

FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

For

CONSUMER CAMERA

MODEL NUMBER: IPC-S42FP-C

ADDTIONAL MODEL NUMBER: IPC-S42FP-C-0360B-imou;IPC-S42FP-C-0600Bimou;IPC-S42FP-C-0360B;IPC-S42FP-C-0600B;IPC-S42FN-C-0360B-imou; IPC-S42FN-C-0600B-imou;IPC-S42FN-C-0360B;IPC-S42FN-C-0600B; IPC-S42F-C-0360B-LC;IPC-S42F-C-0600B-LC;IPC-TS42F-C-0360B-LC;IPC-TS42F-C-0600B-LC;LC-K72F-4M-C;LC-TS2F-4M-C;IPC-S42FN-C; IPC-S42FP-C-imou; IPC-S42FN-C-imou

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Prepared for

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Prepared by

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Revision History

| Rev. | Issue Date | Revisions | Revised By |
|------|------------|---------------|------------|
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TABLE OF CONTENTS

| 1. | ATT | ESTATION OF TEST RESULTS 4 | |
|----|----------------------|---|---|
| 2. | TES | T METHODOLOGY | |
| 3. | FAC | CILITIES AND ACCREDITATION | |
| 4. | CAL | IBRATION AND UNCERTAINTY | |
| 4 | .1. | MEASURING INSTRUMENT CALIBRATION | • |
| 4 | .2. | MEASUREMENT UNCERTAINTY7 | • |
| 5. | EQI | JIPMENT UNDER TEST | |
| 5 | .1. | DESCRIPTION OF EUT | |
| 5 | .2. | MAXIMUM OUTPUT POWER |) |
| 5 | .3. | CHANNEL LIST |) |
| 5 | .4. | TEST CHANNEL CONFIGURATION10 |) |
| 5 | .5. | THE WORSE CASE POWER SETTING PARAMETER |) |
| 5 | .6. | DESCRIPTION OF AVAILABLE ANTENNAS | |
| 5 | .7. | THE WORSE CASE CONFIGURATIONS11 | |
| 5 | .8. | TEST ENVIRONMENT | |
| 5 | .9. | DESCRIPTION OF TEST SETUP13 | |
| 5 | 5.10. | MEASURING INSTRUMENT AND SOFTWARE USED14 | |
| 6. | ME | ASUREMENT METHODS15 | |
| 7. | ANT | ENNA PORT TEST RESULTS16 | |
| 7 | .1. | ON TIME AND DUTY CYCLE16 | ; |
| 7 | .2. | 6 dB BANDWIDTH |) |
| 7 | .3. | CONDUCTED POWER |) |
| 7 | .4. | POWER SPECTRAL DENSITY | |
| 7 | .5. | CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS43 | 1 |
| 7 | 7.6. 7.6. 7.6. | | |
| 8. | AC | POWER LINE CONDUCTED EMISSIONS168 | |
| 9. | ANT | ENNA REQUIREMENTS171 | |



1. ATTESTATION OF TEST RESULTS

Applicant Information

| Company Name: Address: | Hangzhou Huacheng Network Technology Co.,Ltd. No.2930, Nanhuan Road, Binjiang District, Hangzhou, China |
|---|--|
| EUT Description Product Name: Model Name: | CONSUMER CAMERA IPC-S42FP-C |
| Additional No. : | IPC-S42FP-C-0360B-imou;IPC-S42FP-C-0600B-imou; IPC-S42FP-C-0360B;IPC-S42FP-C-0600B;IPC-S42FN-C-0360B- imou;IPC-S42FN-C-0600B-imou;IPC-S42FN-C-0360B;IPC- S42FN-C-0600B;IPC-S42F-C-0360B-LC;IPC-S42F-C-0600B- LC;IPC-TS42F-C-0360B-LC;IPC-TS42F-C-0600B-LC;LC-K72F- 4M-C;LC-TS2F-4M-C;IPC-S42FN-C; IPC-S42FP-C-imou; IPC-S42FN-C-imou |
| Sample Number: | 3967004 |
| Data of Receipt Sample: | Jun.05,2021 |
| Date Tested: | Jun.06,2021~ Jun.14,2021 |
| | |

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



| Summary of Test Results | | | | | | | |
|---|--|--|--------------|--|--|--|--|
| Clause | Test Items | FCC Rules | Test Results | | | | |
| 1 | 6db DTS Bandwidth | FCC 15.247 (a) (2) | Complied | | | | |
| 2 | 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,</pass> | | | | | | | |

FCC CFR 47 Part 2, FCC CFR 47 Part 15C> when <Accuracy Method> decision rule is applied.

Prepared By:

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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 15.

3. FACILITIES AND ACCREDITATION

| Accreditation Certificate | 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 | 3.1dB | | | |
| Radiation Emission test(include Fundamental emission) (9KHz-30MHz) | 3.4dB | | | |
| Radiation Emission test(include Fundamental emission) (30MHz-1GHz) | 3.4dB | | | |
| Radiation Emission test (1GHz to 26GHz)(include Fundamental emission) | 3.9dB (1GHz-18Gz) | | | |
| | 4.2dB (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.: | IPC-S42FP-C |
| 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 |
| Sample Type: | Fixed production |
| Test software of EUT: | Secure CRT (manufacturer declare) |
| Antenna Type: | Monopole Antenna |
| Antenna Gain: | Antenna1: 3.9 dBi |
| | Antenna2: 3.9 dBi |
| | Remark: This data is provided by customer and our lab isn't responsible for this data |
| Adapter | NAME: Power Adapter |
| | MODEL: ADS-12AM-12 12012EPCU |
| | INPUT:100-240V,50/60Hz, 0.3A |
| | OUTPUT:12V 1A |
| Demerly | |

Remark:

Model No.:

| Number: | Name: | Number: | Name: | Number: | Name: |
|---------|----------------------------|---------|----------------------------|---------|----------------------------|
| 1 | IPC-S42FP-C | 2 | IPC-S42FP-C-0360B- imou | 3 | IPC-S42FP-C-0600B- imou |
| 4 | IPC-S42FP-C-0360B | 5 | IPC-S42FP-C-0600B | 6 | IPC-S42FN-C-0360B- imou |
| 7 | IPC-S42FN-C-0600B- imou | 8 | IPC-S42FN-C-0360B | 9 | IPC-S42FN-C-0600B |
| 10 | IPC-S42F-C-0360B- LC | 11 | IPC-S42F-C-0600B- LC | 12 | IPC-TS42F-C-0360B- LC |
| 13 | IPC-TS42F-C-0600B- LC | 14 | LC-K72F-4M-C | 15 | LC-TS2F-4M-C |
| 16 | IPC-S42FN-C | 17 | IPC-S42FP-C-imou | 18 | IPC-S42FN-C-imou |

Only the main model **IPC-S42FP-C** 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 name of the models.



5.2. MAXIMUM OUTPUT POWER

| Number of Transmit Chains (NTX) | IEE Std. 802.11 | Channel Number | Max AV Conducted Power (dBm) |
|---------------------------------------|-------------------|----------------|---------------------------------|
| 1 | IEEE 802.11B SISO | 1-11[11] | 15.40 |
| 1 | IEEE 802.11G SISO | 1-11[11] | 14.44 |
| 1/2 | IEEE 802.11nHT20 | 1-11[11] | 16.62 |
| 1/2 | IEEE 802.11nHT40 | 3-9[7] | 14.05 |

5.3. CHANNEL LIST

| | Channel List for 802.11b/g/n (20 MHz) | | | | | | | | |
|---|---------------------------------------|---|------|---|------|--------------------|------|--|--|
| Channel Channel Channel Channel 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 | Frequenc y(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 POWER SETTING PARAMETER

| The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band | | | | | | | | | |
|--|----------|------|--------------|-------|-------|------------|------|--|--|
| Test Softw | vare | | | Secur | e CRT | | | | |
| | Transmit | | Test Channel | | | | | | |
| Modulation Mode | Antenna | 1 | NCB: 20MHz | | | ICB: 40MHz | Z | | |
| Widde | Number | CH 1 | CH 6 | CH 11 | CH 3 | CH 6 | CH 9 | | |
| 802.11b | 1 | N/A | N/A | N/A | | | | | |
| 802.11g | 1 | N/A | N/A | N/A | / | | | | |
| 802.11n HT20 | 1/2 | N/A | N/A | N/A | | | | | |
| 802.11n HT40 | 1/2 | | / | | N/A | N/A | N/A | | |



5.6. DESCRIPTION OF AVAILABLE ANTENNAS

| Ant. | Frequency (MHz) | Antenna Type | Antenna Gain (dBi) | Directional gain(dBi) |
|------|-----------------|---------------------|--------------------|-----------------------|
| 1 | 2400-2483.5 | Monopole Antenna | 3.9 | 6.91 |
| 2 | 2400-2483.5 | Monopole Antenna | 3.9 | |

Note:

1) Directional gain= $10\log [(10^{G1/20} + 10^{G2/20})^2/N_{ANT}] = 6.91 \text{ dBi}$

2) N_{ANT}: the number of Antenna

3) For this product, it has two antennas, antenna1 and antenna2, but only the 802.11N HT20 and 802.11N HT40 modes can support both the SISO and MIMO technical. For the modes of 11B&11G only the antenna1 is working.

| Test Mode | Transmit and Receive Mode | Description |
|-----------------------------|------------------------------|---|
| IEEE 802.11b | ⊠1TX, 1RX | Antenna1 can be used as transmitting/receiving antenna independently. |
| IEEE 802.11g | ⊠1TX, 1RX | Antenna1 can be used as transmitting/receiving antenna independently. |
| IEEE 802.11N (HT20) MIMO | ⊠2TX, 2RX | Antenna1 or Antenna2 can be used as transmitting/receiving antenna independently. |
| IEEE 802.11N (HT20) MIMO | ⊠2TX, 2RX | Antenna1 or Antenna2 can be used as transmitting/receiving antenna independently. |

Remark:

 For this product, it has two antennas, antenna1 and antenna2, only the 802.11N HT20 and 802.11N HT40 modes can support both the SISO and MIMO technical. For the modes of 11B&11G only the antenna1 is working.

2) For the 11N mode (including the 11N HT20 SISO,11N HT20 MIMO,11N HT40 SISO,11N HT40 MIMO), pre-testing all test modes, only the worst case modes is included in this report.

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 | 5 ~ 65% | | |
| Atmospheric Pressure: | 1 | 010Pa | | |
| Temperature | TN | 23 ~ 28°C | | |
| | VL | N/A | | |
| Voltage : | 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

| 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 | LAN | LAN | LAN Cable | 100cm Length (Supply by UL Lab) | N/A |
| 2 | USB | USB | USB-VGA | 100cm Length (Supply by UL Lab) | N/A |

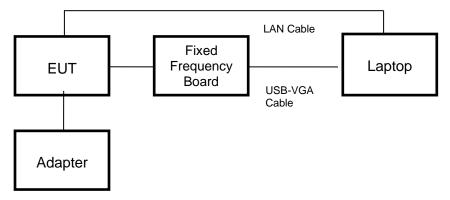
ACCESSORY

| Item | Accessory | Brand Name Model Name | | Description |
|------|---------------|-----------------------|------|------------------|
| 1 | Micro SD card | Kingston | 32GB | Supply by UL lab |

TEST SETUP

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

SETUP DIAGRAM FOR TESTS



Remark: The EUT has been built one SD card during the testing



5.10. MEASURING INSTRUMENT AND SOFTWARE USED

| Conducted Emissions (Instrument) | | | | | | | | | | | | | |
|----------------------------------|-------------------------------------|--|--------------|--|--------|---------|--------------------|------------|------------|--|--|--|--|
| Used | Equipment | Manufacturer | Мо | del No. | Seri | al No. | Upper Last Cal. | Last Cal. | Next Cal. | | | | |
| \checkmark | EMI Test Receiver | R&S | E | SR3 | 12 | 6700 | 2019-12-12 | 2020-12-05 | 2021-12-04 | | | | |
| \checkmark | Two-Line V-Network | R&S | E١ | V216 | 12 | 6701 | 2019-12-12 | 2020-12-05 | 2021-12-04 | | | | |
| V | Artificial Mains Networks | R&S | E | NY81 | 12 | 6711 | 2019-12-12 | 2020-12-05 | 2021-12-04 | | | | |
| | Software | | | | | | | | | | | | |
| Used | Des | cription | | Ma | anufac | turer | Name | Version | | | | | |
| \checkmark | Test Software for (| Conducted distur | bance | | R&S | ; | EMC32 | Ver. 9.25 | | | | | |
| | | Ra | diate | d Emiss | ions (| Instrum | ient) | | | | | | |
| Used | Equipment | Manufacturer | Mo | del No. | Seri | al No. | Upper Last Cal. | Last Cal. | Next Cal. | | | | |
| \checkmark | Spectrum Analyzer | Keysight | NS | 9010B | MY57 | 110128 | 2020-05-10 | 2021-05-09 | 2022-05-08 | | | | |
| \checkmark | EMI test receiver | R&S | E | SR26 | 126 | 67603 | 2019-12-12 | 2020-12-05 | 2021-12-04 | | | | |
| \checkmark | Receiver Antenna (9kHz-30MHz) | Schwarzbeck | FMZ | ZB 1513 | 513 | 3-265 | N/A | 2018-06-15 | 2021-06-14 | | | | |
| \checkmark | Receiver Antenna (30MHz-1GHz) | SunAR RF Motion | , | JB1 | 17 | 7821 | N/A | 2019-01-28 | 2022-01-27 | | | | |
| \checkmark | Receiver Antenna (1GHz-18GHz) | R&S | Н | F907 | 12 | 6705 | 2018-01-29 | 2019-01-28 | 2022-01-27 | | | | |
| \checkmark | Receiver Antenna (18GHz-26.5GHz) | Schwarzbeck | BBH | HA9170 | 12 | 6706 | 2019-02-06 | 2020-12-05 | 2021-12-04 | | | | |
| V | Pre-amplification (To 18GHz) | Compliance Direction System Inc. | PAP- | 1G18-50 | 1414(| 0-13467 | 2019-03-18 | 2020-12-05 | 2021-12-04 | | | | |
| \checkmark | Pre-amplification (To 26.5GHz) | R&S | SC | U-26D | 13 | 4668 | 2019-02-06 | 2020-09-27 | 2021-09-26 | | | | |
| V | Band Reject Filter | Wainwright | 235 2483. | RCJV8- 0-2400- 5-2533.5- 40SS | | 1 | 2020-05-10 | 2021-05-09 | 2022-05-08 | | | | |
| | Highpass Filter | Wainwright | 270 | IKX10- 0-3000-)0-40SS | | 2 | 2020-05-10 | 2021-05-09 | 2022-05-08 | | | | |
| | | | | Soft | ware | | | | | | | | |
| Used | Desci | • | | Manufac | turer | | Name | Version | | | | | |
| \checkmark | Test Software for R | adiated disturbar | | Tonsce | | | JS32 | V1.0 | | | | | |
| | | | C | Other ins | strum | ents | | | | | | | |
| Used | Equipment | Manufacturer | Mo | del No. | Seri | al No. | Upper Last Cal. | Last Cal. | Next Cal. | | | | |
| | Spectrum Analyzer | Keysight | NS | 9010B | MY57 | 110128 | 2020-05-10 | 2021-05-09 | 2022-05-08 | | | | |
| V | Power Meter | Keysight | U2 | 021XA | MY57 | 110002 | 2020-05-10 | 2021-05-09 | 2022-05-08 | | | | |



6. MEASUREMENT METHODS

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

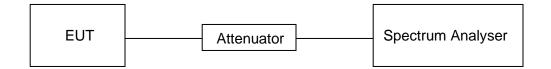
<u>LIMITS</u>

None; for reporting purposes only

PROCEDURE

FCC KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



<u>RESULTS</u>

| 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 |
| 11N HT20 | 100 | 100 | 1 | 100 | 0 | 0.01 |
| 11N HT40 | 100 | 100 | 1 | 100 | 0 | 0.01 |

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

2) Where: x is Duty Cycle(Linear)

3) Where: T is On Time (transmit duration)

4) Pre-testing Antenna 1 and Antenna2, and pre-testing SISO and MIMO modes, only the data of worse case is shown in this test repot.



| | | | | 11B ON T | | DUTY CYC | CLE MID CH | H (WORSE C | ASE) | | |
|--------------------------|------------|---------------------------------|--------|--|--------------------------|--|----------------|--|-------------------------|-----------|----------|
| Spectrum Swept SA | A | • | | + | | | | | | Frequency | * 崇 |
| | GHT ·≁· | Input: F Couplir Align: F | ng: DC | Input Z: 50 Ω Corrections: 0 Freq Ref: Int (| | PNO: Fast Gate: Off IF Gain: Low | Ing. Free Rur | ower (RMS 1 2 3 4 5 0 WWWWWW A A A A A A | 2.4370000 | | Settings |
| 1 Spectru | | | V | | D _{1} = 1 = 0.00 | Sig Track: O | u | | Span 0.0000000 | | |
| Scale/Div Log 13.0 | V 1U C | 1B | | | Ref Level 23. | | | | Swept Zero S | | |
| 3.00 -7.00 | | | | | | | | | Full S | Span | |
| -17.0 -27.0 -37.0 | | | | | | | | | Start Freq 2.4370000 | 00 GHz | |
| -47.0 | | | | | | | | | Stop Freq 2.4370000 | 00 GHz | |
| -67.0 | .4370 | 00000 (| GHz | | #Video BW 8. | 0 MHz* | | Span 0 H | AUTO | TUNE | |
| Res BW | | z | V | | | | Swee | p 100.3 ms (8001 pts | | МНz | |
| M | ode | Trace | Scale | X | Y | Function | Function Width | Function Value | Auto Man | | |
| 2 3 | | | | | | | | | Freq Offset 0 Hz | | |
| 4 5 6 | | | | | | | | | X Axis Scal Log | e | |
| | າ[| C | | Jun 11, 202 3:25:40 PM | | | | | Lin Signal Trac | | |

| | | 11G ON TIM | E AND DU | JTY CYCL | E MID CH | (WORSE C | ASE) | |
|--|--|--|------------------------------|--|----------------------------------|--|---|----------------------|
| Spectrum Analy Swept SA | /zer 1 | + | | | | | Frequency | ▼ <mark>\$'</mark> * |
| KEYSIGHT RL ↔→ | Input: RF Coupling: DC Align: Auto | Input Ζ: 50 Ω Corrections: Off Freq Ref: Int (S) | #Atten: 40 dB Preamp: Off | PNO: Fast Gate: Off IF Gain: Low Sig Track: Off | #Avg Type: Pov Trig: Free Run | wer (RMS 1 2 3 4 5 6 W W W W W A A A A A A | Center Frequency 2.437000000 GHz Span | Settings |
| 1 Spectrum Scale/Div 10 dl Log 13.0 | B | | Ref Level 23.00 | dBm | | | 0.00000000 Hz Swept Span Zero Span | |
| -7.00 -17.0 | | | | | | | Full Span Start Freg | |
| -27.0 | | | | | | | 2.437000000 GHz Stop Freq | |
| -47.0 -57.0 -67.0 | | | | | | | 2.437000000 GHz | |
| Center 2.43700 Res BW 8 MHz 5 Marker Table | | | #Video BW 8.0 I | MHz* | Sweep | Span 0 Hz 100.3 ms (8001 pts) | | |
| | ▼ Trace Scale | Х | Y | Function F | unction Width | Function Value | Auto Man | |
| 2 3 4 | | | | | | | Freq Offset 0 Hz | |
| 5 | | | | | | | X Axis Scale Log Lin | |
| 1 1 | | ? Jun 11, 2021 3:34:10 PM | | | | | Signal Track (Span Zoom) | |



| | | 11N | HT20 ON | TIME AND | | YCLE MID | CH (WORSE | ECASE) | |
|------------------------------|---------------------------------|------------|--|------------------------------|---|---------------------------------------|--|-------------------------------------|----------|
| Spectrum Anal Swept SA | - | | + | | | | | Frequer | |
| RL +++ | Input: I Couplii Align: J | ng: DC | Input Z: 50 Ω Corrections: Off Freq Ref: Int (S) | #Atten: 40 dB Preamp: Off | PNO: Fast Gate: Off IF Gain: Low Sig Track: Of | Trig: Free Rur | wer (RMS <mark>1</mark> 23456 WWWWWW A A A A A A | 2.437000000 GHz | Settings |
| 1 Spectrum Scale/Div 10 d | JB | v | | Ref Level 23.00 | | 1 | | Span 0.00000000 Hz Swept Span | |
| Log 13.0 3.00 -7.00 | | | | | | | | Eull Span | |
| -17.0 -27.0 -37.0 | | | | | | | | Start Freq 2.437000000 GHz | |
| -47.0 -57.0 -67.0 | | | | | | | | Stop Freq 2.437000000 GHz | |
| Center 2.4370 Res BW 8 MH | | GHz | | #Video BW 8.0 | MHz* | Swee | Span 0 Hz p 100.3 ms (8001 pts) | CF Step | |
| 5 Marker Table | Trace | ▼ Scale | Х | Y | Function | Function Width | Function Value | 8.000000 MHz Auto Man | |
| 2 3 4 | | | | | | | | Freq Offset 0 Hz | |
| 5 6 | | | | | | | | X Axis Scale Log Lin | |
| | C | | Jun 11, 2021 3:45:42 PM | $\Box \triangle$ | | l l l l l l l l l l l l l l l l l l l | | Signal Track (Span Zoom) | |

| | 1 | 1N HT40 | ON TIME | | TY CY | CLE MID | CH (V | VORSE | CASE) | | |
|----------------------------------|---|---------------------------------------|---------------|---------------|---|---------------------------------|------------|--------------------------------------|------------------------------------|-----------|--------------|
| Spectrum Ana Swept SA | lyzer 1 | • + | | | | | | | ₽ | Frequency | <u>۲ :::</u> |
| KEYSIGH | Input: RF Coupling: D Align: Auto | Input Z: 5 C Correctio Freq Ref | ns: Off Pream | p: Off Gate | 9: Fast 9: Off ain: Low Frack: Off | #Avg Type: Po Trig: Free Rur | n v | 1 2 3 4 5 6 VWWWWW A A A A A A | Center Frequ 2.43700000 Span | | Settings |
| 1 Spectrum Scale/Div 10 | ₹ | | Ref Le | /el 23.00 dBm | | | | | 0.00000000 Swept S | | |
| Log 13.0 3.00 | | | | | | | | | Zero Sp Full S | àn | |
| -7.00 -17.0 -27.0 | | | | | | | · | | Start Freq 2.43700000 | | |
| -37.0 -47.0 -57.0 -67.0 | | | | | | | | | Stop Freq 2.43700000 | 0 GHz | |
| Center 2.437 Res BW 8 MH | | | #Video | BW 8.0 MHz* | | Swee | o 100.3 ms | Span 0 Hz s (8001 pts) | AUTO T CF Step | UNE | |
| 5 Marker Table Mode | | ale X | | Y Fund | tion Fu | unction Width | | on Value | 8.000000 M Auto Man | Hz | |
| 1 2 3 4 | | | | | | | | | Freq Offset 0 Hz | | |
| 5 | | | | | | | | | X Axis Scale Log Lin | | |
| 1 5 | | ? Jun 11, 4:03:1 | 2021 | | | | | | Signal Track (Span Zoom) | | |



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 | >= 500KHz | 2400-2483.5 | | | |

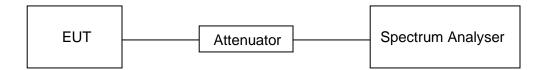
TEST PROCEDURE

Refer to FCC KDB 558074, connect the UUT to the spectrum analyzer 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 : ≥3 × 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 SETUP





RESULTS

| Test Mode | Test Antenna | Test Channel | 6dB bandwidth (MHz) | Result |
|--------------|--------------|--------------|------------------------|--------|
| | | LCH | 10.07 | Pass |
| 11B SISO | Antenna 1 | MCH | 10.08 | Pass |
| | | HCH | 10.08 | Pass |
| | | LCH | 16.57 | Pass |
| 11G SISO | Antenna 1 | MCH | 16.57 | Pass |
| | | HCH | 16.57 | Pass |
| | | LCH | 17.78 | Pass |
| | Antenna 1 | MCH | 17.79 | Pass |
| 11N20MIMO | | HCH | 17.78 | Pass |
| | | LCH | 17.78 | Pass |
| | Antenna 2 | MCH | 17.78 | Pass |
| | | HCH | 17.79 | Pass |
| | | LCH | 36.44 | Pass |
| | Antenna 1 | MCH | 36.44 | Pass |
| 111/00/00/00 | | HCH | 36.45 | Pass |
| 11N40MIMO | | LCH | 36.42 | Pass |
| | Antenna 2 | MCH | 36.43 | Pass |
| | | HCH | 36.44 | Pass |

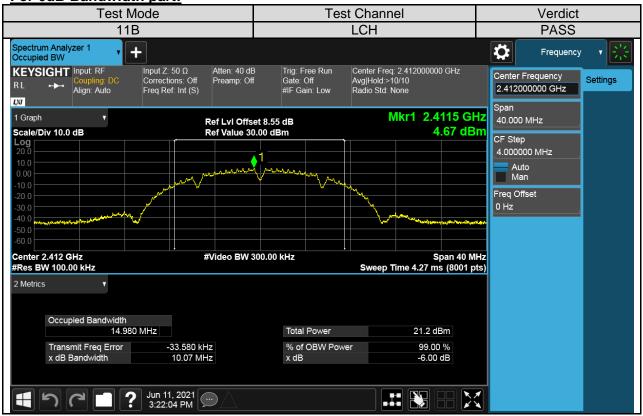
Remark:

1) For this product, it has two antennas, antenna1 and antenna2, but only the 802.11N HT20 and 802.11N HT40 modes can support both the SISO and MIMO technical. But for the modes of 11B &11G,only the antenna 1 is working.

2) Through pre-testing all the test modes of 11N 20 and 11N40, including SISO and MIMO, but only the data if worse case is included in this test report.



For 6dB Bandwidth part:

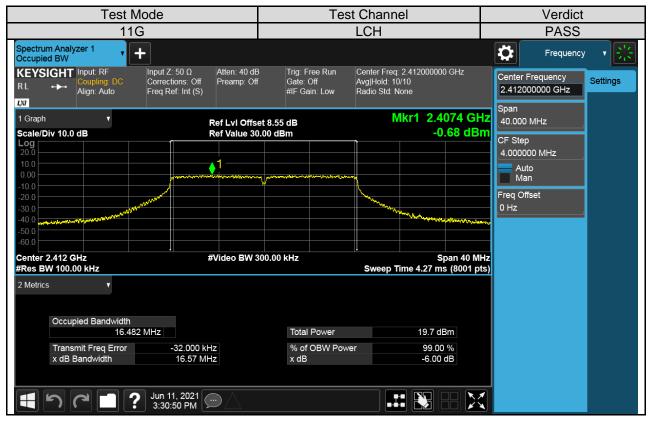




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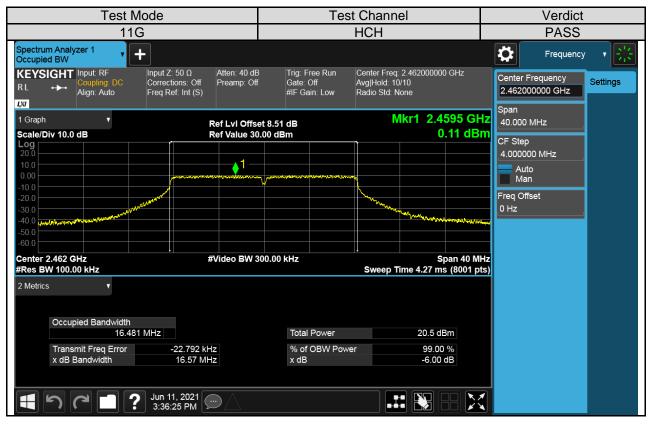




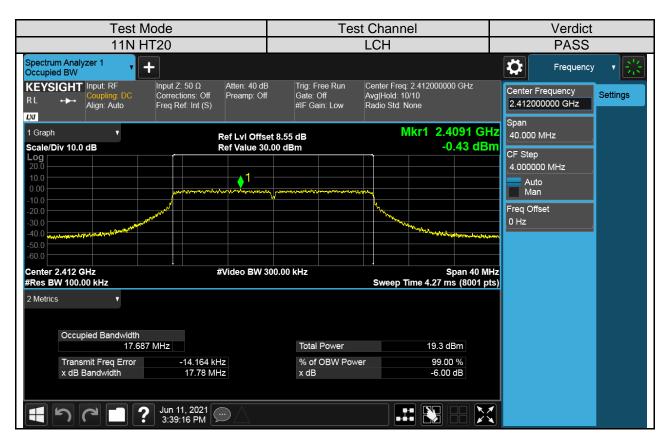


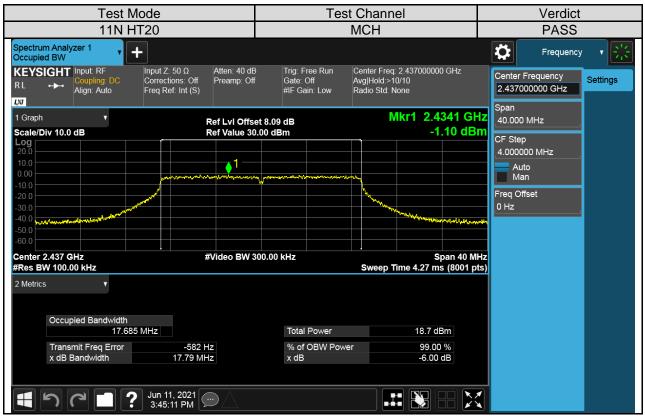






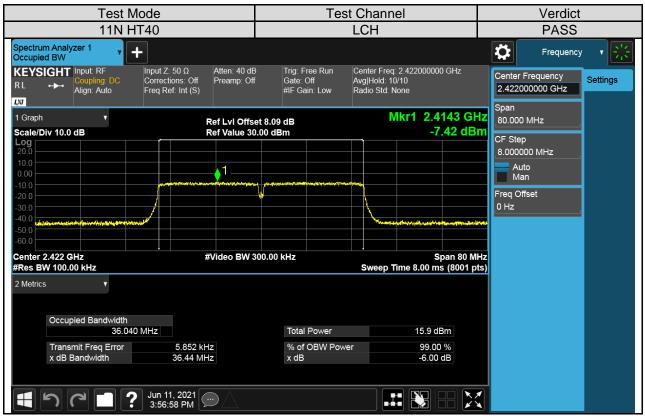




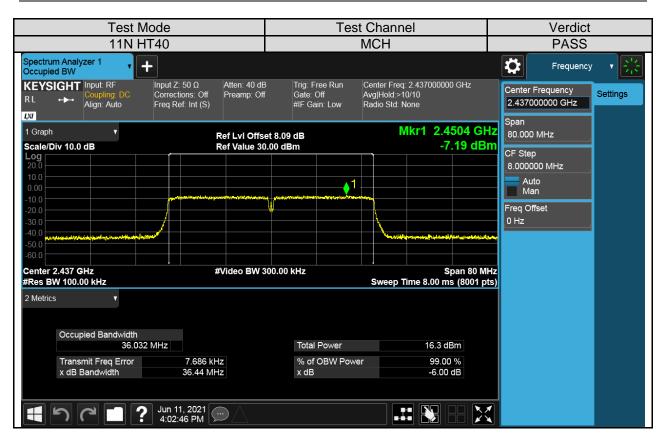


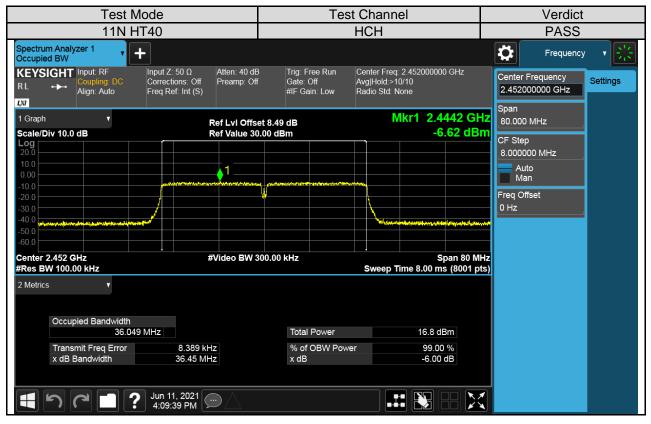








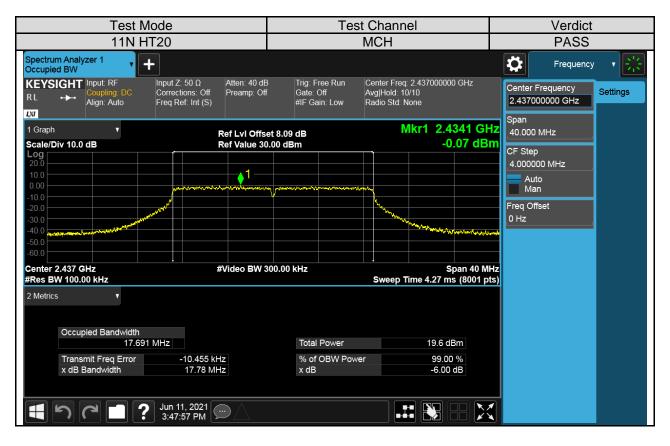






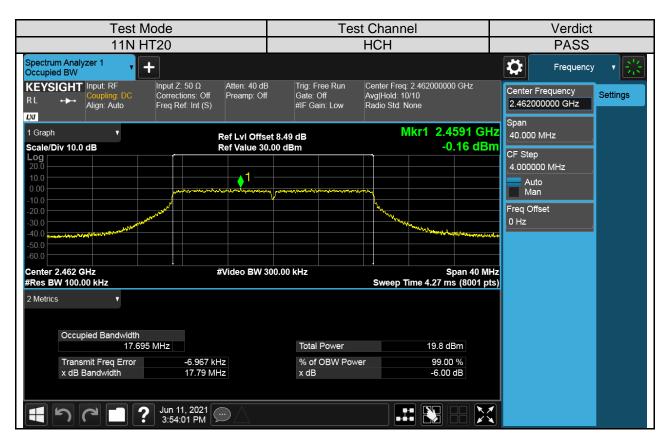
For Antenna2 part:

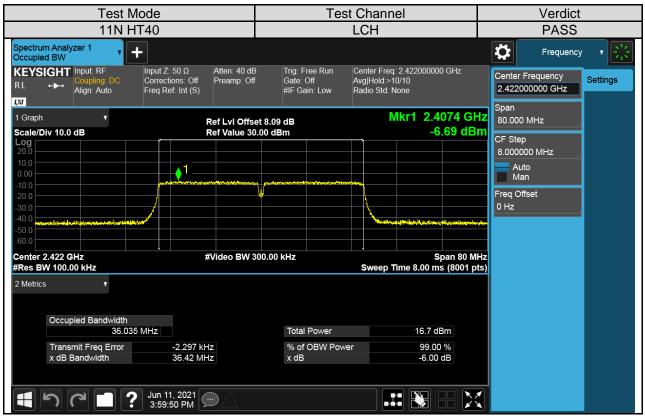




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7.3. CONDUCTED POWER

LIMITS

| FCC Part15 (15.247), Subpart C | | | | | | | |
|---|--------------|-----------------|-------------|--|--|--|--|
| Section Test Item Limit Frequency Range (MHz) | | | | | | | |
| FCC 15.247(b)(3) | Output Power | 1 watt or 30dBm | 2400-2483.5 | | | | |
| 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. Limit=30dBm – (Directional gain -6)dBi Directional gain = 10log [(10^{G1/20}+10^{G2/20})²/N_{ANT}] =6.91>6dBi,where the NANT is the numbers of antenna. So, the power limit shall be reduced to 30 – (6.91-6) = 29.09 dBm | | | | | | | |

TEST PROCEDURE

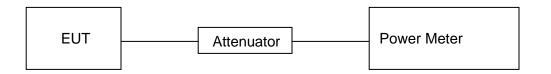
Place the EUT on the table and set it in the transmitting mode.

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.

AVG Detector use for AVG result.

TEST SETUP



RESULTS

| Test Mode | Test Antenna | Test Channel | Maximum Average Conducted Output Power (dBm) | Result |
|-----------|-----------------|-----------------|--|--------|
| | | LCH | 14.26 | Pass |
| 11B | Antenna 1 | MCH | 14.11 | Pass |
| 11B | | HCH | 15.40 | Pass |
| | | LCH | 13.73 | Pass |
| 11G | Antenna 1 | MCH | 13.96 | Pass |
| | | HCH | 14.44 | Pass |
| | | LCH | 12.90 | Pass |
| | Antenna 1 | MCH | 12.73 | Pass |
| | | HCH | 13.14 | Pass |
| | Antenna 2 | LCH | 14.22 | Pass |
| 11N20MIMO | | MCH | 13.67 | Pass |
| | | HCH | 13.67 | Pass |
| | Antenna 1+2 | LCH | 16.62 | Pass |
| | | MCH | 16.24 | Pass |
| | | HCH | 16.42 | Pass |
| | | LCH | 9.91 | Pass |
| | Antenna 1 | MCH | 10.30 | Pass |
| | | HCH | 10.75 | Pass |
| | | LCH | 10.66 | Pass |
| 11N40MIMO | Antenna 2 | MCH | 11.12 | Pass |
| | | HCH | 11.31 | Pass |
| | | LCH | 13.31 | Pass |
| | Antenna 1+2 | MCH | 13.74 | Pass |
| | | HCH | 14.05 | Pass |

Remark:

1) For all the test results has been adjusted the duty cycle factor.

2) For Correction Factor is refer to the result in section 7.1

- 3) For this product, it has two antennas, antenna1 and antenna2, but only the 802.11N HT20 and 802.11N HT40 modes can support both the SISO and MIMO technical. But for the modes of 11B &11G,only the antenna 1 is working.
- 4) Through pre-testing all the test modes of 11N 20 and 11N40, including SISO and MIMO, but only the data if worse case is included in this test report.



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 Density8 dBm in any 3 kHz band2400-2483.5 | | | | | | | |
| 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. 2) Limit=30dBm – (Directional gain -6)dBi Directional gain = 10log [(10^{G1/20} +10^{G2/20})²/N_{ANT}] =6.91>6dBi,where the NANT is the numbers of antenna. So, the power limit shall be reduced to 8 – (6.91-6) = 7.09dBm | | | | | | | |

TEST PROCEDURE

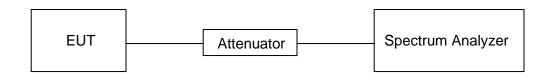
Refer to FCC KDB 558074, connect the UUT to the spectrum analyser and use the following settings:

| Center Frequency | The centre frequency of the channel under test |
|------------------|--|
| Detector | Peak |
| RBW | 3 kHz ≤ RBW ≤100 kHz |
| VBW | ≥3 × 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 SETUP





RESULTS

| Test Mode | Test Antenna | Test Channel | Maximum Peak power spectral density(dBm/30kHz) | Result |
|-----------|--------------|--------------|---|--------|
| | | LCH | -0.70 | Pass |
| 11B | Antenna 1 | MCH | -0.76 | Pass |
| | | HCH | 0.59 | Pass |
| | | LCH | -3.48 | Pass |
| 11G | Antenna 1 | MCH | -3.06 | Pass |
| | | HCH | -2.49 | Pass |
| | | LCH | -4.02 | Pass |
| | Antenna 1 | MCH | -4.23 | Pass |
| | | HCH | -3.72 | Pass |
| | | LCH | -2.65 | Pass |
| 11N20MIMO | Antenna 2 | MCH | -3.19 | Pass |
| | | HCH | -3.33 | Pass |
| | | LCH | -0.27 | Pass |
| | Antenna 1+2 | MCH | -0.67 | Pass |
| | | HCH | -0.51 | Pass |
| | | LCH | -10.31 | Pass |
| | Antenna 1 | MCH | -9.82 | Pass |
| | | HCH | -9.36 | Pass |
| | | LCH | -9.34 | Pass |
| 11N40MIMO | Antenna 2 | MCH | -8.83 | Pass |
| | | HCH | -8.84 | Pass |
| | | LCH | -6.79 | Pass |
| | Antenna 1+2 | MCH | -6.29 | Pass |
| | | НСН | -6.08 | Pass |

Remark:

1) For this product, it has two antennas, antenna1 and antenna2, but only the 802.11N HT20 and 802.11N HT40 modes can support both the SISO and MIMO technical. But for the modes of 11B &11G,only the antenna 1 is working.

2) Through pre-testing all the test modes of 11N 20 and 11N40, including SISO and MIMO, but only the data if worse case is included in this test report.



For Antenna 1 Part:





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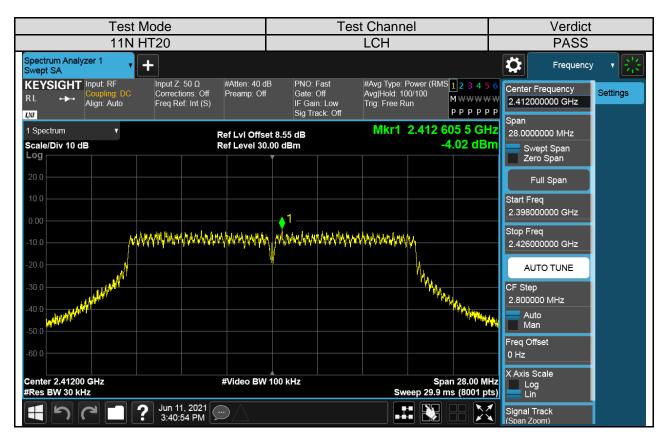


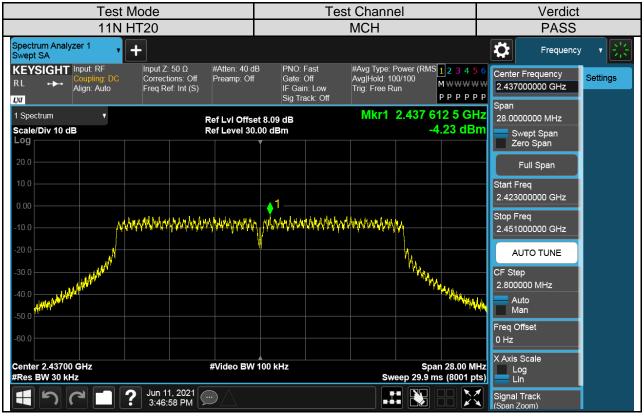






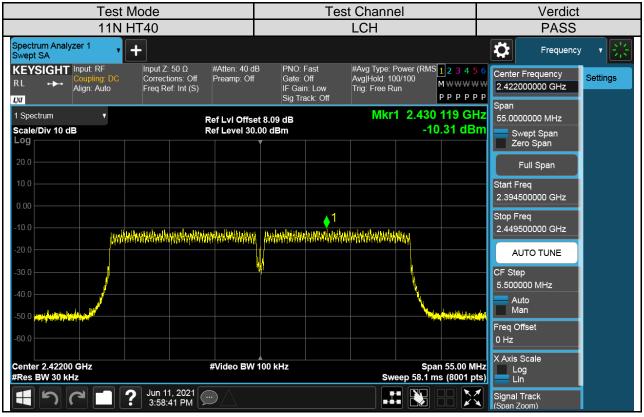






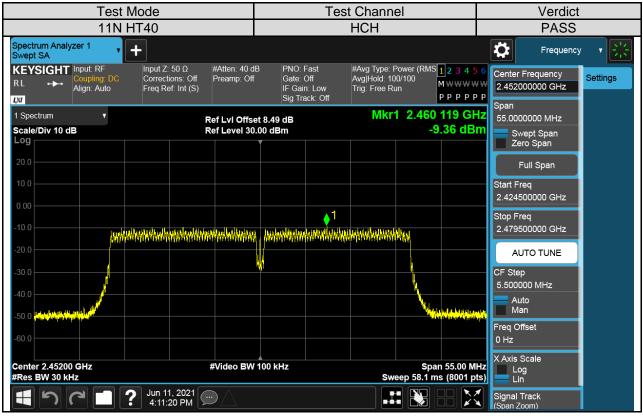






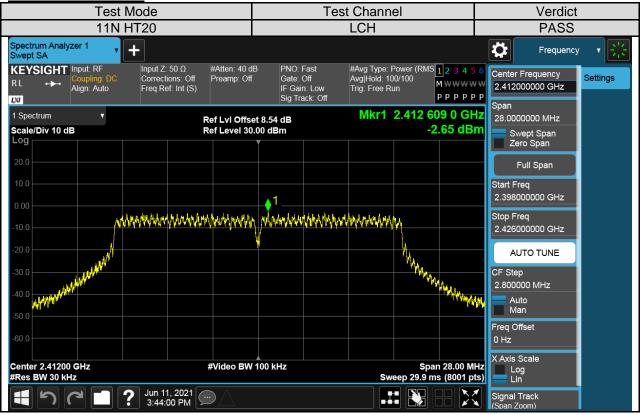








For Antenna 2 Part:

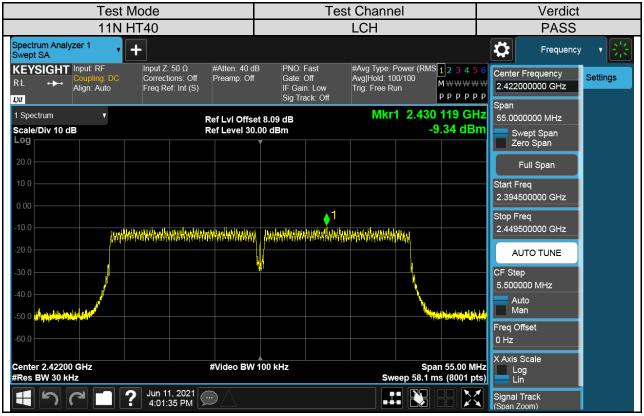




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7.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

<u>LIMITS</u>

| FCC Part15 (15.247) Subpart C | | | | | | | |
|-------------------------------|---|---|--|--|--|--|--|
| Section Test Item Limit | | | | | | | |
| FCC §15.247 (d) | Conducted Bandedge and Spurious Emissions | 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 | ≥3 × RBW |
| Span | 1.5 x DTS bandwidth |
| Trace | Max hold |
| Sweep time | Auto couple. |

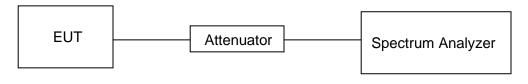
settings:

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 | ≥3 × RBW |
| measurement points | ≥span/RBW |
| Trace | Max hold |
| Sweep time | Auto couple. |

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

TEST SETUP



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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 | 4.393 | -41.42 | -25.61 | PASS |
| ПВ | Antenna i | HCH | 5.685 | -41.17 | -24.32 | PASS |
| 11G | Antonno 1 | LCH | -0.579 | -41.83 | -30.58 | PASS |
| ПĞ | Antenna 1 | HCH | 0.172 | -41.40 | -29.83 | PASS |
| | Antonno 1 | LCH | -1.374 | -41.67 | -31.37 | PASS |
| 4410004040 | Antenna 1 | HCH | -0.792 | -41.26 | -30.79 | PASS |
| 11N20MIMO | Antenna 2 | LCH | 0.390 | -41.01 | -29.61 | PASS |
| | | HCH | -0.208 | -40.34 | -30.21 | PASS |
| | Antonno 1 | LCH | -7.403 | -42.09 | -37.40 | PASS |
| 445140541540 | Antenna 1 | HCH | -6.692 | -41.28 | -36.69 | PASS |
| 11N40MIMO | Antonno O | LCH | -6.472 | -41.99 | -36.47 | PASS |
| | Antenna 2 | HCH | -5.911 | -40.48 | -35.91 | PASS |

Remark:

1) For this product, it has two antennas, antenna1 and antenna2, but only the 802.11N HT20 and 802.11N HT40 modes can support both the SISO and MIMO technical. But for the modes of 11B &11G,only the antenna 1 is working.

2) Through pre-testing all the test modes of 11N 20 and 11N40, including SISO and MIMO, but only the data if worse case is included in this test report.

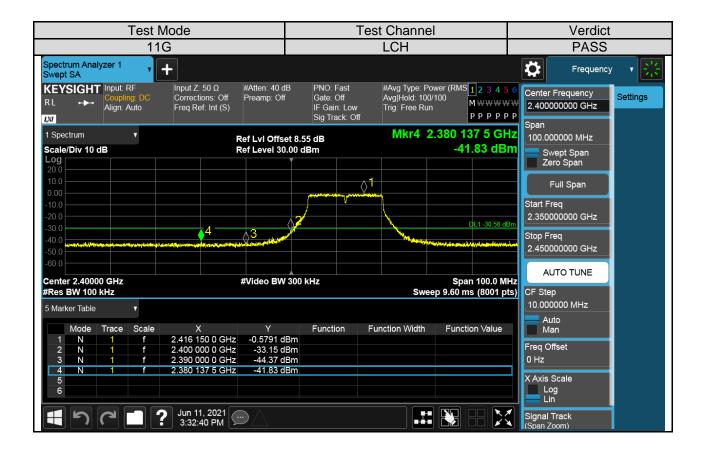


For Antenna 1 Part:



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

| (| <u>1</u> | | | | | | | | | REPOR | T No. | : 478997 Page 4 | 3747-34 6 of 171 |
|-------------------------|--------------------|------------------------------|------------|--|--|---|--------------------------|---|--------------------------|---|----------------------------------|--------------------------------|---------------------|
| Spect Swep | rum Ana t SA | lyzer 1 | • | + | | | | | | | * | Frequency | |
| KEY RL | SIGH ⁻ | Input: Coupli Align: J | ng: DC | Input Ζ: 50 Ω Corrections: Off Freq Ref: Int (S) | #Atten: 40 dB Preamp: Off | PNO: Fas Gate: Off IF Gain: L Sig Track: | .ow | #Avg Type: Avg Hold: 1 Trig: Free R | 00/100 | 6 <mark>1</mark> 2 3 4 5 6 M₩₩₩₩₩ P P P P P P P | | requency 00000 GHz | Settings |
| | ctrum /Div 10 | dB | • | | Ref LvI Offset 8. Ref Level 30.00 | | | Mkr4 | | 25 0 GHz 1.17 dBm | 100.000 | 0000 MHz ept Span o Span | |
| 20.0 10.0 0.00 | | | | 1 Marine Marine Marine Marine | | | | | | | F | ull Span | |
| -10.0 -20.0 -30.0 | | | / | | | 4 | 3 | | | DL1 -24.32 dBm | Start Fre 2.43350 Stop Fre | 00000 GHz | |
| -40.0 -50.0 -60.0 | ali-tili ogistig | | | | V | | the Product of Party and | y dilente entre riter to | nilaa jirana qalqada ada | 47027 avga fördadt for ätt gedelt och atten | 2.53350 | 90000 GHz | |
| | er 2.483 BW 100 | | | | #Video BW 300 | kHz | | Sw | | an 100.0 MHz ns (8001 pts) | CF Step | | |
| 5 Mar | ker Table | | V | | | | _ | | _ | | Aut | - | |
| 1 | Mode N | Trace 1 | Scale f | X 2.461 487 5 GHz | Y 5.685 dBm | Function | Fu | nction Width | i Func | tion Value | Mai Freq Off | | |
| 2 3 4 | N N N | 1 1 1 | f f | 2.483 500 0 GHz 2.500 000 0 GHz 2.489 025 0 GHz | -45.64 dBm -44.48 dBm -41.17 dBm | | | | | | 0 Hz | set | |
| 5 6 | | | | 2.469 023 0 GHZ | -41.17 0011 | | | | | | X Axis S Log Lin | | |
| | ょ | 6 | | ? Jun 11, 2021 3:29:50 PM | \Box | | | | | | Signal T (Span Zo | | |



| Test Mode | Test Channel | Verdict |
|-----------|--------------|---------|
| | | |



REPORT No.: 4789973747-34

Page 47 of 171

| | | 11 | G | | | HCH | | PASS | |
|----------------------------|---------------------------------|--------|--|--|---|---------------------------------|--|--|----------|
| Spectrum Anal | lyzer 1 | | + | | | | | FROS | v 🛃 |
| KEYSIGHT RL ++- | Input: F Couplir Align: A | ng: DC | Input Z: 50 Ω Corrections: Off Freq Ref: Int (S) | #Atten: 40 dB Preamp: Off | PNO: Fast Gate: Off IF Gain: Low Sig Track: Of | Avg Hold: 100 Trig: Free Rur | | 6 Center Frequency ₩ 2.483500000 GHz | Settings |
| Spectrum | dB | • | | Ref LvI Offset 8. Ref Level 30.00 | | Mkr4 2 | 2.484 125 0 GH -41.40 dBr | Z 100.000000 MHz | |
| .og 20.0 10.0 | | | | | | | | Zero Span Full Span | |
| 0.00 | | | | | | | DL1 -29.83 dE | Start Freq 2 433500000 GHz | |
| 60.0 60.0 60.0 | النزر بطريام أرفادهم | | | Martine and a start of the star | 1 Antopological Alamana | 3 | h i wangan dan dipin ing ting ting ting ting ting ting tin | Stop Freq 2.533500000 GHz | |
| enter 2.4835 Res BW 100 | | | | #Video BW 300 |) kHz | Swo | Span 100.0 Mi ep 9.60 ms (8001 pt | | |
| Marker Table | KΠZ | • | | | | Swe | ep 9.00 ms (800 m | 10.000000 MHz | |
| Mode | Trace | Scale | Х | Y | Function | Function Width | Function Value | Auto Man | |
| 1 N 2 N | 1 | f f | 2.466 150 0 GHz 2.483 500 0 GHz | | | | | Freq Offset | |
| 3 N | 1 | f | 2.500 000 0 GHz | | | | | 0 Hz | |
| 4 N 5 6 | 1 | f | 2.484 125 0 GHz | | | | | X Axis Scale Log Lin | |
| 1 7 | 6 | | Jun 11, 2021 3:38:14 PM | | | | | Signal Track (Span Zoom) | |

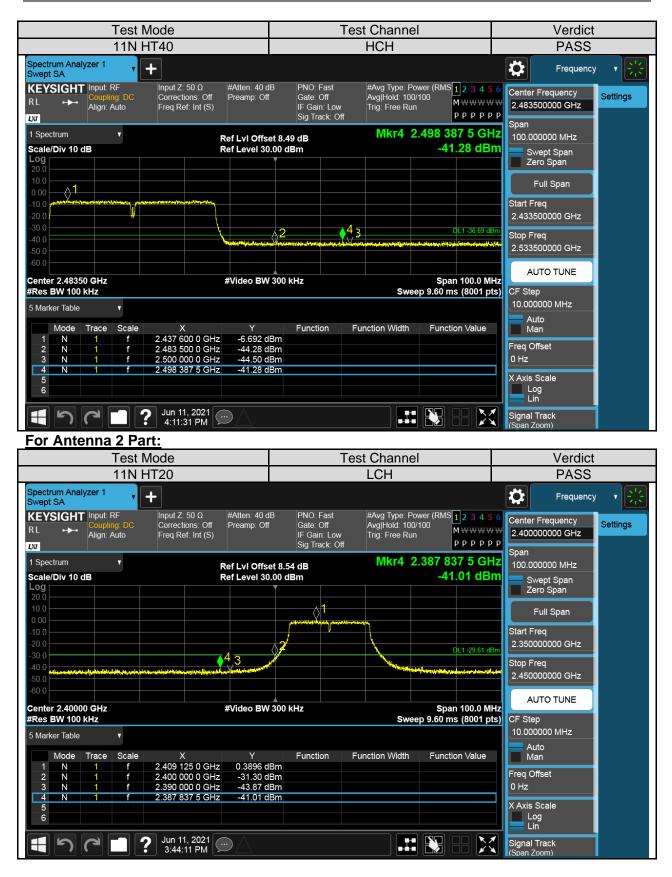














| Test Mode | Test Channel | Verdict |
|---|---|-------------------------------|
| 11N HT20 | HCH | PASS |
| Spectrum Analyzer 1 | | Frequency V |
| | en: 40 dB PNO: Fast #Avg Type: Power (RMS 1 2 3 4 9 amp: Off Gate: Off Avg]Hold: 100/100 M WWWW IF Gain: Low Trig: Free Run P P P P | 2.483500000 GHz |
| 1 Spectrum Ref | vl Offset 8.49 dB evel 30.00 dBm -40.34 dB | |
| | | Full Span |
| -10.0 | DL1-30.21 dl | Start Freq 2.433500000 GHz |
| -30.0 -40.0 -50.0 | | Stop Freq 2.533500000 GHz |
| | leo BW 300 kHz Span 100.0 M | |
| #Res BW 100 kHz 5 Marker Table v | Sweep 9.60 ms (8001 p | 10.000000 MHz |
| Mode Trace Scale X 1 N 1 f 2.459 125 0 GHz -(| Y Function Function Width Function Value | Auto Man |
| 2 N 1 f 2.483 500 0 GHz 3 N 1 f 2.500 000 0 GHz | 43.83 dBm 44.05 dBm | Freq Offset 0 Hz |
| 4 N 1 f 2.485 350 0 GHz 5 6 6 | 40.34 dBm | X Axis Scale Log Lin |
| Jun 11, 2021 | | Signal Track (Span Zoom) |





| Test Mode | | Tes | t Channel | Verdict | | |
|---|---|--|---|--|-------------------------------|----------|
| 11N HT40 | | | HCH | PASS | | |
| Spectrum Analyzer 1 | | | | | Frequency | |
| KEYSIGHT Input: RF Input: S0 Ω R L →→ Coupling: DC Corrections: Off Align: Auto Freq Ref: Int (S) | #Atten: 40 dB Preamp: Off | PNO: Fast Gate: Off IF Gain: Low Sig Track: Off | #Avg Type: Po Avg Hold: 100/ Trig: Free Run | wer (RMS <mark>1</mark> 2345 100 M WWW PPPPP | 2.483500000 GHz | Settings |
| Scale/Div 10 dB | Ref LvI Offset 8.4 Ref Level 30.00 d | | Mkr4 2 | .483 937 5 GH -40.48 dB | | |
| 10.0 0.00 1 | | | | | Full Span | |
| -10.0 -20.0 | | | | | Start Freq 2.433500000 GHz | |
| -30.0 | | | فالمتعر معتاق معاقبات ومرجمة القرقي | DL1-35.91 dE | Stop Freq 2.533500000 GHz | |
| -60.0 | #Video BW 300 | kHz | | Span 100.0 M | | |
| #Res BW 100 kHz 5 Marker Table | | | Swee | p 9.60 ms (8001 p | 10.000000 MHz | |
| Mode Trace Scale X | Y | Function Fu | nction Width | Function ∀alue | Auto Man | |
| 1 N 1 f 2.437 600 0 GH 2 N 1 f 2.483 500 0 GH | | | | | Freq Offset | |
| 3 N 1 f 2.500 000 0 GH | | | | | 0 Hz | |
| 4 N 1 f 2.483 937 5 GH 5 6 6 | Iz -40.48 dBm | | | | X Axis Scale Log Lin | |
| Jun 11, 2021 4:14:26 PM | \square | | | | Signal Track (Span Zoom) | |

Part II :Conducted Emission

| Test Mode | Test Antenna | Channel | Pref(dBm) | Puw(dBm) | Verdict |
|------------|--------------|---------|---------------------|--------------------------------------|---------|
| | | LCH | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |
| | Antenna 1 | MCH | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |
| 11B SISO | | HCH | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |
| | | LCH | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |
| | Antenna 1 | MCH | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |
| 11G SISO | | НСН | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |
| | | LCH | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |
| | Antenna 1 | MCH | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |
| 11N MIMO20 | | HCH | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |
| | | LCH | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |
| | Antenna 2 | MCH | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |
| | | HCH | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |
| | | LCH | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |
| | Antenna 1 | MCH | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |
| 11N MIMO40 | | HCH | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |
| | | LCH | See the test graphs | <limit< td=""><td>PASS</td></limit<> | PASS |



| | | | | • |
|-----------|-------------------------|---------------------|--------------------------------------|------|
| Antenna 2 | MCH See the test graphs | | <limit< th=""><th>PASS</th></limit<> | PASS |
| | HCH | See the test graphs | <limit< th=""><th>PASS</th></limit<> | PASS |

Remark:

- 1) For this product, it has two antennas, antenna1 and antenna2, but only the 802.11N HT20 and 802.11N HT40 modes can support both the SISO and MIMO technical. But for the modes of 11B &11G,only the antenna 1 is working.
- 2) Through pre-testing all the test modes of 11N 20 and 11N40, including SISO and MIMO, but only the data if worse case is included in this test report.



For Antenna 1 Part:

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

Pref test Plot

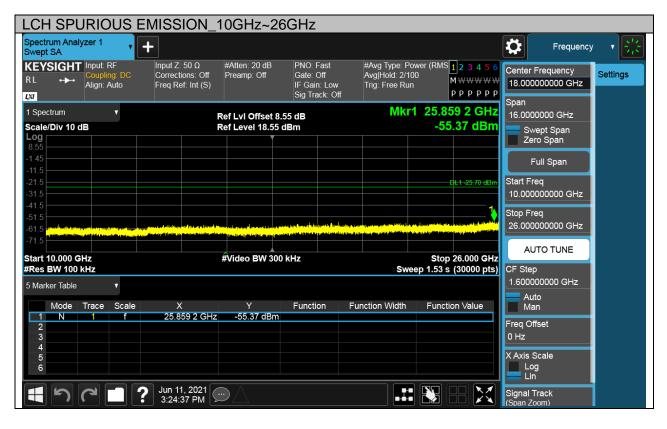




REPORT No.: 4789973747-34 Page 54 of 171

Puw test Plot

| LCH SPL | JRIOUS | EMISSION_3 | 30MHz~10 | GHz | | | | | |
|------------------------------|--|--|---|--|---|--|-------------------|------------------------------|----------|
| Spectrum Anal Swept SA | yzer 1 🗸 | + | | | | | | Frequency | - * 影 |
| KEYSIGHT RL ↔ | Input: RF Coupling: DC Align: Auto | Input Ζ: 50 Ω Corrections: Off Freq Ref: Int (S) | #Atten: 20 dB Preamp: Off | PNO: Fast Gate: Off IF Gain: Low Sig Track: Off | #Avg Type: Pov Avg Hold: 11/10 Trig: Free Run | wer (RMS <mark>123456</mark> 00 M WWWWW P P P P P P | 5.015 | r Frequency 000000 GHz | Settings |
| 1 Spectrum Scale/Div 10 c | ▼ 1B | | Ref LvI Offset 8.5 Ref Level 18.55 d | | Mkı | r2 2.572 1 GHz -46.69 dBm | s s | 00000 GHz wept Span | |
| 8.55 -1.45 -11.5 | | 1 | | | | | | ero Span Full Span | |
| -21.5 -31.5 -41.5 | | 2 | | | | DL1 -25.70 dBm | | 0000 MHz | |
| -51.5 -61.5 -71.5 | | | | | | | | 0000000 GHz | |
| Start 30 MHz #Res BW 100 | kHz | | #Video BW 300 | kHz | Sweep | Stop 10.000 GHz 954 ms (30000 pts) | CF Ste | UTO TUNE ∋p 000000 MHz | |
| | Trace Scale | | Y | Function F | unction Width | Function Value | - A | uto lan | |
| 1 N 2 N 3 4 | 1 f 1 f | 2.412 9 GHz 2.572 1 GHz | | | | | Freq C 0 Hz | Offset | |
| 5 6 | | | | | | | L | Scale og in | |
| 1 5 | C | ? Jun 11, 2021 3:24:28 PM | | | | | Signal (Span 2 | | |





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

Pref test Plot

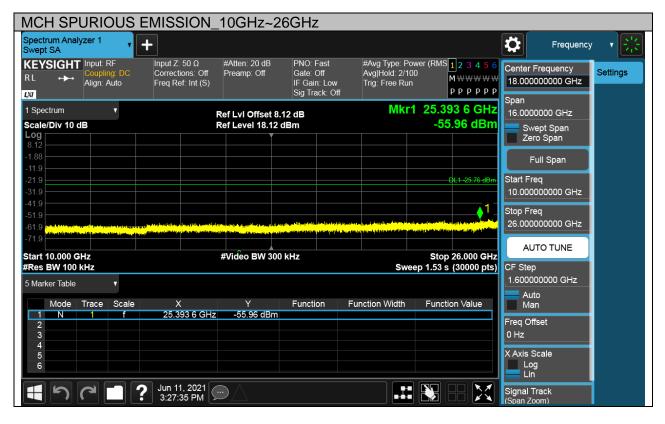




REPORT No.: 4789973747-34 Page 56 of 171

Puw test Plot







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

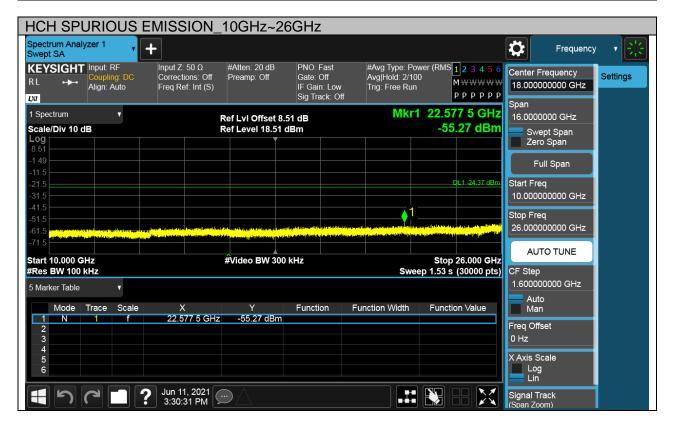
Pref test Plot





Puw test Plot

| HCH SPL | JRIOUS | EMISSION_ | _30MHz~10 | GHz | | | | |
|---------------------------------|--|--|--|---|---|---|-------------------------------------|----------|
| Spectrum Analy Swept SA | /zer 1 🔻 | + | | | | | Frequency | / 「米 |
| KEYSIGHT RL ↔ | Input: RF Coupling: DC Align: Auto | Input Ζ: 50 Ω Corrections: Off Freq Ref: Int (S) | #Atten: 20 dB Preamp: Off | PNO: Fast Gate: Off IF Gain: Low Sig Track: Off | #Avg Type: Po Avg Hold: 12/1 Trig: Free Run | | Center Frequency 5.015000000 GHz | Settings |
| 1 Spectrum Scale/Div 10 d | T B | | Ref LvI Offset 8.5 Ref Level 18.51 di | 1 dB | Mki | 2 4.924 1 GHz -43.49 dBm | Span 9.97000000 GHz | |
| Log 8.51 | | | | | | | Zero Span | |
| -1.49 -11.5 -21.5 | | | | | | DL1-24.37 dBm | Full Span Start Freg | |
| -31.5 | | | 2 | | | | 30.000000 MHz | |
| -51.5 -61.5 | | | | ور ور می اواند و در ور او | | en blevet te tel kommen andere and | Stop Freq 10.000000000 GHz | |
| Start 30 MHz | | | #Video BW 300 k | (Hz | | Stop 10.000 GHz | AUTO TUNE | |
| #Res BW 100 F 5 Marker Table | KHZ V | | | | Swee | o 954 ms (30000 pts) | CF Step 997.000000 MHz | |
| Mode 1 | Trace Scale | X 2.463 1 GHz | Y 5.475 dBm | Function F | unction Width | Function ∀alue | Auto Man | |
| 2 N 3 | 1 f | 4.924 1 GHz | | | | | Freq Offset 0 Hz | |
| 4 5 6 | | | | | | | X Axis Scale Log Lin | |
| | | ? Jun 11, 2021 3:30:22 PM | | | | | Signal Track (Span Zoom) | |





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

Pref test Plot

