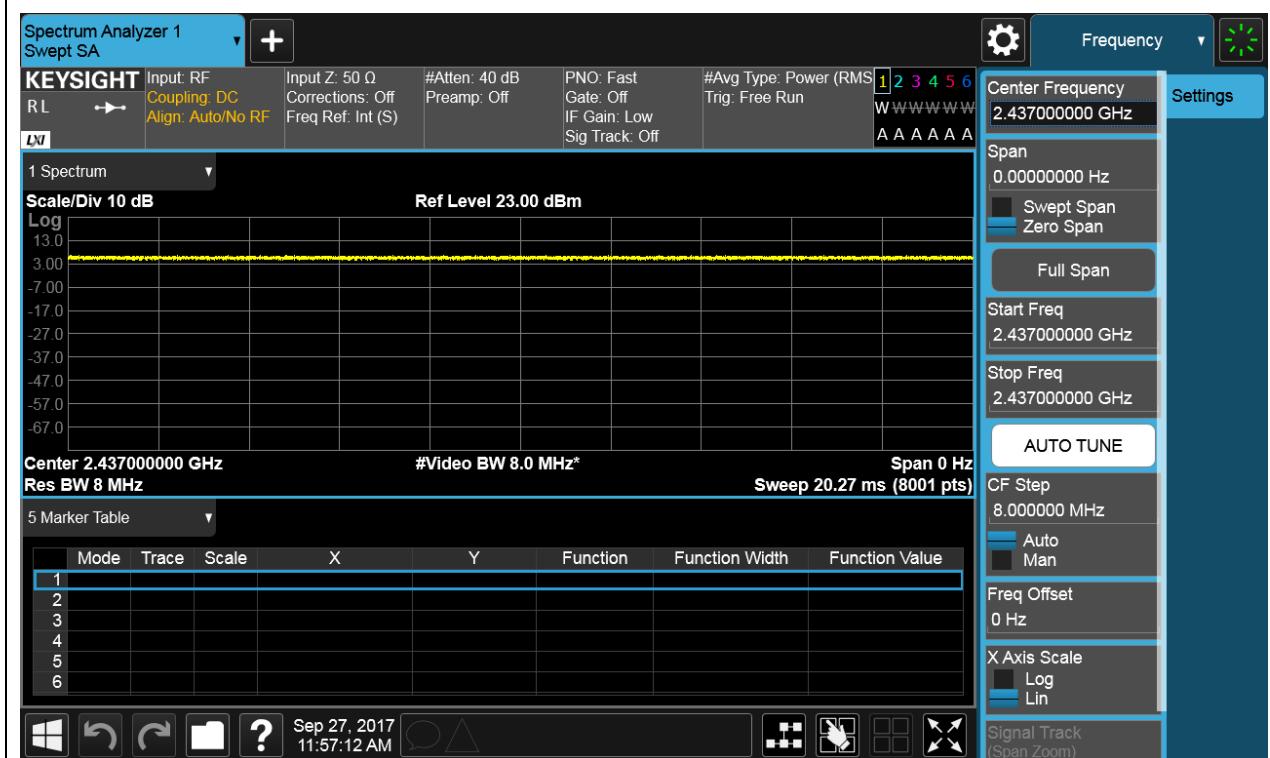
Note: Duty Cycle Correction Factor=10log(1/x).

Where: x is Duty Cycle(Linear)

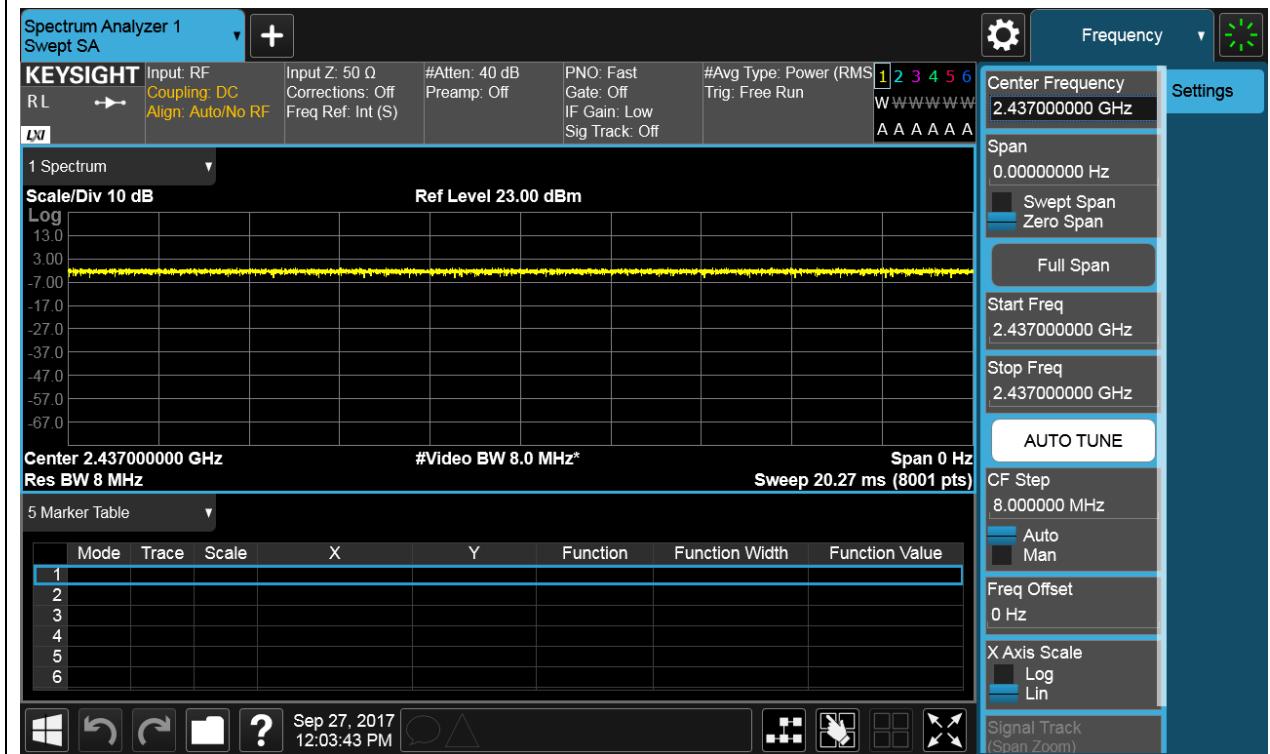
Where: T is On Time (transmit duration)

ON TIME AND DUTY CYCLE MID CH

11B



11G





6.2. 6 dB BANDWIDTH

LIMITS

| FCC Part15 (15.247) Subpart C | | | |
|-------------------------------|---------------|-----------|-----------------------|
| Section | Test Item | Limit | Frequency Range (MHz) |
| FCC 15.247(a)(2) | 6dB Bandwidth | >= 500KHz | 2400-2483.5 |

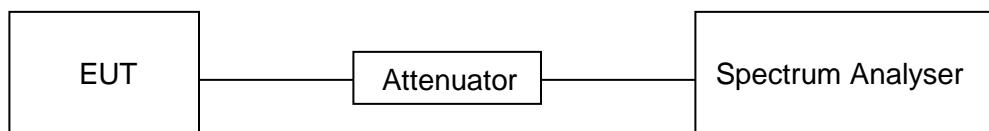
TEST PROCEDURE

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 6 dB Bandwidth :100K For 99% Bandwidth :1% to 5% of the occupied bandwidth |
| VBW | For 6dB Bandwidth : $\geq 3 \times$ RBW For 99% Bandwidth : approximately 3xRBW |
| 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.

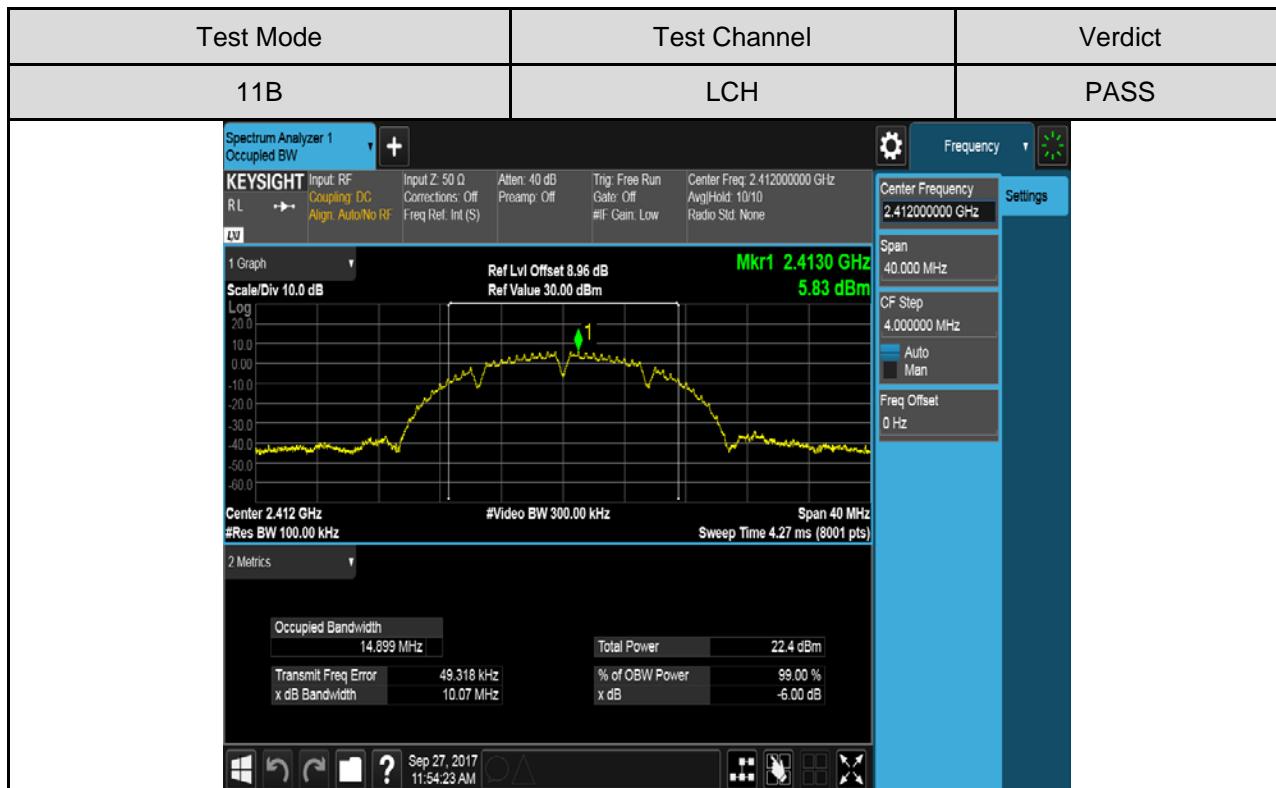
TEST SETUP

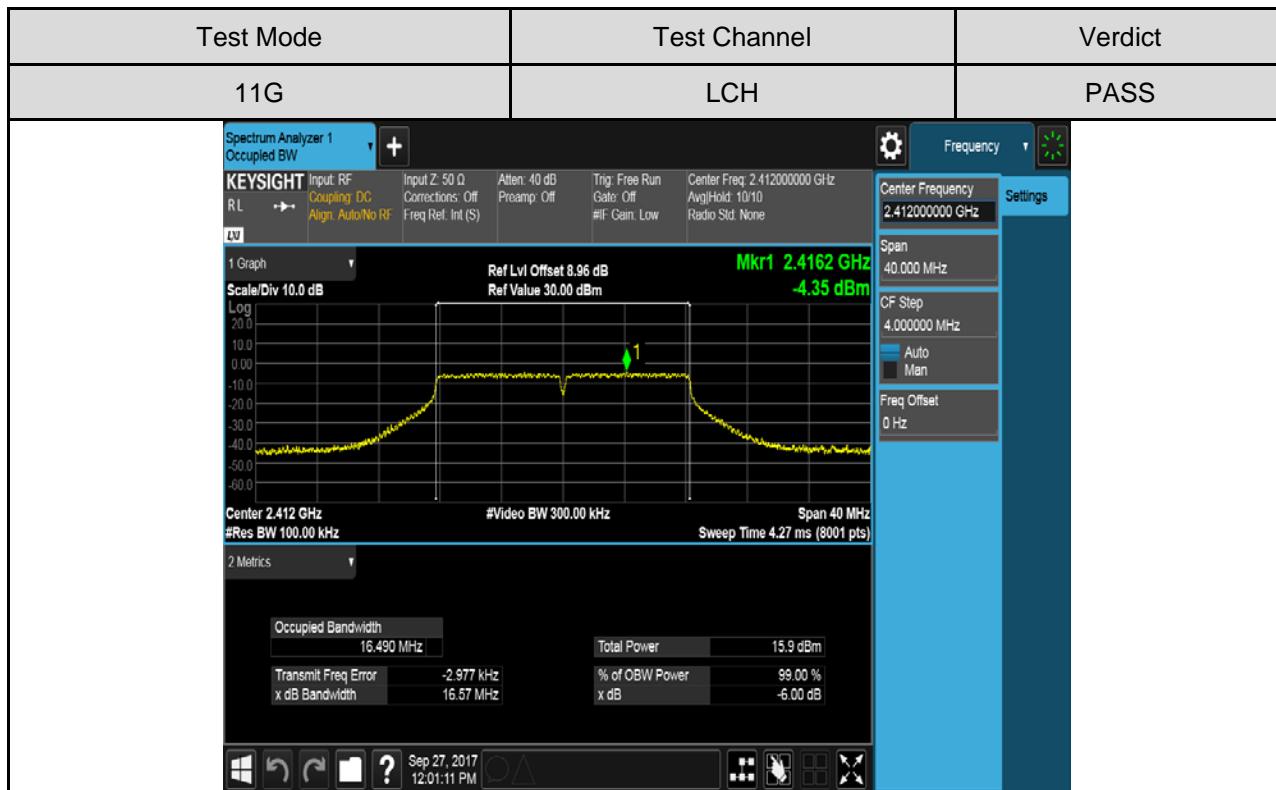
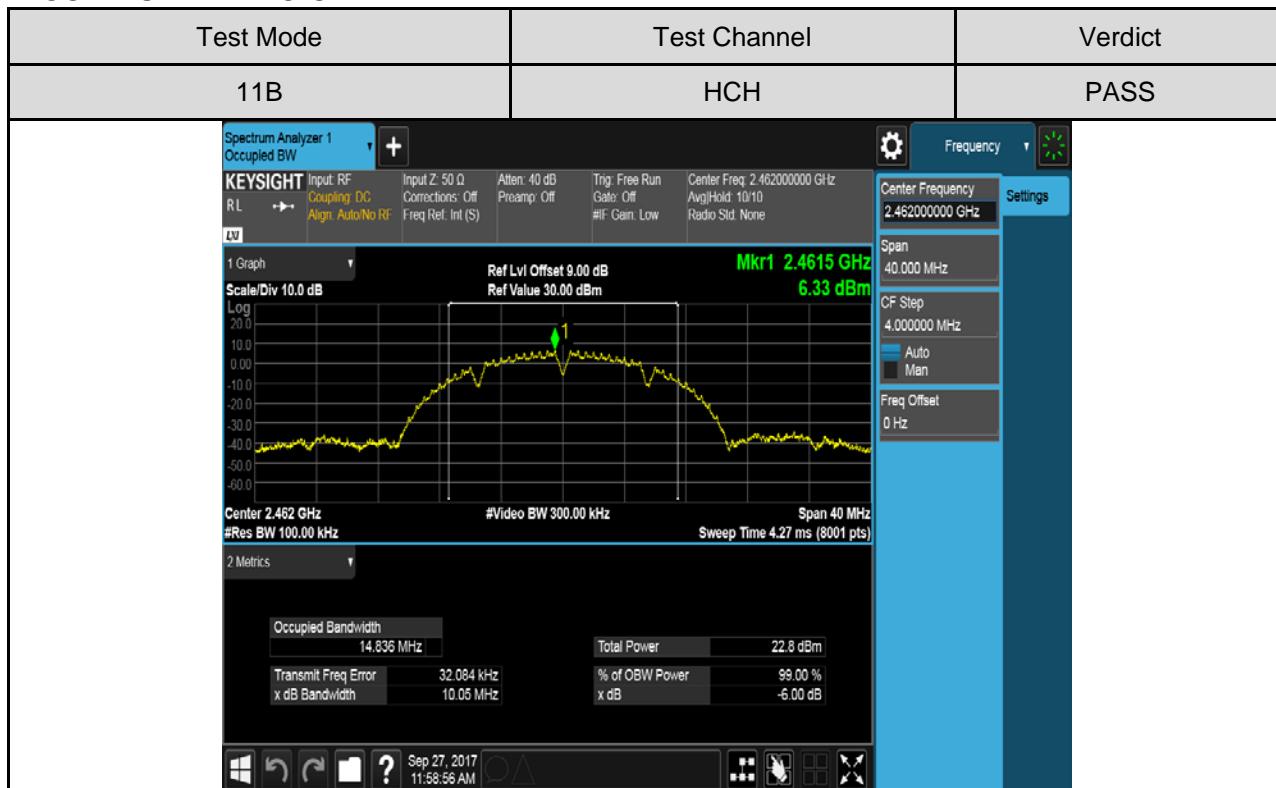


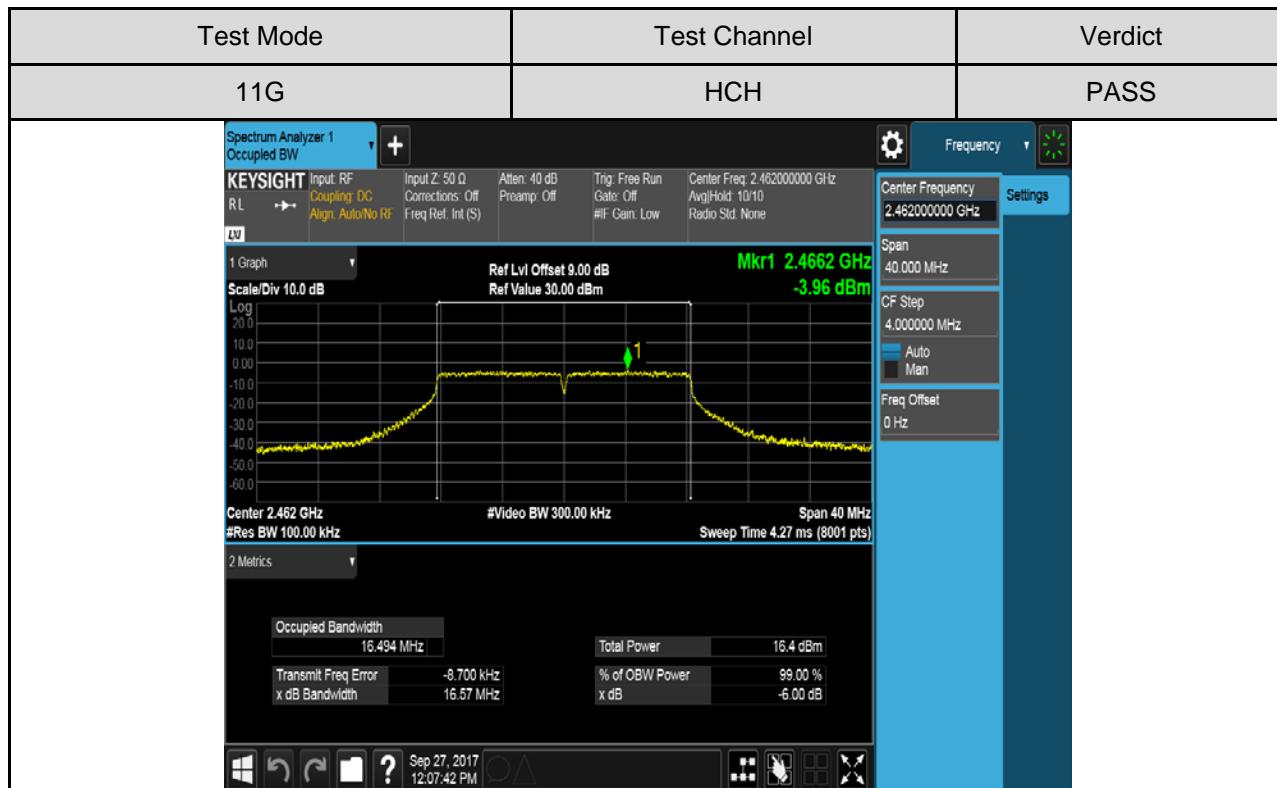
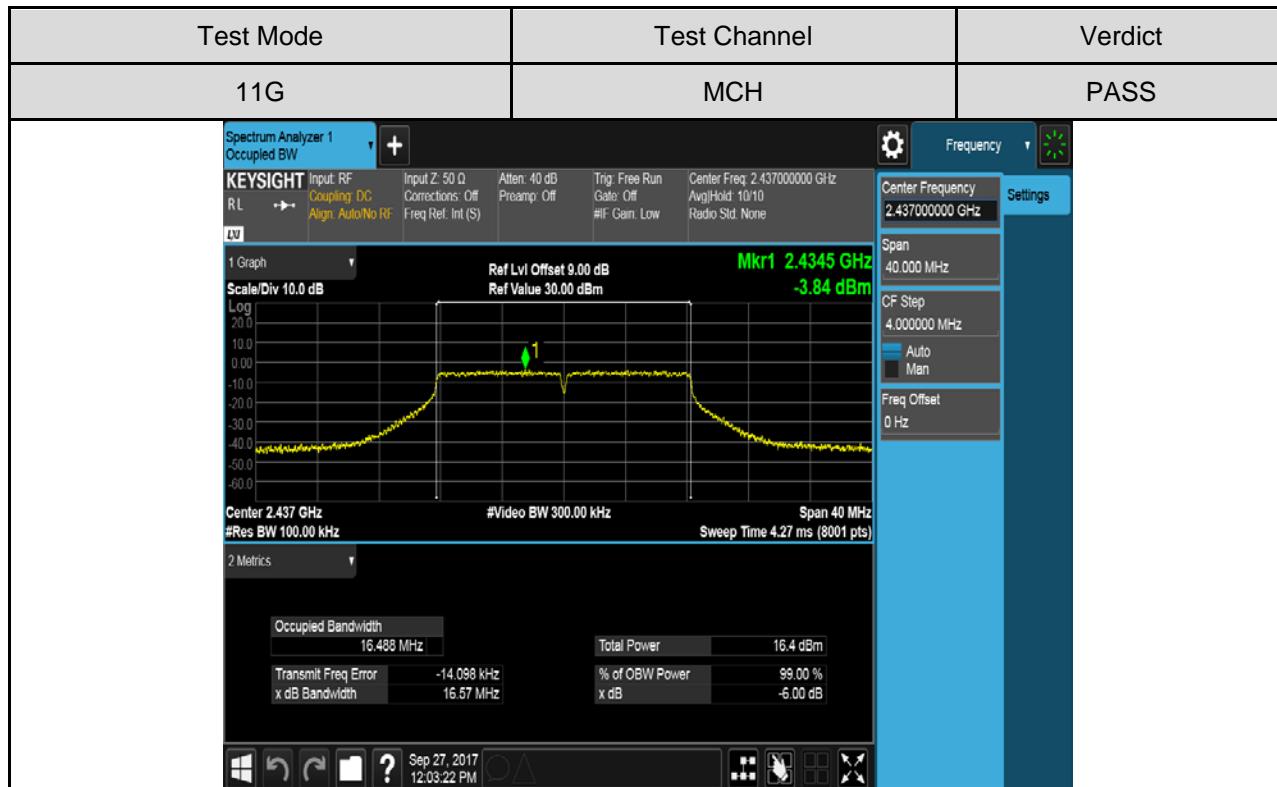
RESULTS

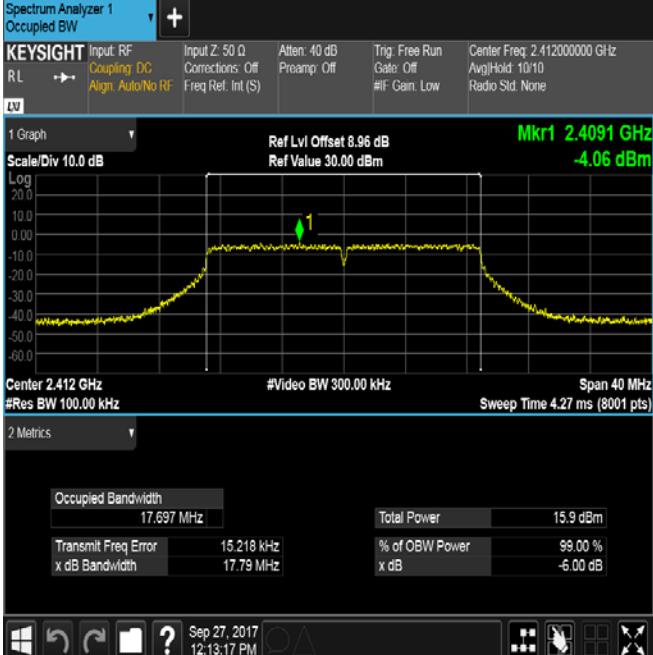
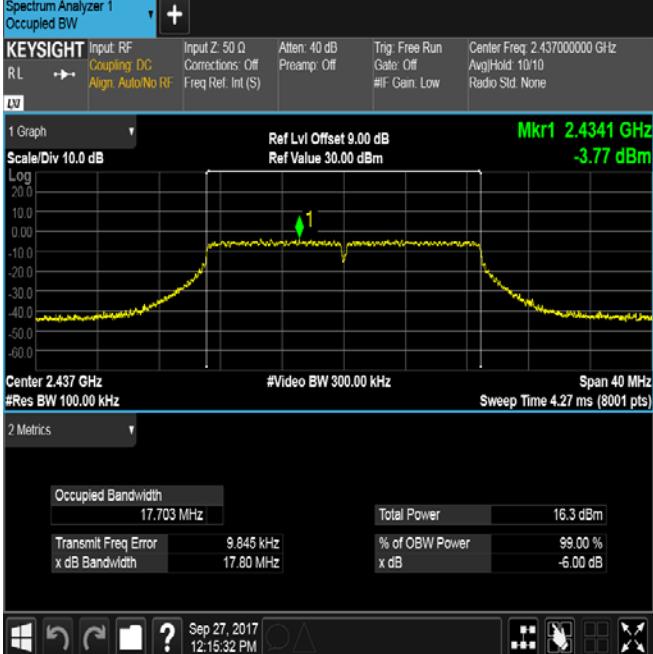
| Test Mode | Test Channel | 6dB bandwidth (MHz) | Result |
|------------------|---------------------|----------------------------|---------------|
| 11B | LCH | 10.07 | Pass |
| | MCH | 10.05 | Pass |
| | HCH | 10.05 | Pass |
| 11G | LCH | 16.57 | Pass |
| | MCH | 16.57 | Pass |
| | HCH | 16.57 | Pass |
| 11N20SISO | LCH | 17.79 | Pass |
| | MCH | 17.80 | Pass |
| | HCH | 17.81 | Pass |
| 11N40SISO | LCH | 36.34 | Pass |
| | MCH | 36.36 | Pass |
| | HCH | 36.36 | Pass |

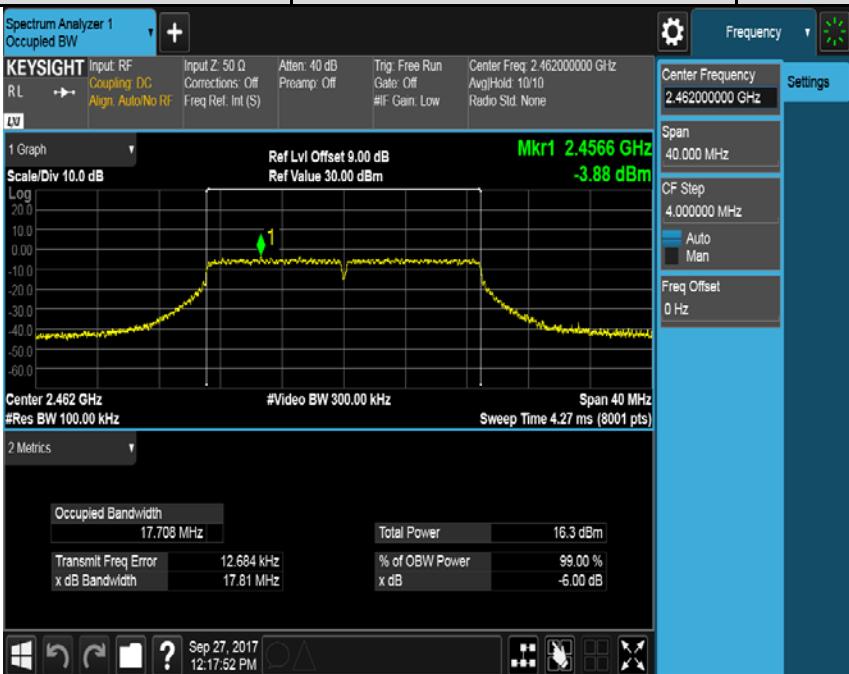
Test Graphs



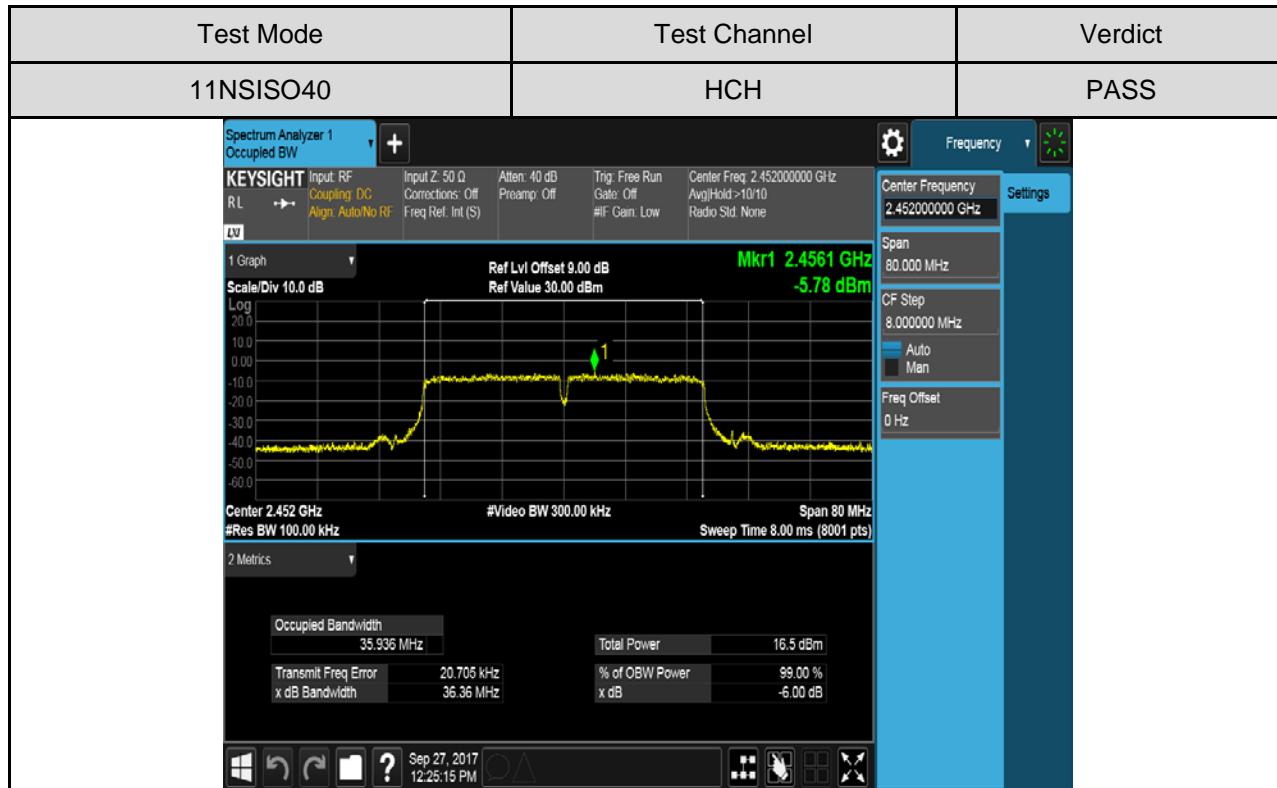
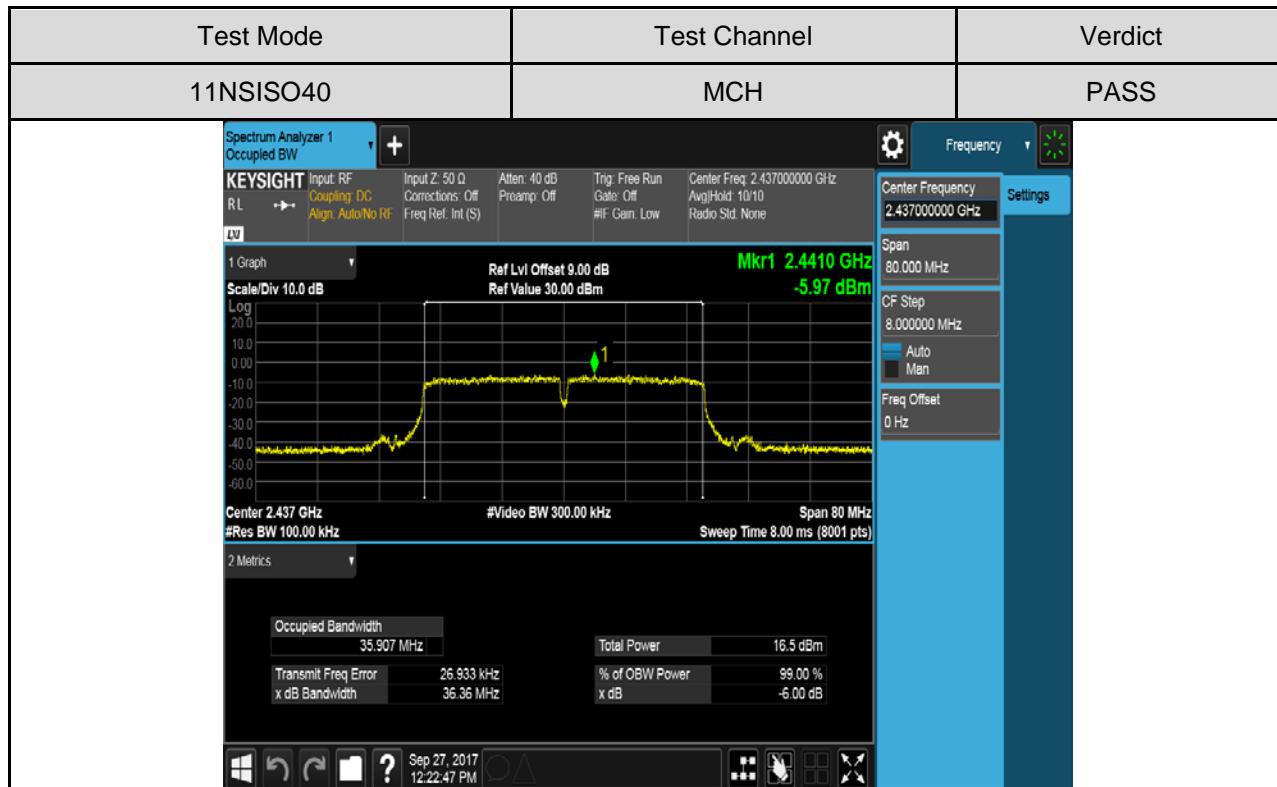




| Test Mode | Test Channel | Verdict |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 11NSISO20 | LCH | PASS |
| |  <p>1 Graph Ref Lvl Offset 8.96 dB Ref Value 30.00 dBm</p> <p>KEYSIGHT Input: RF Coupling: DC Input Z: 50 Ω Corrections: Off Alten: 40 dB Preamp: Off Trig: Free Run Freq Ref. Int (S) Gate: Off #IF Gain: Low Center Freq: 2.41200000 GHz Avg/Hold: 10/10 Radio Std: None</p> <p>Scale/Div 10.0 dB</p> <p>Log</p> <p>10.0</p> <p>10.00</p> <p>0.00</p> <p>-10.00</p> <p>-20.00</p> <p>-30.00</p> <p>-40.00</p> <p>-50.00</p> <p>-60.00</p> <p>Center 2.412 GHz #Video BW 300.00 kHz Span 40 MHz #Res BW 100.00 kHz Sweep Time 4.27 ms (8001 pts)</p> <p>2 Metrics</p> <p>Occupied Bandwidth 17.697 MHz Total Power 15.9 dBm</p> <p>Transmit Freq Error 15.218 kHz % of OBW Power 99.00 %</p> <p>x dB Bandwidth 17.79 MHz x dB -6.00 dB</p> <p>Sep 27, 2017 12:13:17 PM</p> | |
| 11NSISO20 | MCH | PASS |
| |  <p>1 Graph Ref Lvl Offset 9.00 dB Ref Value 30.00 dBm</p> <p>KEYSIGHT Input: RF Coupling: DC Input Z: 50 Ω Corrections: Off Alten: 40 dB Preamp: Off Trig: Free Run Freq Ref. Int (S) Gate: Off #IF Gain: Low Center Freq: 2.43700000 GHz Avg/Hold: 10/10 Radio Std: None</p> <p>Scale/Div 10.0 dB</p> <p>Log</p> <p>10.0</p> <p>10.00</p> <p>0.00</p> <p>-10.00</p> <p>-20.00</p> <p>-30.00</p> <p>-40.00</p> <p>-50.00</p> <p>-60.00</p> <p>Center 2.437 GHz #Video BW 300.00 kHz Span 40 MHz #Res BW 100.00 kHz Sweep Time 4.27 ms (8001 pts)</p> <p>2 Metrics</p> <p>Occupied Bandwidth 17.703 MHz Total Power 16.3 dBm</p> <p>Transmit Freq Error 9.845 kHz % of OBW Power 99.00 %</p> <p>x dB Bandwidth 17.80 MHz x dB -6.00 dB</p> <p>Sep 27, 2017 12:15:32 PM</p> | |

| Test Mode | Test Channel | Verdict |
|------------------------------------------------------------------------------------|--------------|---------|
| 11NSISO20 | HCH | PASS |
|  | | |

| Test Mode | Test Channel | Verdict |
|--------------------------------------------------------------------------------------|--------------|---------|
| 11NSISO40 | LCH | PASS |
|  | | |



6.3. PEAK CONDUCTED OUTPUT POWER

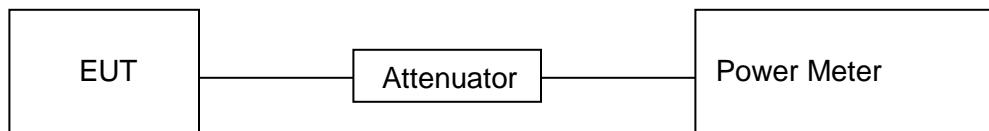
LIMITS

| 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

Refer to FCC KDB 558074

TEST SETUP



RESULTS

| Test Mode | Test Channel | Maximum Peak Conducted Output Power(dBm) | EIRP (dBm) | Result |
|------------------|---------------------|------------------------------------------|------------|---------------|
| 11B | LCH | 18.24 | 21.24 | Pass |
| | MCH | 18.69 | 21.69 | Pass |
| | HCH | 18.62 | 21.62 | Pass |
| 11G | LCH | 16.67 | 19.67 | Pass |
| | MCH | 17.15 | 20.15 | Pass |
| | HCH | 17.07 | 20.07 | Pass |
| 11N20SISO | LCH | 16.9 | 19.9 | Pass |
| | MCH | 17.33 | 20.33 | Pass |
| | HCH | 17.31 | 20.31 | Pass |
| 11N40SISO | LCH | 17.36 | 20.36 | Pass |
| | MCH | 17.46 | 20.46 | Pass |
| | HCH | 17.5 | 20.5 | Pass |

6.4. 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

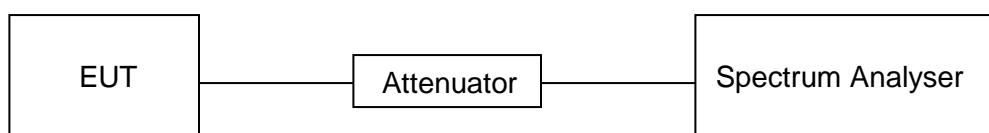
Refer to FCC KDB 558074, connect the UUT to the spectrum analyser and use the following settings:

| | |
|------------------|------------------------------------------------------|
| 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 | $1.5 \times \text{DTS bandwidth}$ |
| 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.

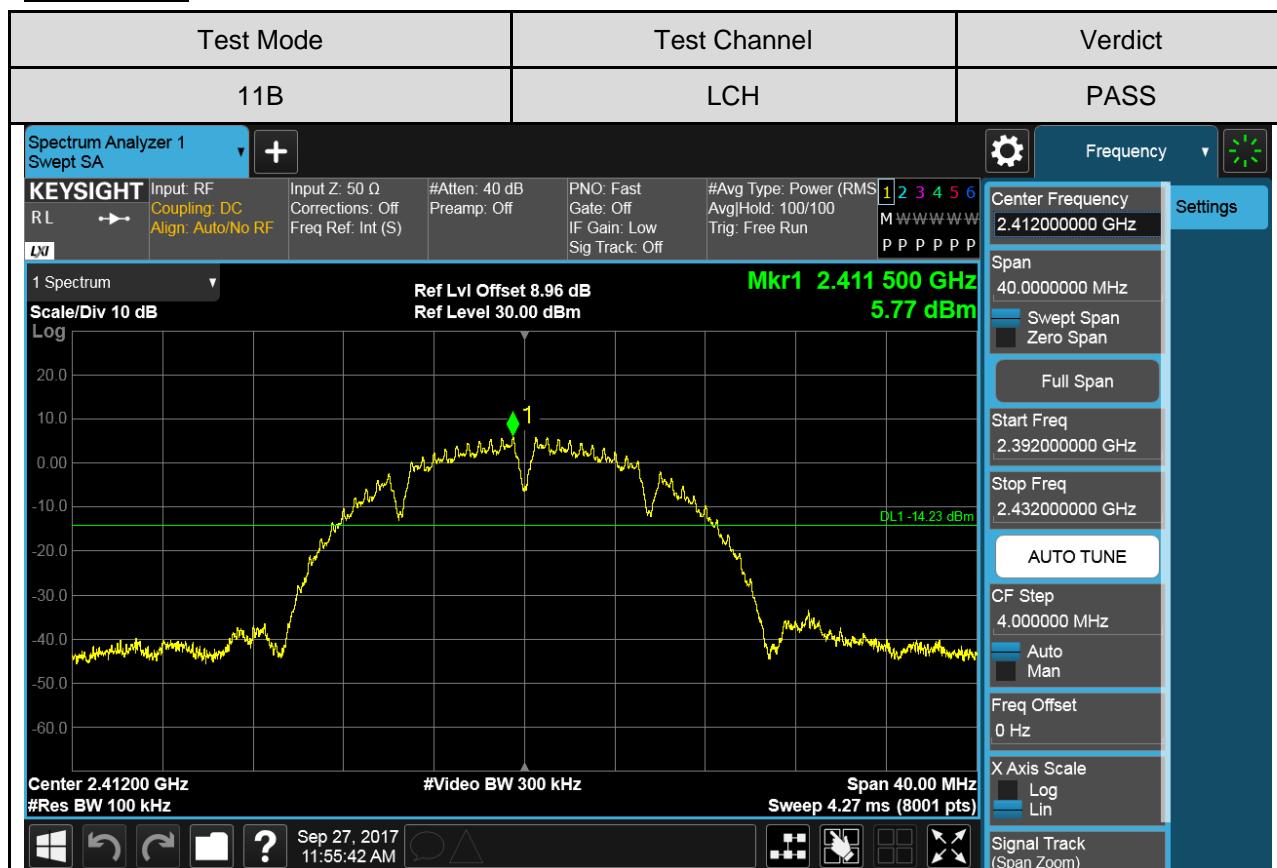
TEST SETUP



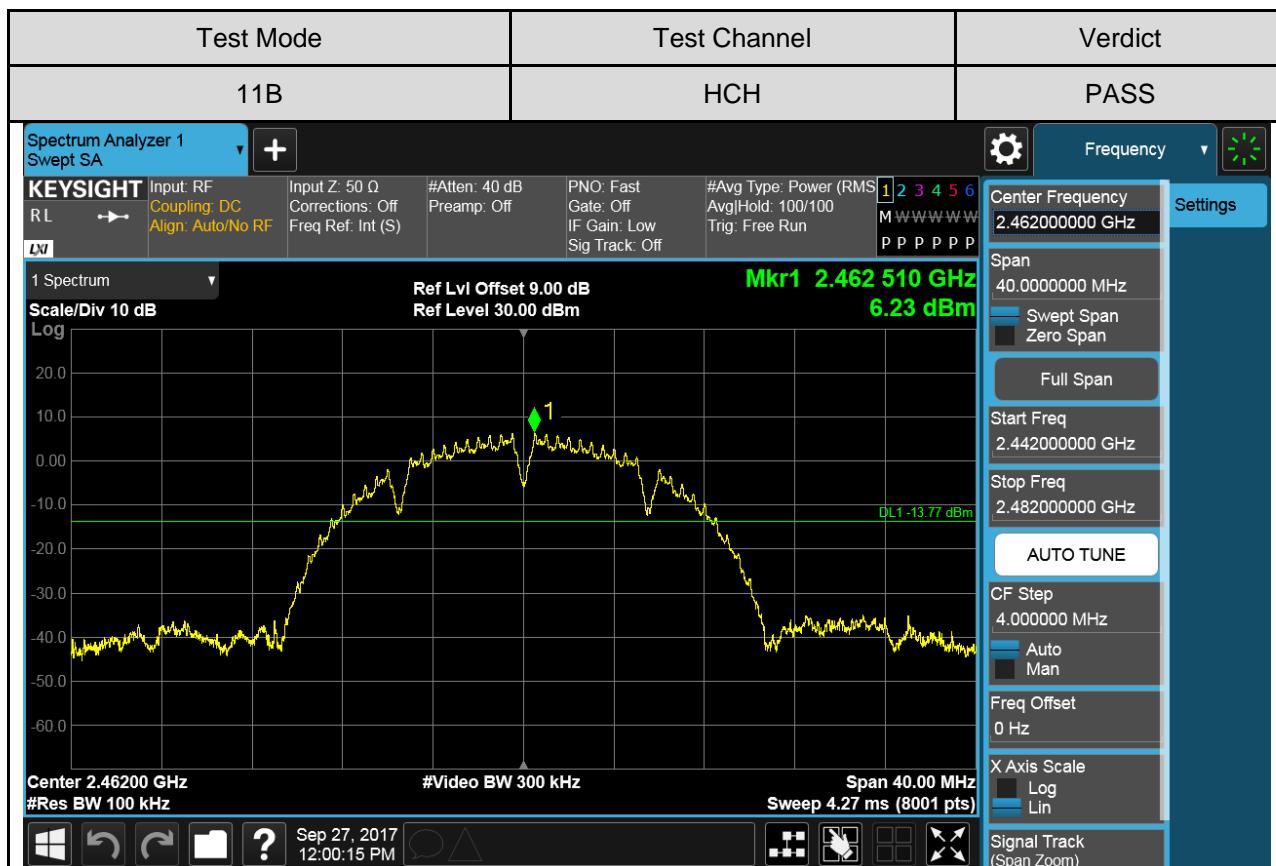
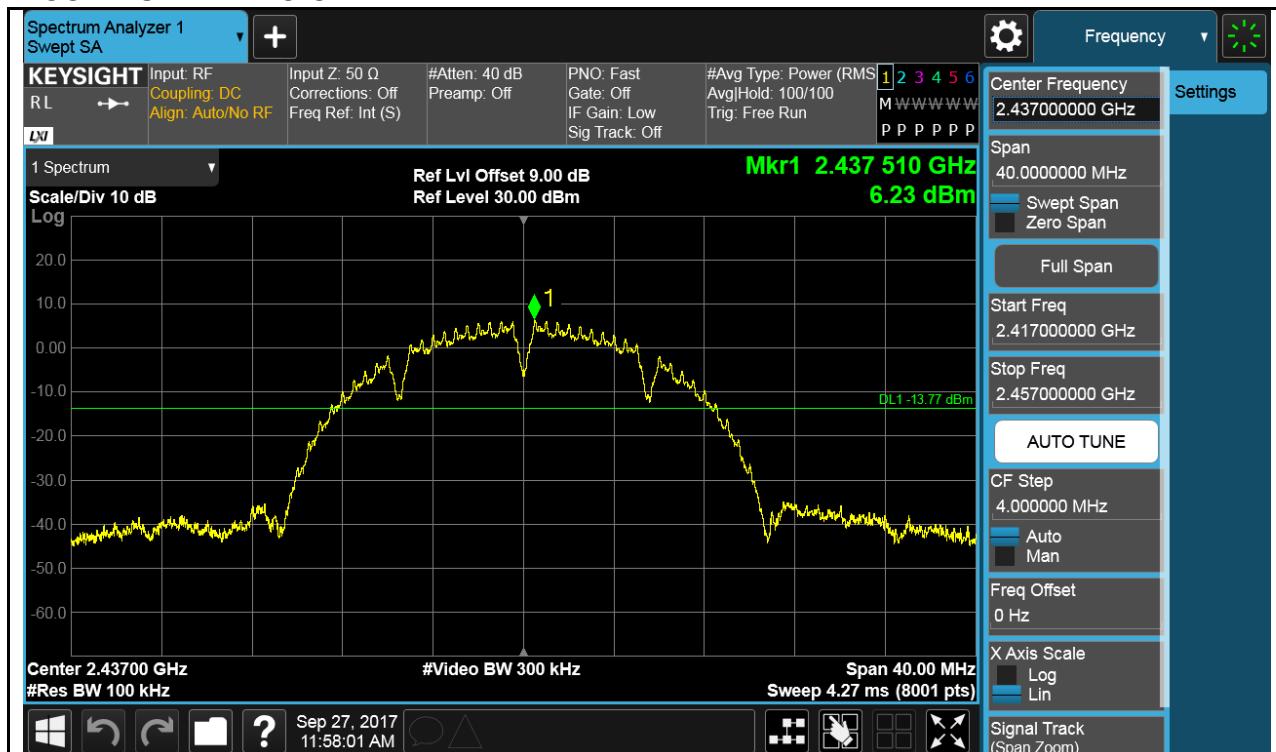
RESULTS

| Test Mode | Test Channel | Maximum Peak power spectral density (dBm) | Result |
|------------------|---------------------|--------------------------------------------------|---------------|
| 11B | LCH | 5.77 | Pass |
| | MCH | 6.23 | Pass |
| | HCH | 6.23 | Pass |
| 11G | LCH | -4.29 | Pass |
| | MCH | -3.86 | Pass |
| | HCH | -3.93 | Pass |
| 11N20SISO | LCH | -4.13 | Pass |
| | MCH | -3.58 | Pass |
| | HCH | -3.54 | Pass |
| 11N40SISO | LCH | -6.02 | Pass |
| | MCH | -5.95 | Pass |
| | HCH | -6.05 | Pass |

Test Graphs:



| Test Mode | Test Channel | Verdict |
|-----------|--------------|---------|
| 11B | MCH | PASS |



| Test Mode | Test Channel | Verdict |
|-----------|--------------|---------|
| 11G | LCH | PASS |

Spectrum Analyzer 1 Swept SA

KEYSIGHT Input: RF Coupling: DC Align: Auto/No RF

Input Z: 50 Ω Corrections: Off Freq Ref: Int (S)

#Atten: 40 dB Preamp: Off PNO: Fast Gate: Off If Gain: Low Trig: Free Run

#Avg Type: Power (RMS) 1 2 3 4 5 6

Avg|Hold: 100/100 M W W W W W P P P P P P

1 Spectrum Ref Lvl Offset 8.96 dB Ref Level 30.00 dBm

Scale/Div 10 dB

Log

Mkr1 2.416 145 GHz -4.29 dBm

Center 2.41200 GHz #Video BW 300 kHz #Res BW 100 kHz

Span 40.00 MHz Sweep 4.27 ms (8001 pts)

DL1 -24.29 dBm

CF Step 4.000000 MHz

Auto Man

Freq Offset 0 Hz

X Axis Scale Log Lin

Signal Track (Span Zoom)

Frequency 2.412000000 GHz

Settings

Span 40.000000 MHz

Swept Span

Zero Span

Full Span

Start Freq 2.392000000 GHz

Stop Freq 2.432000000 GHz

AUTO TUNE

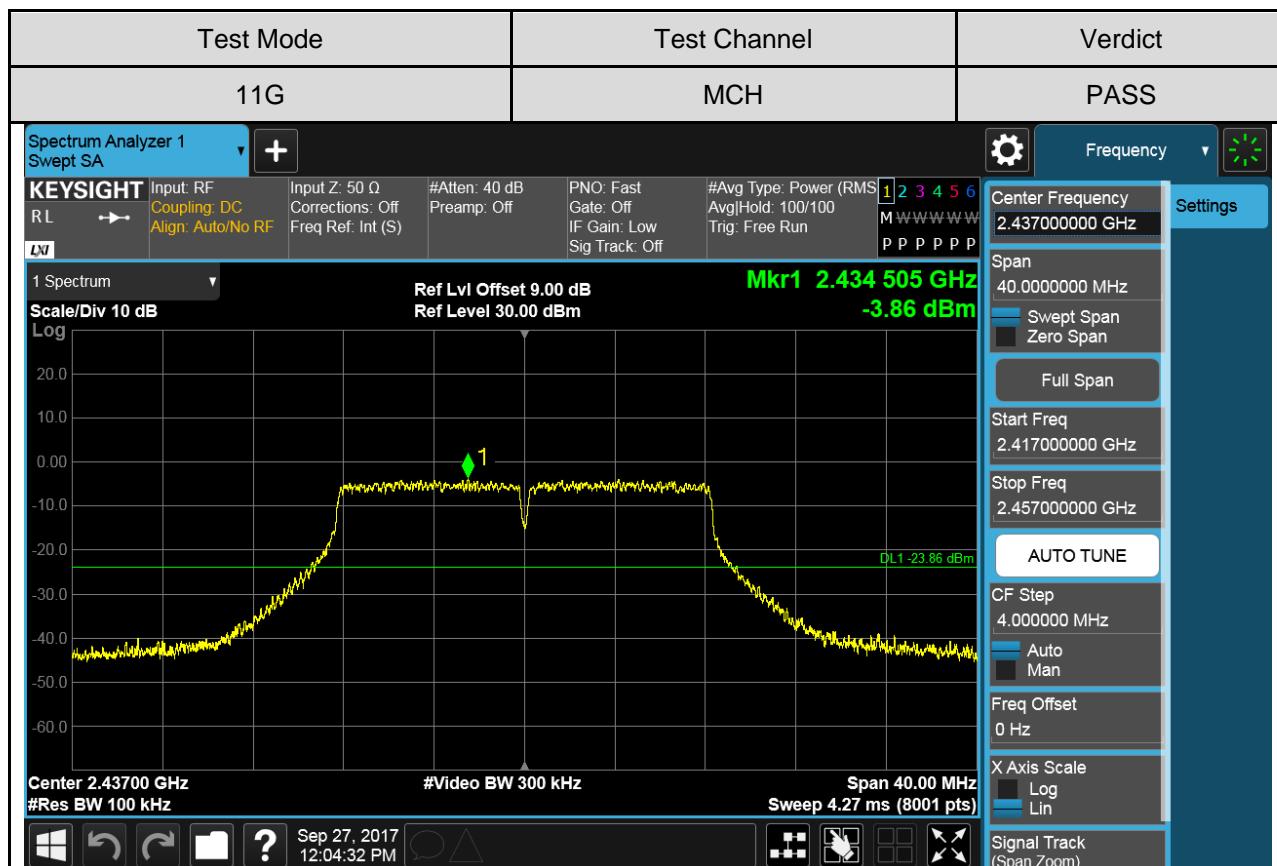
CF Step 4.000000 MHz

Auto Man

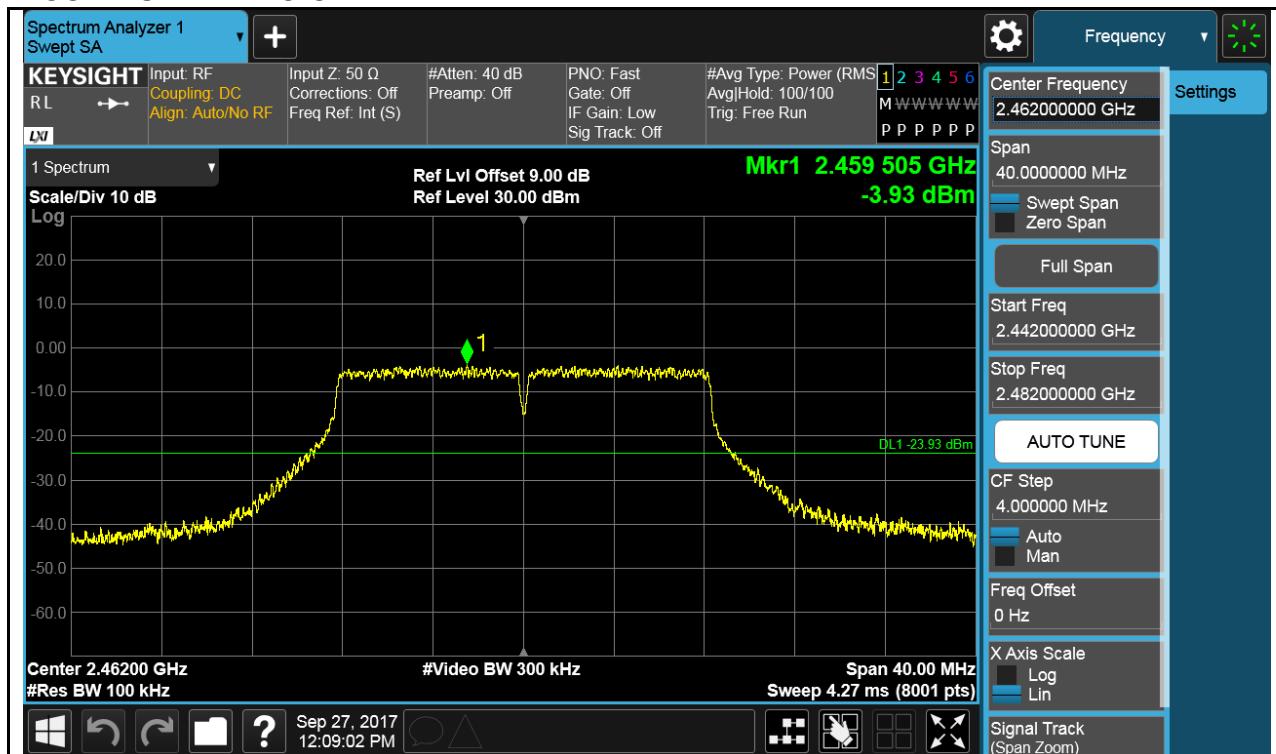
Freq Offset 0 Hz

X Axis Scale Log Lin

Signal Track (Span Zoom)



| Test Mode | Test Channel | Verdict |
|-----------|--------------|---------|
| 11G | HCH | PASS |



| Test Mode | Test Channel | Verdict |
|-----------|--------------|---------|
| 11NSISO20 | LCH | PASS |

Spectrum Analyzer 1 **Frequency** **Settings**

KEYSIGHT Input: RF Coupling: DC Input Z: 50 Ω Corrections: Off #Atten: 40 dB Preamp: Off PNO: Fast Gate: Off IF Gain: Low #Avg Type: Power (RMS) 1 2 3 4 5 6 Freq Ref. Int (S) Avg|Hold: 100/100 Trig: Free Run M W W W W W P P P P P P

LNI

1 Spectrum Ref Lvl Offset 8.96 dB Ref Level 30.00 dBm Mkr1 2.409 130 GHz -4.13 dBm

Scale/Div 10 dB Log

20.0 10.0 0.00 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0

DL1-24 13 dBm

Center 2.41200 GHz #Video BW 300 kHz Span 40.00 MHz #Res BW 100 kHz Sweep 4.27 ms (8001 pts)

1

CF Step 4.000000 MHz Auto Man

Freq Offset 0 Hz

X Axis Scale Log Lin

Signal Track (Span Zoom)

| Test Mode | Test Channel | Verdict |
|-----------|--------------|---------|
| 11NSISO20 | MCH | PASS |

Spectrum Analyzer 1 Swept SA +

KEYSIGHT Input: RF Coupling: DC Align: Auto/No RF Input Z: 50 Ω Corrections: Off Freq Ref: Int (S) #Atten: 40 dB Preamp: Off PNO: Fast Gate: Off If Gain: Low Trig: Free Run #Avg Type: Power (RMS) 1 2 3 4 5 6 M W W W W W P P P P P P

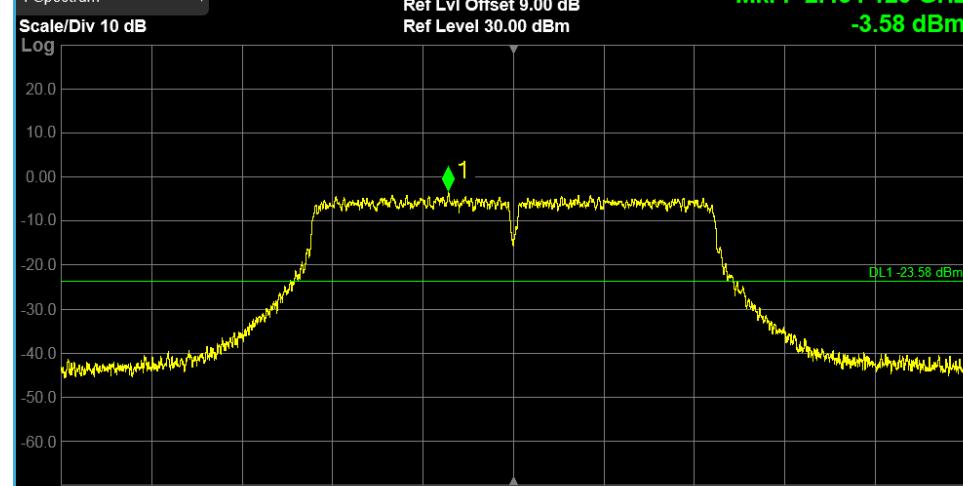
1 Spectrum Ref Lvl Offset 9.00 dB Ref Level 30.00 dBm Mkr1 2.434 120 GHz -3.58 dBm

Scale/Div 10 dB Log 20.0 10.0 0.00 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0

Center 2.43700 GHz #Video BW 300 kHz #Res BW 100 kHz Span 40.00 MHz Sweep 4.27 ms (8001 pts)

DL1 -23.58 dBm

1



Frequency 2.437000000 GHz Settings

Span 40.000000 MHz

Swept Span

Zero Span

Full Span

Start Freq 2.417000000 GHz

Stop Freq 2.457000000 GHz

AUTO TUNE

CF Step 4.000000 MHz

Auto

Man

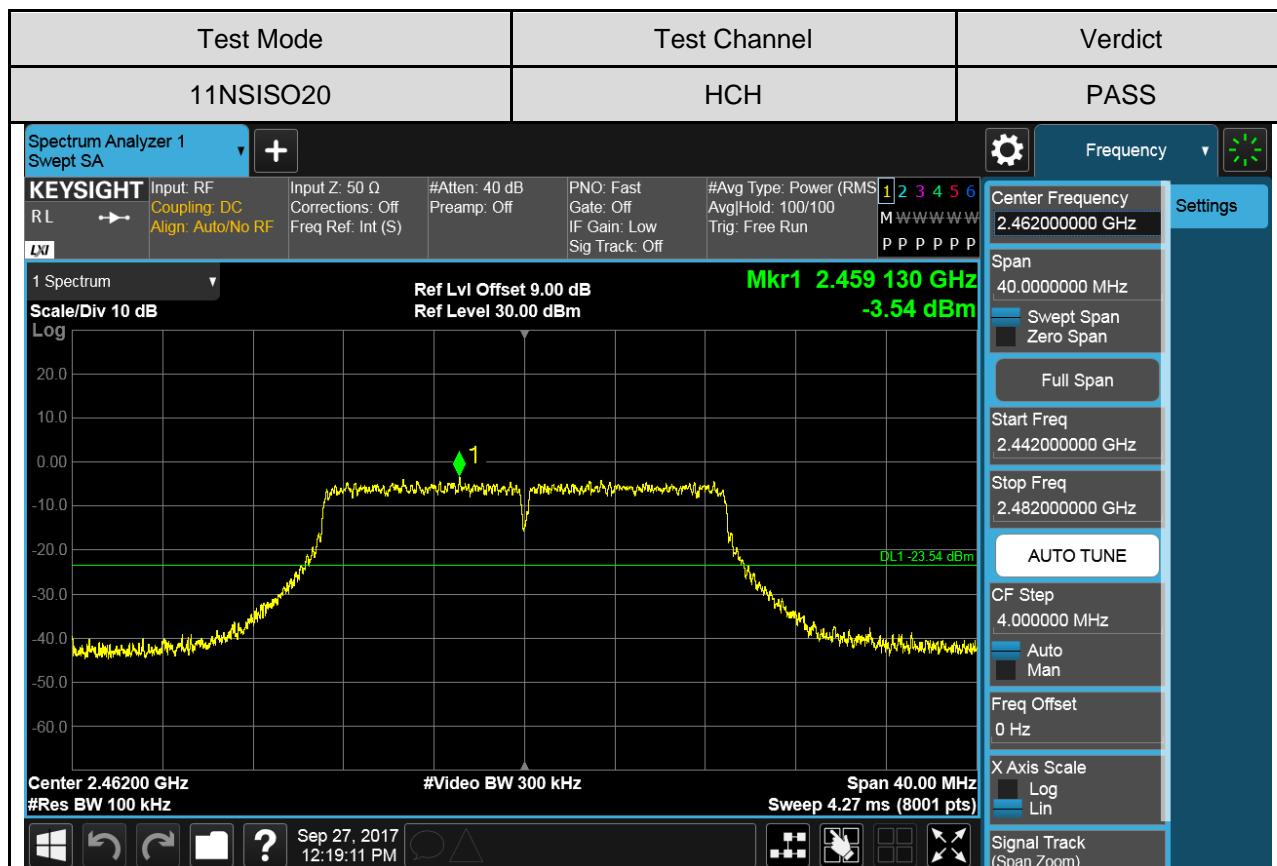
Freq Offset 0 Hz

X Axis Scale Log

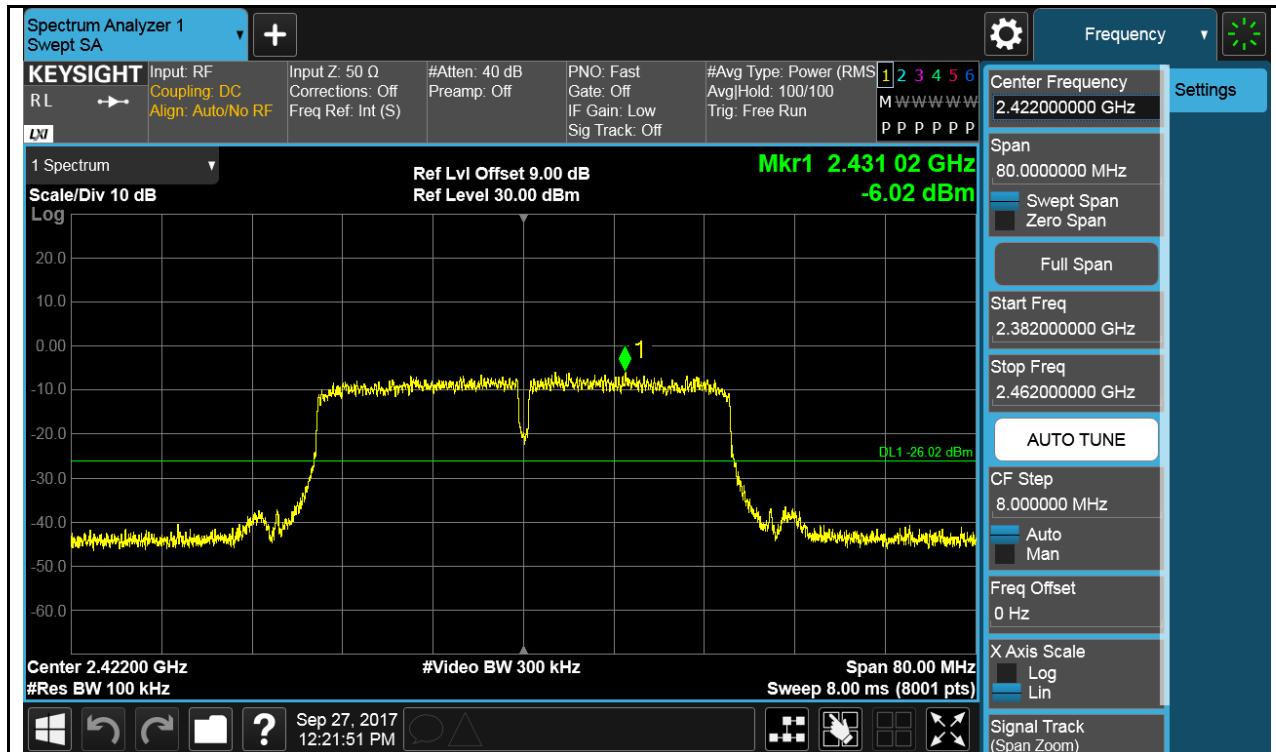
Lin

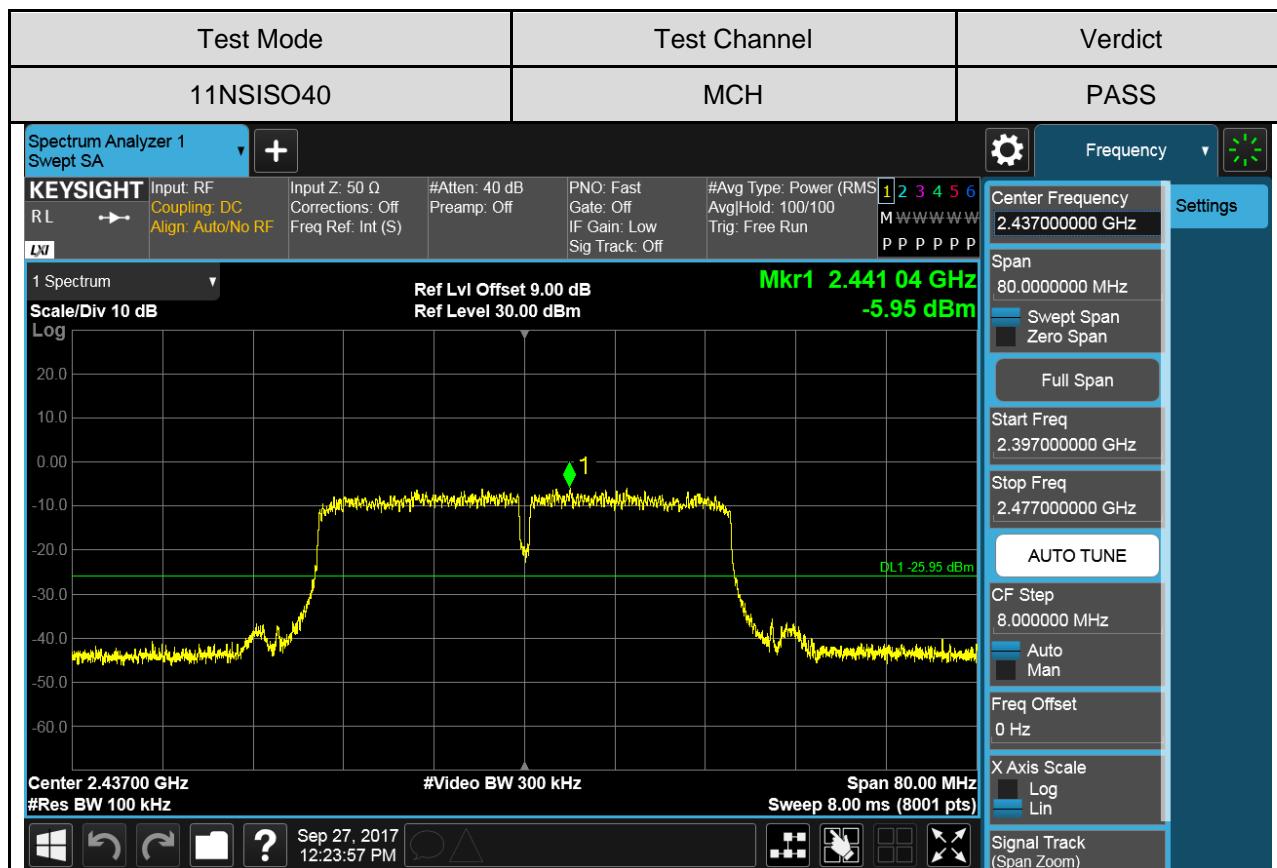
Signal Track (Span Zoom)

Sep 27, 2017 12:16:42 PM



| Test Mode | Test Channel | Verdict |
|-----------|--------------|---------|
| 11NSISO40 | LCH | PASS |





| Test Mode | Test Channel | Verdict |
|-----------|--------------|---------|
| 11NSISO40 | HCH | PASS |



6.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

| FCC Part15 (15.247) , Subpart C | | |
|---------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Section | Test Item | Limit |
| 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

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

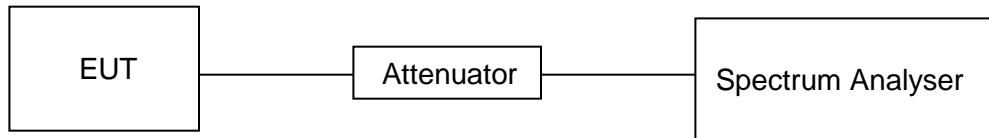
| | |
|------------------|------------------------------------------------|
| Center Frequency | The centre frequency of the channel under test |
| Detector | Peak |
| RBW | 100K |
| VBW | $\geq 3 \times$ RBW |
| Span | 1.5 x DTS bandwidth |
| Trace | Max hold |
| Sweep time | Auto couple. |

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

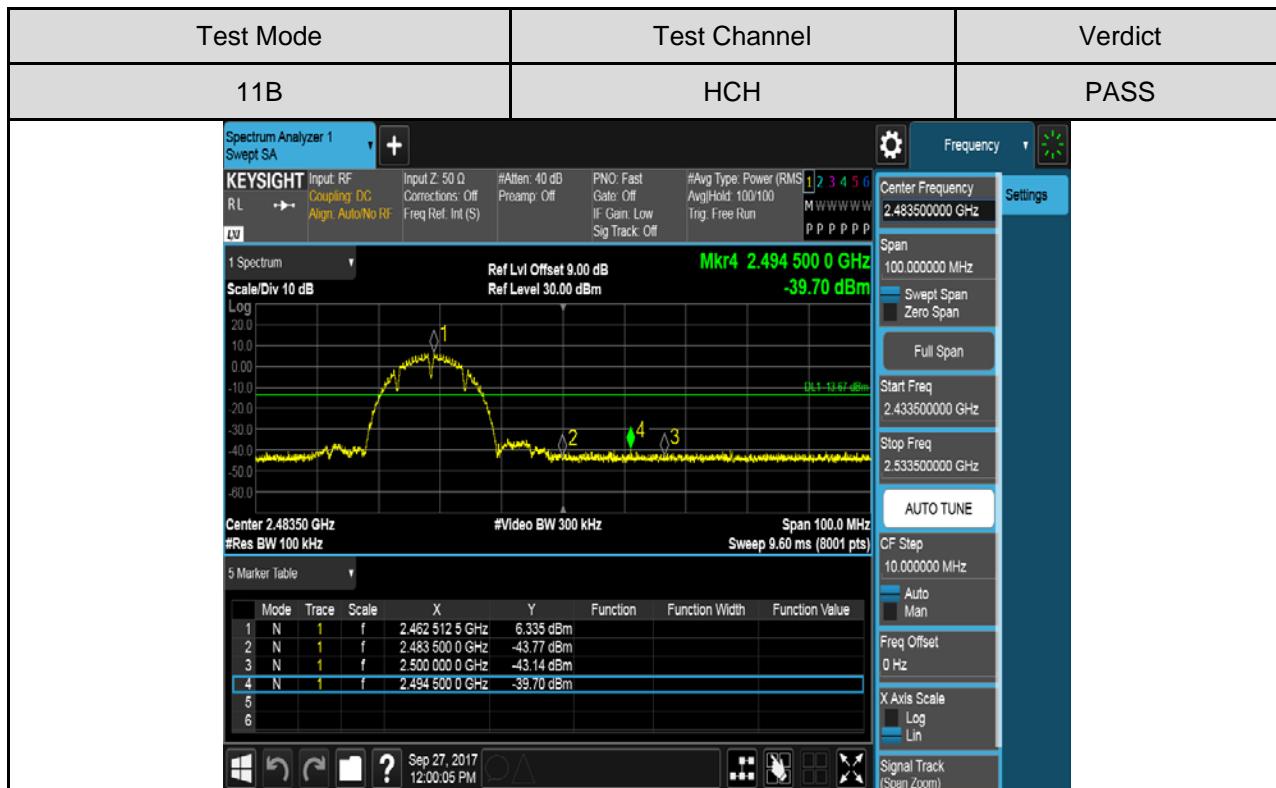
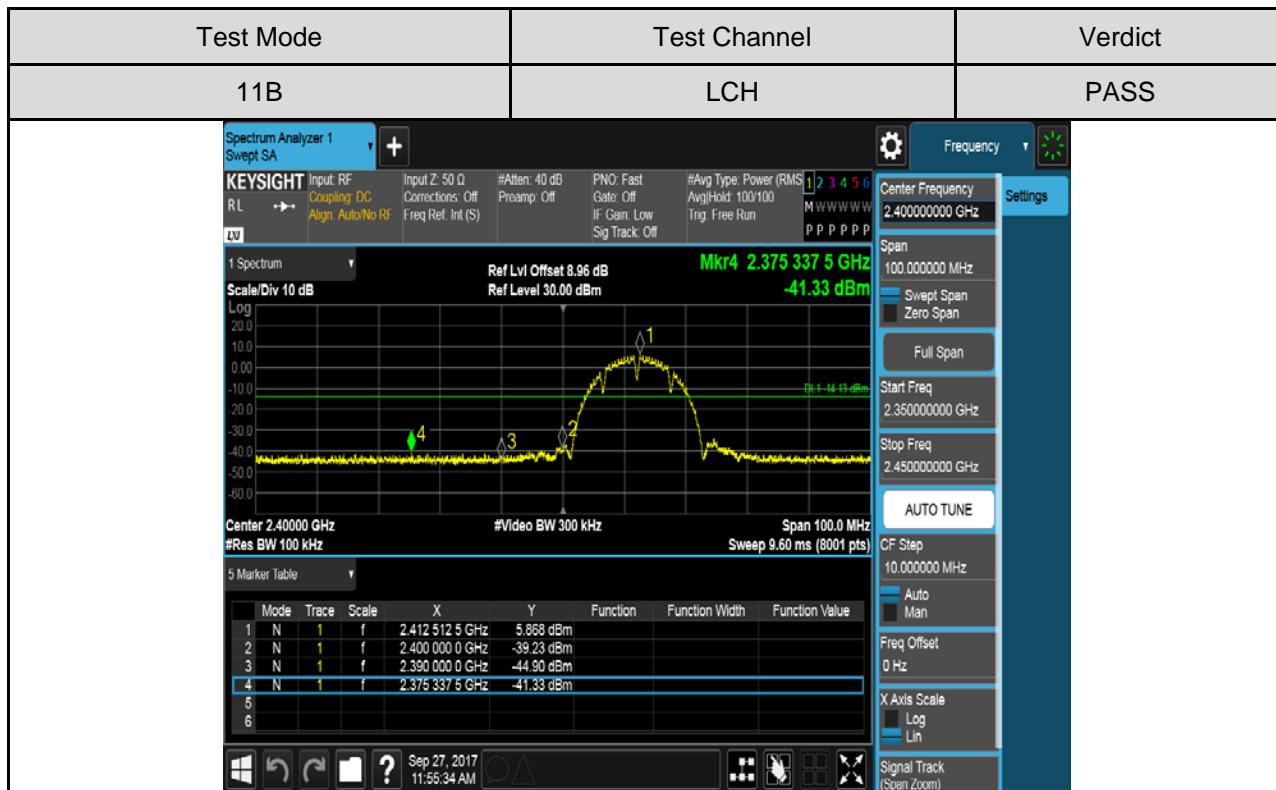


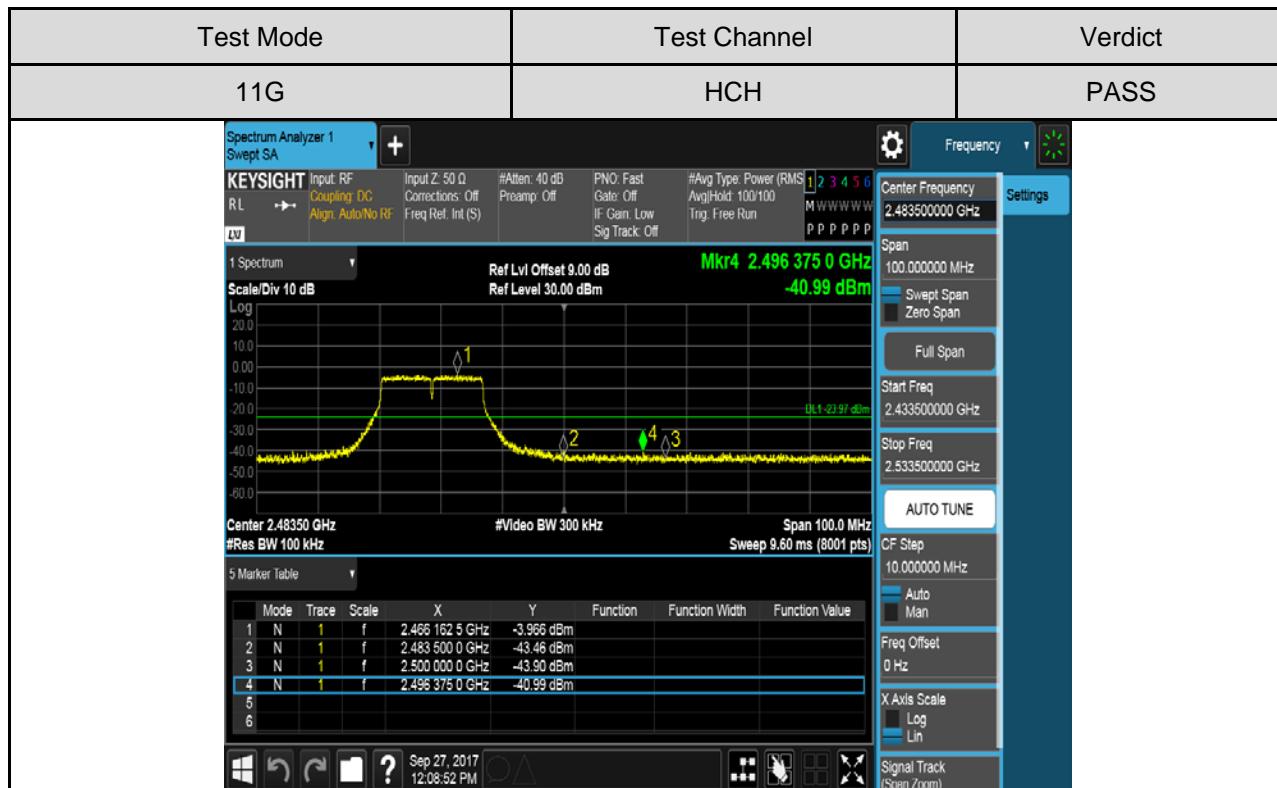
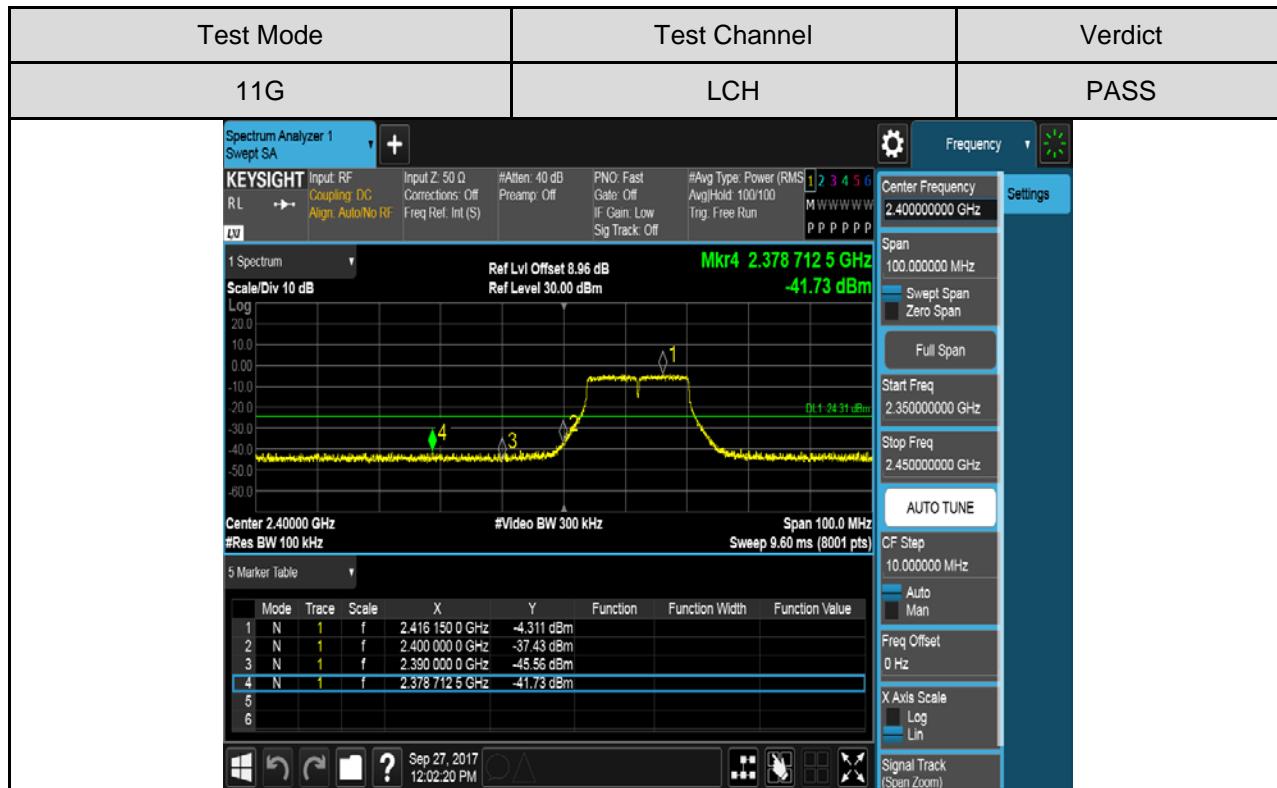
Part I :Conducted Bandedge

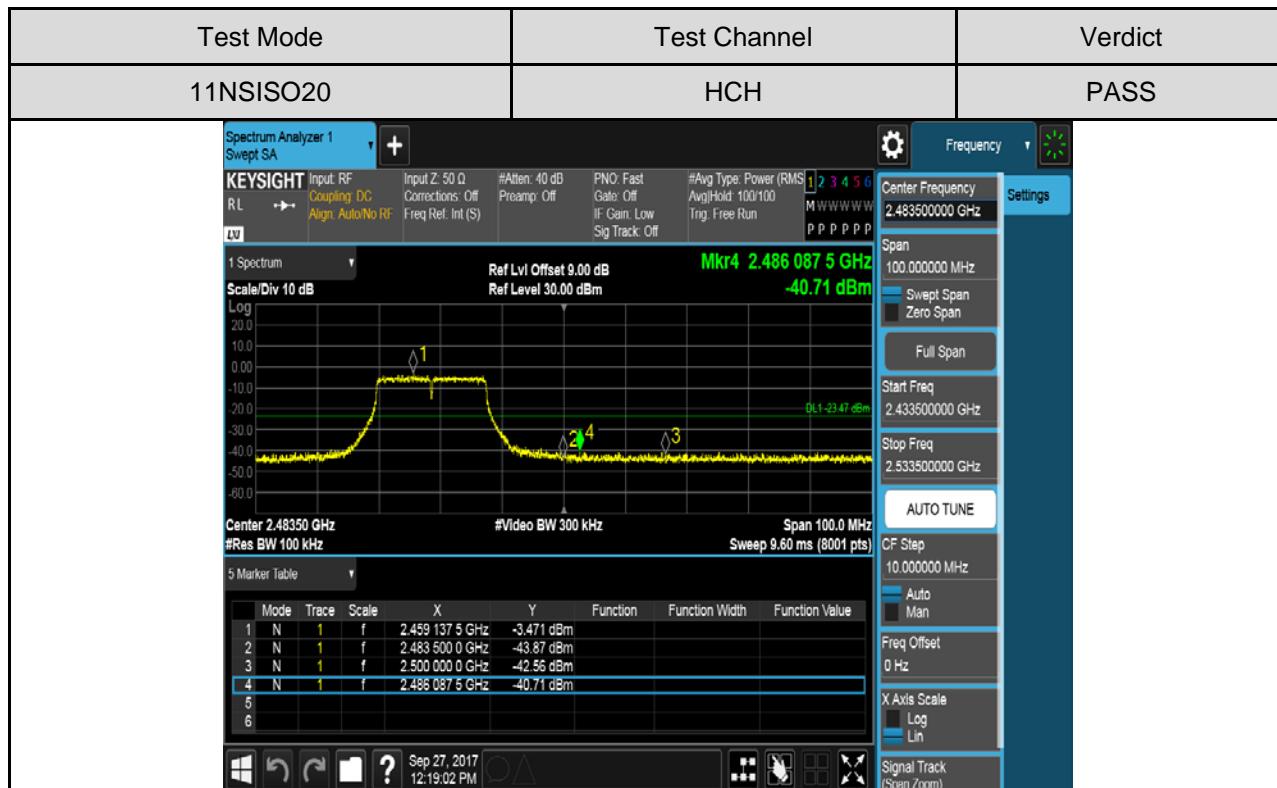
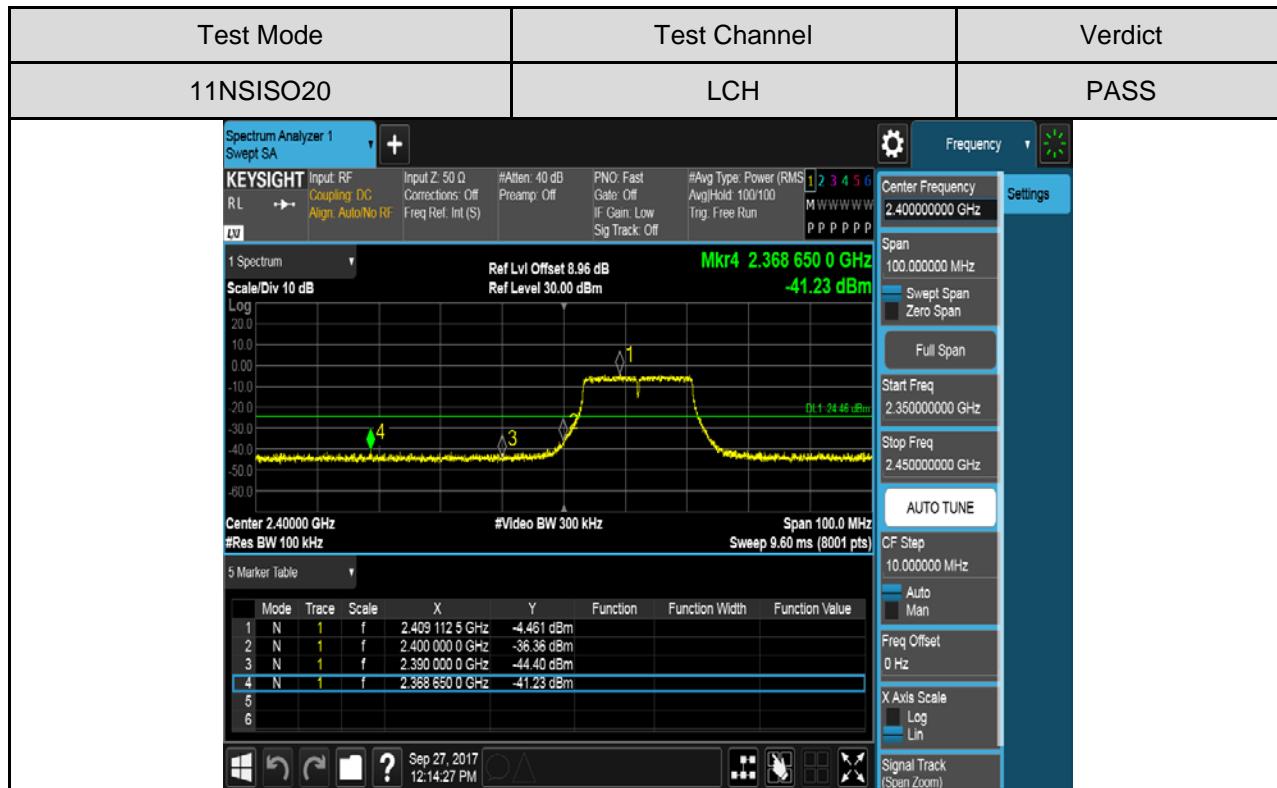
RESULTS TABLE

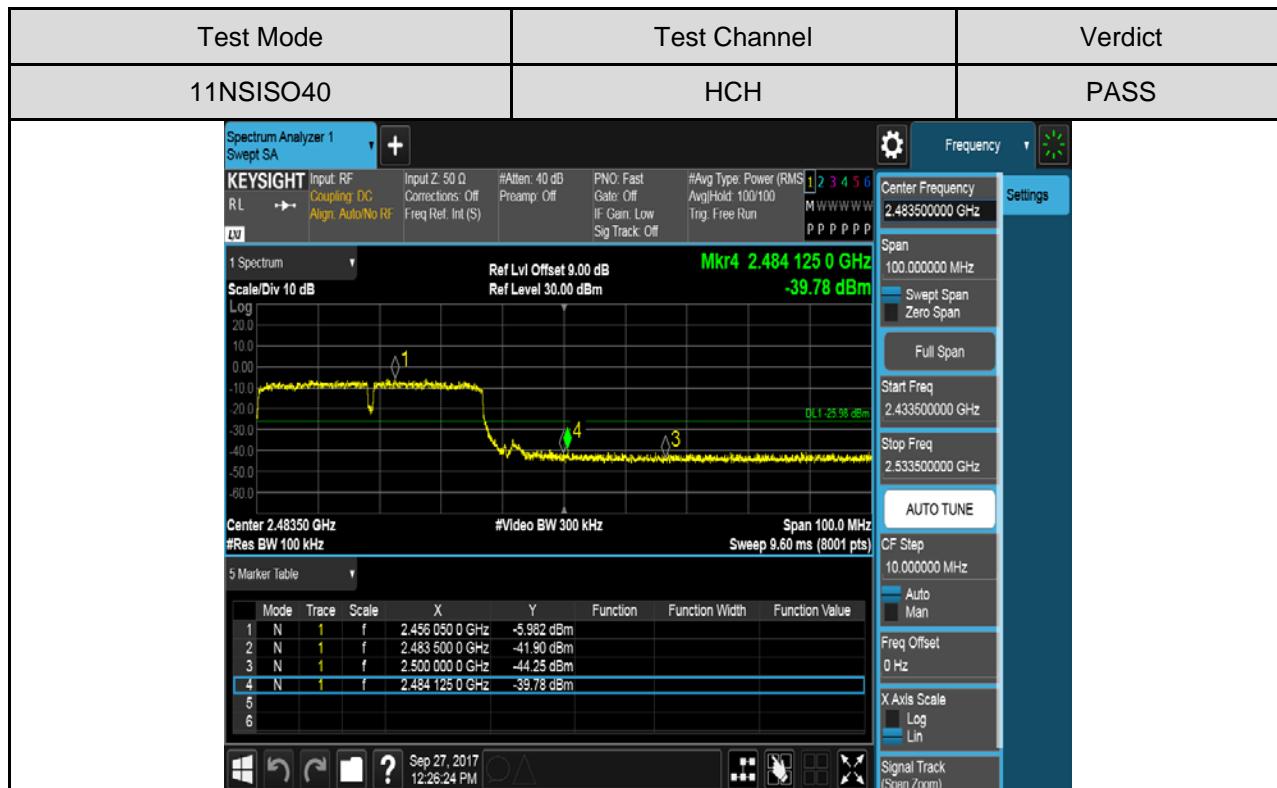
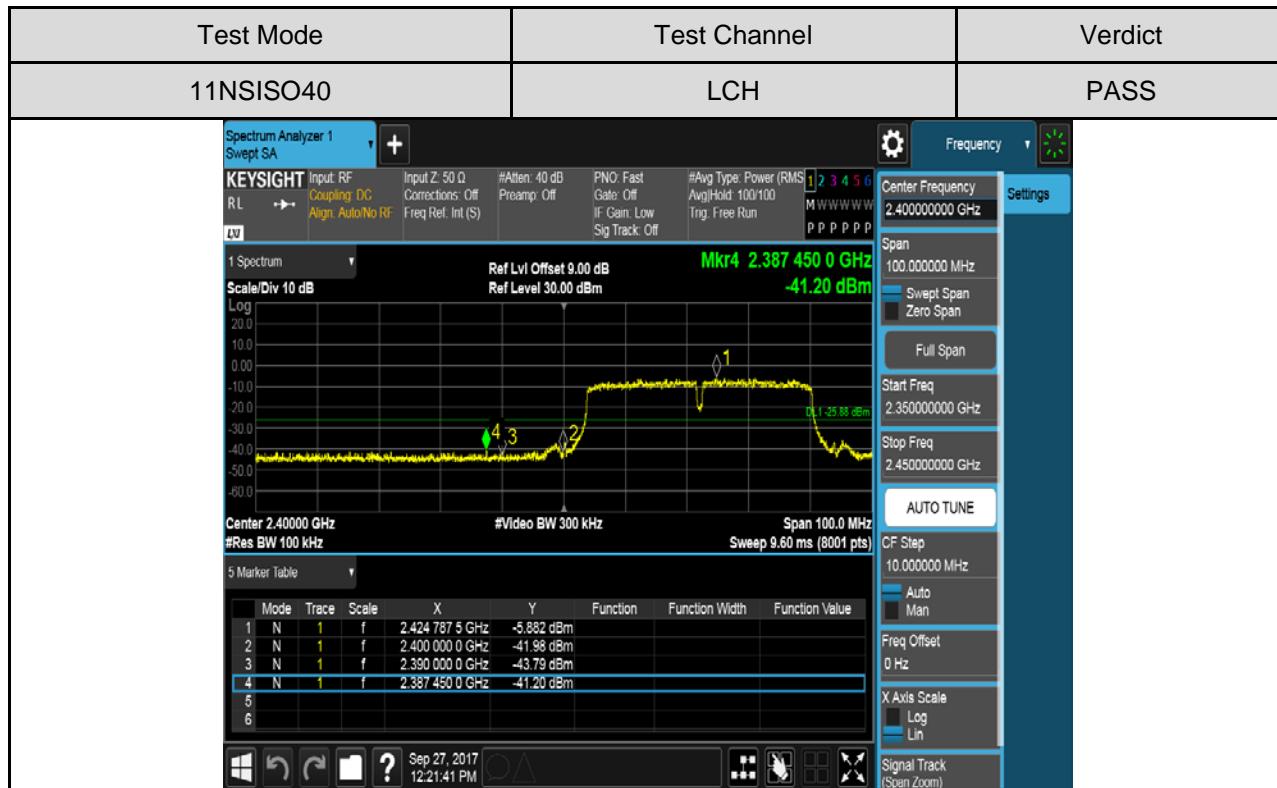
| Test Mode | Test Channel | Carrier Power[dBm] | Max. Spurious Level [dBm] | Limit [dBm] | Verdict |
|-----------|--------------|--------------------|---------------------------|-------------|---------|
| 11B | 2412 | 5.868 | -41.325 | -14.13 | PASS |
| 11B | 2462 | 6.335 | -39.697 | -13.67 | PASS |
| 11G | 2412 | -4.311 | -41.731 | -24.31 | PASS |
| 11G | 2462 | -3.966 | -40.988 | -23.97 | PASS |
| 11N20SISO | 2412 | -4.461 | -41.233 | -24.46 | PASS |
| 11N20SISO | 2462 | -3.471 | -40.712 | -23.47 | PASS |
| 11N40SISO | 2422 | -5.882 | -41.199 | -25.88 | PASS |
| 11N40SISO | 2452 | -5.982 | -39.779 | -25.98 | PASS |

TEST GRAPHS









Part II :Conducted Emission

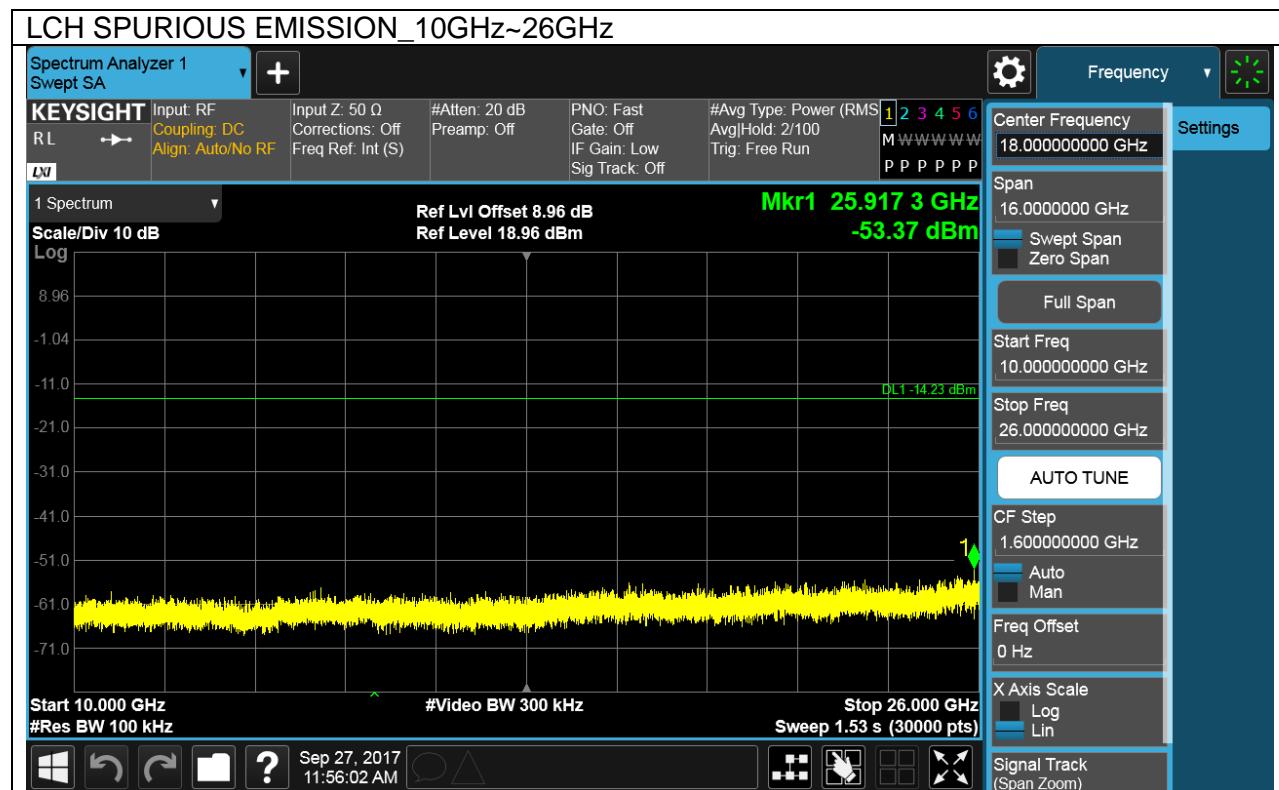
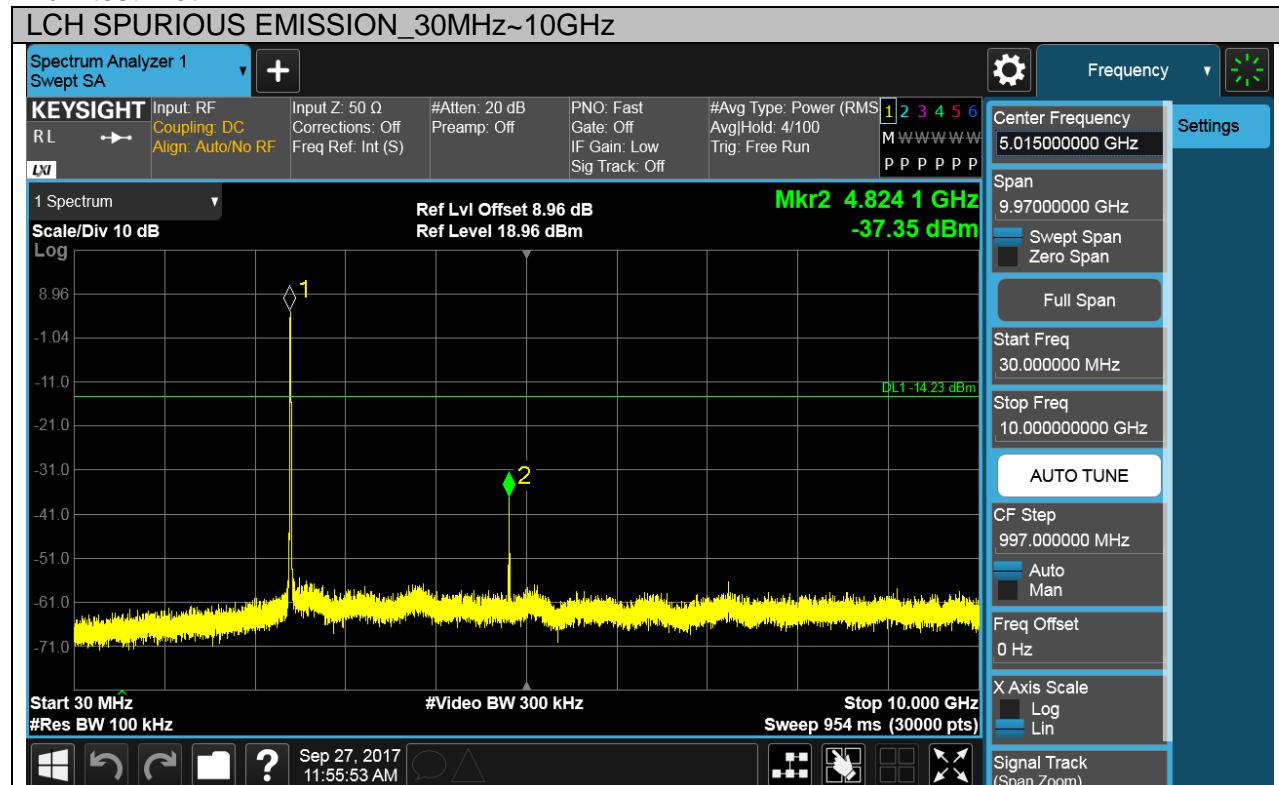
Test Result Table

| Test Mode | Channel | Pref(dBm) | Puw(dBm) | Verdict |
|-----------|---------|-----------|----------|---------|
| 11B | LCH | 5.77 | <Limit | PASS |
| | MCH | 6.234 | <Limit | PASS |
| | HCH | 6.229 | <Limit | PASS |
| 11G | LCH | -4.292 | <Limit | PASS |
| | MCH | -3.858 | <Limit | PASS |
| | HCH | -3.93 | <Limit | PASS |
| 11NSISO20 | LCH | -4.126 | <Limit | PASS |
| | MCH | -3.576 | <Limit | PASS |
| | HCH | -3.543 | <Limit | PASS |
| 11NSISO40 | LCH | -6.016 | <Limit | PASS |
| | MCH | -5.953 | <Limit | PASS |
| | HCH | -6.05 | <Limit | PASS |

| Test Mode | Channel | Verdict |
|-----------|---------|---------|
| 11B | LCH | PASS |

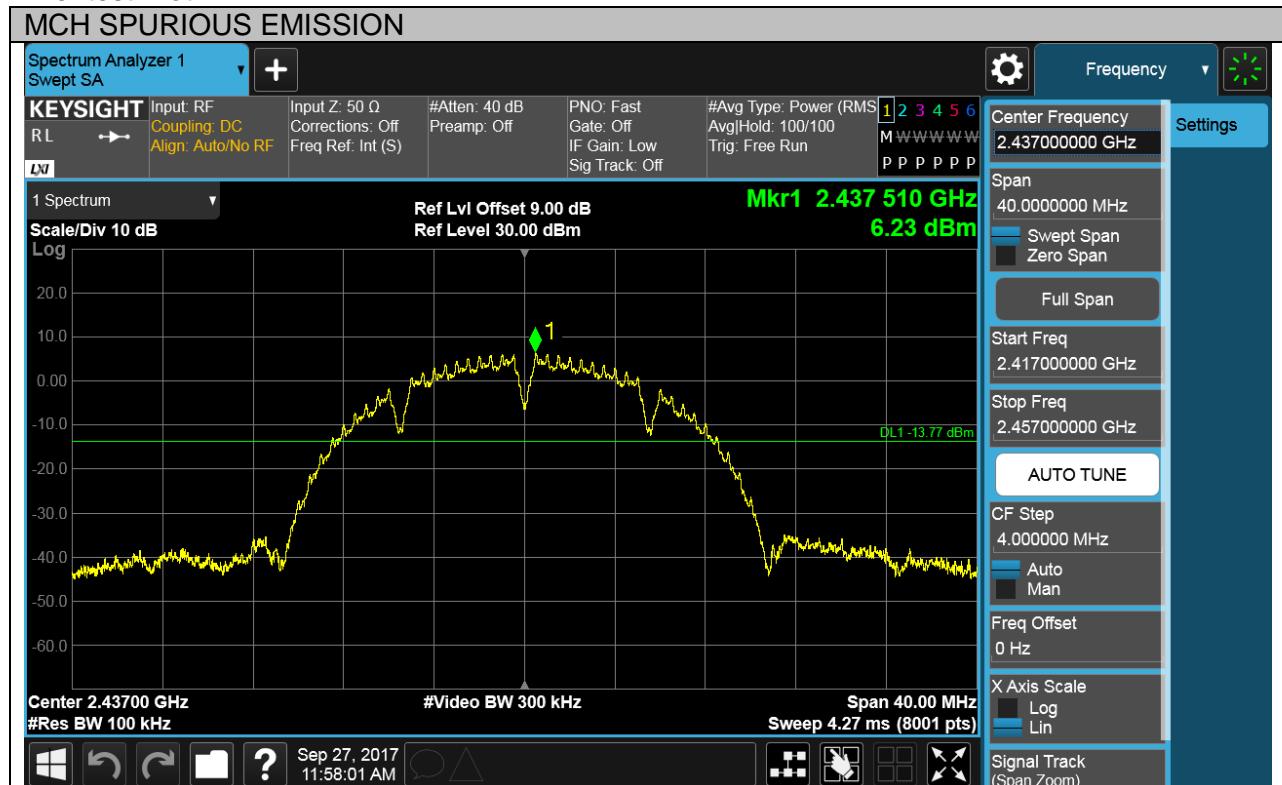
Pref test Plot

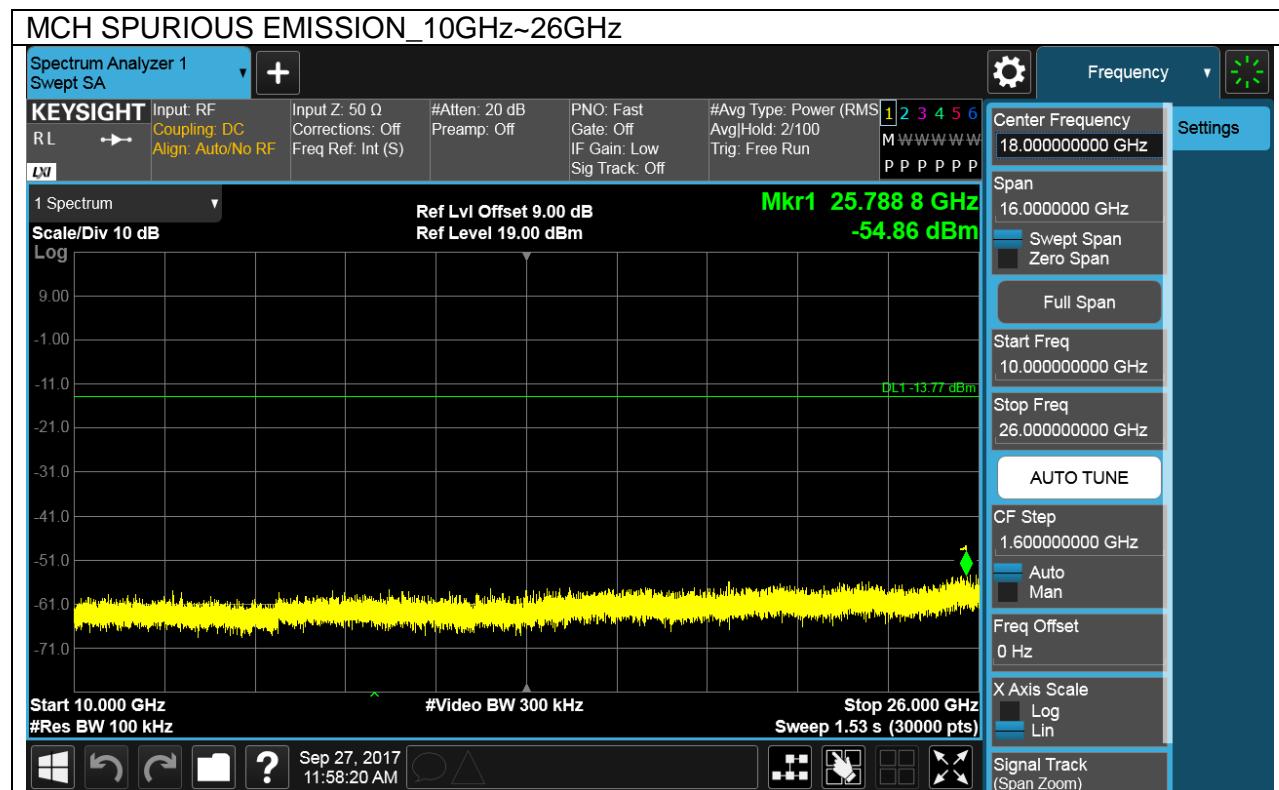
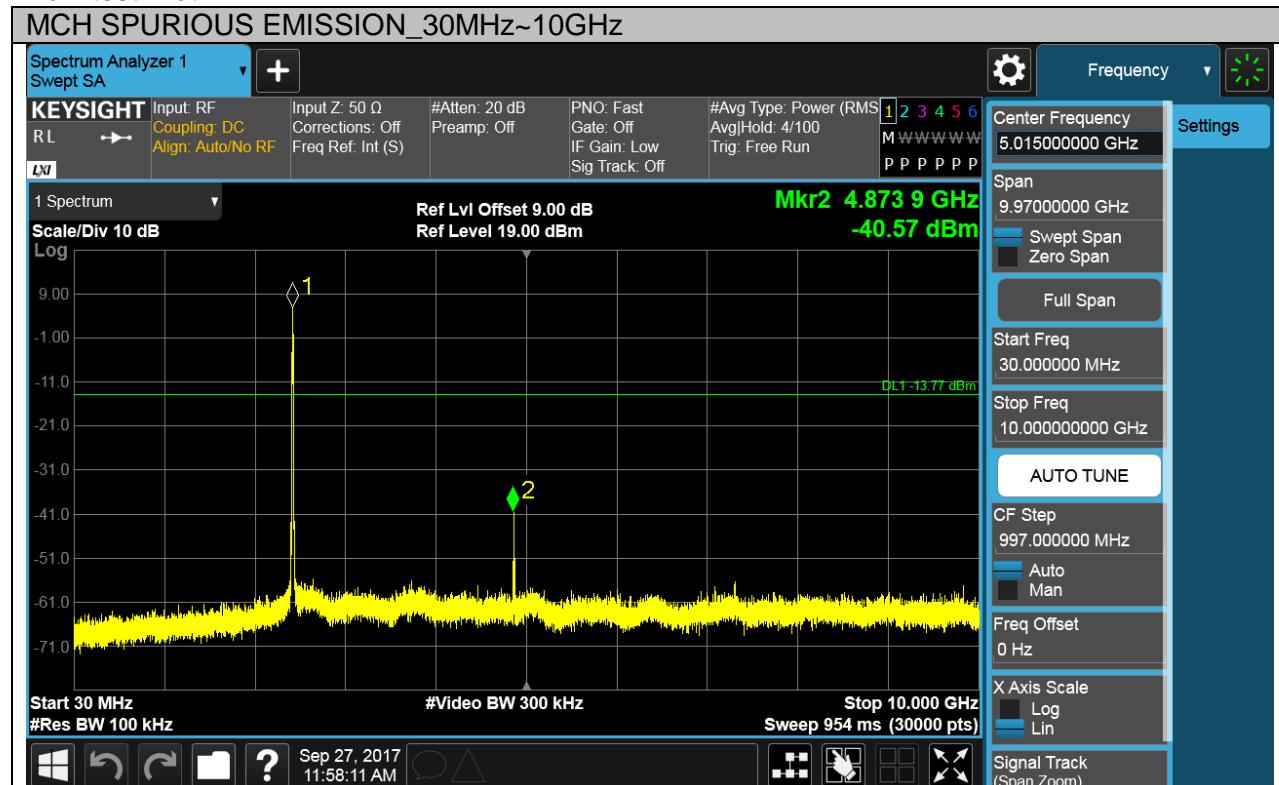




| Test Mode | Channel | Verdict |
|-----------|---------|---------|
| 11B | MCH | PASS |

Pref test Plot





| Test Mode | Channel | Verdict |
|-----------|---------|---------|
| 11B | HCH | PASS |

Pref test Plot

