

FCC-ID: LYHMPCIE1V1

# EMI - TEST REPORT

- FCC Part 15.407 and RSS210 -



Deutsche  
Akkreditierungsstelle  
D-PL-12030-01-01

|                          |                       |                                    |
|--------------------------|-----------------------|------------------------------------|
| <b>Test Report No. :</b> | <b>T35222-06-04HS</b> | 06 September 2013<br>Date of issue |
|--------------------------|-----------------------|------------------------------------|

Type / Model Name : WLAN n-module MPCIE-R1-ABGN-U3

Product Description : Module for industrial WLAN applications 2.4 / 5 GHz

**Applicant** : Siemens AG, Industrial Automation Division

Address : Gleiwitzer Strasse 555

90475 NUERNBERG, GERMANY

**Manufacturer** : Siemens AG, Sensors & Communication

Address : Oestliche Rheinbrueckenstrasse 50

76187 KARLSRUHE, GERMANY

**Licence holder** : Siemens AG, Industrial Automation Division

Address : Gleiwitzer Strasse 555

90475 NUERNBERG, GERMANY

|  |                 |
|--|-----------------|
| <b>Test Result</b> according to the standards listed in clause 1 test standards: | <b>POSITIVE</b> |
|--|-----------------|



The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

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## 1 TEST STANDARDS

The tests were performed according to following standards:

### **FCC Rules and Regulations Part 15, Subpart A - General (September, 2011)**

|                                   |   |
|-----------------------------------|---|
| Part 15, Subpart A, Section 15.31 | Measurement standards                         |
| Part 15, Subpart A, Section 15.33 | Frequency range of radiated measurements      |
| Part 15, Subpart A, Section 15.35 | Measurement detector functions and bandwidths |

### **FCC Rules and Regulations Part 15, Subpart C - Intentional Radiators (September, 2011)**

|                                    |   |
|------------------------------------|---|
| Part 15, Subpart C, Section 15.203 | antenna requirement   |
| Part 15, Subpart C, Section 15.204 | External radio frequency power amplifiers and antenna modifications |
| Part 15, Subpart C, Section 15.205 | Restricted bands of operation                                       |
| Part 15, Subpart C, Section 15.207 | Conducted limits  |
| Part 15, Subpart C, Section 15.209 | Radiated emission limits, general requirements                      |
| Part 15, Subpart C, Section 15.212 | Modular transmitters  |

### **FCC Rules and Regulations Part 15, Subpart E – Unlicensed National Information Infrastructure Devices (September, 2011)**

|                                    |   |
|------------------------------------|---|
| Part 15, Subpart E, Section 15.407 | Operation within the bands 5.15 - 5.25 GHz, 5.25 - 5.35 GHz, 5.47 - 5.725 GHz and 5.725 - 5.825 GHz |
|------------------------------------|---|

### **FCC Rules and Regulations Part 1, Subpart I - Procedures Implementing the National Environmental Policy Act of 1969**

|                                   |   |
|-----------------------------------|---|
| Part 1, Subpart I, Section 1.1310 | Radiofrequency radiation exposure limits                      |
| Part 1, Subpart 2, Section 2.1093 | Radiofrequency radiation exposure evaluation: portable device |

### **OET Bulletin 65, 65A, 65B, 65C Edition 97-01, August 1997 – Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.**

|                  |   |
|------------------|---|
| ANSI C63.4: 2009 | Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz. |
|------------------|---|

|                   |                                     |
|-------------------|-------------------------------------|
| ANSI C63.10: 2009 | Testing Unlicensed Wireless Devices |
|-------------------|-------------------------------------|

|                  |  |
|------------------|--|
| ANSI C95.1: 2005 | IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz |
|------------------|--|

|                    |                                  |
|--------------------|----------------------------------|
| CISPR 16-4-2: 2003 | Uncertainty in EMC measurement   |
| CISPR 22: 2005     | Information technology equipment |
| EN 55022: 2006     |                                  |

|                            |  |
|----------------------------|--|
| OET 789033 D01, 10/25/2011 | Guidelines for compliance testing of Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E |
|----------------------------|--|

## 2 SUMMARY

### 2.1 Test result summary

WLAN devices using digital modulation:

Operating in the 5150 MHz - 5350 MHz and 52up75 MHz – 5725 MHz band:

| FCC Rule Part   | RSS Rule Part   | Description                            | Result         |
|-----------------|-----------------|--|----------------|
| 15.207(a)       | RSS Gen, 7.2.4. | AC power line conducted emissions      | not applicable |
| 15.407(a)       |                 | EBW 26 dB                              | passed         |
| 15.407(a)       | RSS210, A9.2    | Conducted output power and PSD         | passed         |
| 15.407(a)(6)    |                 | Peak excursion                         | passed         |
| 15.407(b)       | RSS210, A9.2    | Undesirable emissions                  | passed         |
| 15.205(a)       | RSS-Gen, 7.2.2  | Emissions in restricted bands          | passed         |
| 15.407(g)       | RSS-Gen, 7.2.6  | Frequency stability                    | passed         |
| 15.407(f)       | RSS210, A9.2    | Maximum permissible exposure (MPE)     | passed         |
| 15.407(h)(1)    | RSS210, A9.2    | TPC                                    | passed         |
| 15.407(a)       | RSS210, A9.2    | antenna requirement                    | passed         |
| OET Bulletin 65 | RSS100up, 3.2   | Co-location, Co-transmission           | passed         |
| 15.111(a)       | RSS-Gen, 6.2    | Receiver spurious emissions, conducted | not required   |
| 15.109(a)       | RSS-Gen, 6.1    | Receiver spurious emissions, radiated  | not required   |
|                 | RSS210, A9.2    | OBW 99%                                | passed         |

The mentioned RSS Rule Parts in the above table are related to:

RSS Gen, Issue 3, December 2010

RSS 210, Issue 8, December 2010

RSS 100up, Issue 4, March 2010

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**2.2 GENERAL REMARKS:**

The EUT is a WLAN module. The intent of this Test Report is a modular approval according to FCC 15.212. The EUT may be access point or client. The WLAN module is compatible with 802.11h and 802.11n standard. It supports the 5 GHz frequency bands. The EUT have to be professionally installed to ensure the right power setting in combination with one of the listed antennas.

Test Jig

The used test jig provides the necessary power supply and control signals to operate the WLAN module for testing. The test jig is DC power supplied with the view to the industrial application in future. The test ports are connected via UFL-RSMA-Pigtail which will be used in the end application. The photos of the test jig are made without heat sink for a better view on the devices, for operating the EUT the test jig is embedded in a heat sink.

Channel plan:

HT20 mode and Legacy mode:

| Channel | Frequency |
|---------|-----------|
| 52      | 5260      |
| 56      | 5280      |
| 60      | 5300      |
| 64      | 5320      |
|         |           |
| 100     | 5500      |
| 104     | 5520      |
| 108     | 5540      |
| 112     | 5560      |
| 116     | 5580      |
| 120     | 5600      |
| 124     | 5620      |
| 128     | 5640      |
| 132     | 5660      |
| 136     | 5680      |
| 140     | 5700      |

HT40 mode:

| Channel | Frequency |
|---------|-----------|
| 52up    | 5270      |
| 60up    | 5310      |
|         |           |
| 100up   | 5510      |
| 108up   | 5550      |
| 132up   | 5670      |

Note: The marked channels are not supported by the firmware.

Transmit operating modes

It supports MIMO at 3 antenna ports which is 3T3R. The firmware does not support the ad-hoc modes. The EUT use the MIMO function with multiple antennas without beam forming. The EUT has no ad hoc modes. The EUT has radar detection and manually TPC.

Both modules use OFDM modulation and may provide following data rates:

- 802.11n      HT20                      MCS 0 - 23                      (MCS = modulation coding sequence)
- 802.11n      HT40                      MCS 0 - 23
- 802.11h      Legacy mode      52up, 48, 36, 24, 18, 12, 9, 6 Mbps      (Mbps = megabits per second)

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HT20:

**MCS parameters for mandatory 20 MHz, NSS = 1, NES = 1**

| MCS Index | Modulation | R   | N <sub>BPSCS(iSS)</sub> | N <sub>SD</sub> | N <sub>SP</sub> | N <sub>CBPS</sub> | N <sub>DBPS</sub> | Data rate (Mb/s) |                      |
|-----------|------------|-----|-------------------------|-----------------|-----------------|-------------------|-------------------|------------------|----------------------|
|           |            |     |                         |                 |                 |                   |                   | 800 ns GI        | 400 ns GI (see NOTE) |
| 0         | BPSK       | 1/2 | 1                       | 52              | 4               | 52                | 26                | 6.5              | 7.2                  |
| 1         | QPSK       | 1/2 | 2                       | 52              | 4               | 104               | 52                | 13.0             | 14.4                 |
| 2         | QPSK       | 3/4 | 2                       | 52              | 4               | 104               | 78                | 19.5             | 21.7                 |
| 3         | 16-QAM     | 1/2 | 4                       | 52              | 4               | 208               | 104               | 26.0             | 28.9                 |
| 4         | 16-QAM     | 3/4 | 4                       | 52              | 4               | 208               | 156               | 39.0             | 43.3                 |
| 5         | 64-QAM     | 2/3 | 6                       | 52              | 4               | 312               | 208               | 52.0             | 57.8                 |
| 6         | 64-QAM     | 3/4 | 6                       | 52              | 4               | 312               | 234               | 58.5             | 65.0                 |
| 7         | 64-QAM     | 5/6 | 6                       | 52              | 4               | 312               | 260               | 65.0             | 72.2                 |

NOTE—Support of 400 ns GI is optional on transmit and receive.

**MCS parameters for optional 20 MHz, NSS = 2, NES = 1, EQM**

| MCS Index | Modulation | R   | N <sub>BPSCS(iSS)</sub> | N <sub>SD</sub> | N <sub>SP</sub> | N <sub>CBPS</sub> | N <sub>DBPS</sub> | Data rate (Mb/s) |                      |
|-----------|------------|-----|-------------------------|-----------------|-----------------|-------------------|-------------------|------------------|----------------------|
|           |            |     |                         |                 |                 |                   |                   | 800 ns GI        | 400 ns GI (see NOTE) |
| 8         | BPSK       | 1/2 | 1                       | 52              | 4               | 104               | 52                | 13.0             | 14.4                 |
| 9         | QPSK       | 1/2 | 2                       | 52              | 4               | 208               | 104               | 26.0             | 28.9                 |
| 10        | QPSK       | 3/4 | 2                       | 52              | 4               | 208               | 156               | 39.0             | 43.3                 |
| 11        | 16-QAM     | 1/2 | 4                       | 52              | 4               | 416               | 208               | 52.0             | 57.8                 |
| 12        | 16-QAM     | 3/4 | 4                       | 52              | 4               | 416               | 312               | 78.0             | 86.7                 |
| 13        | 64-QAM     | 2/3 | 6                       | 52              | 4               | 624               | 416               | 104.0            | 115.6                |
| 14        | 64-QAM     | 3/4 | 6                       | 52              | 4               | 624               | 468               | 117.0            | 130.0                |
| 15        | 64-QAM     | 5/6 | 6                       | 52              | 4               | 624               | 520               | 130.0            | 144.4                |

NOTE—The 400 ns GI rate values are rounded to 1 decimal place.

**MCS parameters for optional 20 MHz, NSS = 3, NES = 1, EQM**

| MCS Index | Modulation | R   | N <sub>BPSCS(iSS)</sub> | N <sub>SD</sub> | N <sub>SP</sub> | N <sub>CBPS</sub> | N <sub>DBPS</sub> | Data rate (Mb/s) |           |
|-----------|------------|-----|-------------------------|-----------------|-----------------|-------------------|-------------------|------------------|-----------|
|           |            |     |                         |                 |                 |                   |                   | 800 ns GI        | 400 ns GI |
| 16        | BPSK       | 1/2 | 1                       | 52              | 4               | 156               | 78                | 19.5             | 21.7      |
| 17        | QPSK       | 1/2 | 2                       | 52              | 4               | 312               | 156               | 39.0             | 43.3      |
| 18        | QPSK       | 3/4 | 2                       | 52              | 4               | 312               | 234               | 58.5             | 65.0      |
| 19        | 16-QAM     | 1/2 | 4                       | 52              | 4               | 624               | 312               | 78.0             | 86.7      |
| 20        | 16-QAM     | 3/4 | 4                       | 52              | 4               | 624               | 468               | 117.0            | 130.0     |
| 21        | 64-QAM     | 2/3 | 6                       | 52              | 4               | 936               | 624               | 156.0            | 173.3     |
| 22        | 64-QAM     | 3/4 | 6                       | 52              | 4               | 936               | 702               | 175.5            | 195.0     |
| 23        | 64-QAM     | 5/6 | 6                       | 52              | 4               | 936               | 780               | 195.0            | 216.7     |

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HT40:

#### MCS parameters for optional 40 MHz, NSS = 1, NES = 1

| MCS Index | Modulation | R   | $N_{BPSCS(i_{SS})}$ | $N_{SD}$ | $N_{SP}$ | $N_{CBPS}$ | $N_{DBPS}$ | Data rate (Mb/s) |           |
|-----------|------------|-----|---------------------|----------|----------|------------|------------|------------------|-----------|
|           |            |     |                     |          |          |            |            | 800 ns GI        | 400 ns GI |
| 0         | BPSK       | 1/2 | 1                   | 108      | 6        | 108        | 54         | 13.5             | 15.0      |
| 1         | QPSK       | 1/2 | 2                   | 108      | 6        | 216        | 108        | 27.0             | 30.0      |
| 2         | QPSK       | 3/4 | 2                   | 108      | 6        | 216        | 162        | 40.5             | 45.0      |
| 3         | 16-QAM     | 1/2 | 4                   | 108      | 6        | 432        | 216        | 54.0             | 60.0      |
| 4         | 16-QAM     | 3/4 | 4                   | 108      | 6        | 432        | 324        | 81.0             | 90.0      |
| 5         | 64-QAM     | 2/3 | 6                   | 108      | 6        | 648        | 432        | 108.0            | 120.0     |
| 6         | 64-QAM     | 3/4 | 6                   | 108      | 6        | 648        | 486        | 121.5            | 135.0     |
| 7         | 64-QAM     | 5/6 | 6                   | 108      | 6        | 648        | 540        | 135.0            | 150.0     |

#### MCS parameters for optional 40 MHz, NSS = 2, NES = 1, EQM

| MCS Index | Modulation | R   | $N_{BPSCS(i_{SS})}$ | $N_{SD}$ | $N_{SP}$ | $N_{CBPS}$ | $N_{DBPS}$ | Data rate (Mb/s) |           |
|-----------|------------|-----|---------------------|----------|----------|------------|------------|------------------|-----------|
|           |            |     |                     |          |          |            |            | 800 ns GI        | 400 ns GI |
| 8         | BPSK       | 1/2 | 1                   | 108      | 6        | 216        | 108        | 27.0             | 30.0      |
| 9         | QPSK       | 1/2 | 2                   | 108      | 6        | 432        | 216        | 54.0             | 60.0      |
| 10        | QPSK       | 3/4 | 2                   | 108      | 6        | 432        | 324        | 81.0             | 90.0      |
| 11        | 16-QAM     | 1/2 | 4                   | 108      | 6        | 864        | 432        | 108.0            | 120.0     |
| 12        | 16-QAM     | 3/4 | 4                   | 108      | 6        | 864        | 648        | 162.0            | 180.0     |
| 13        | 64-QAM     | 2/3 | 6                   | 108      | 6        | 1296       | 864        | 216.0            | 240.0     |
| 14        | 64-QAM     | 3/4 | 6                   | 108      | 6        | 1296       | 972        | 243.0            | 270.0     |
| 15        | 64-QAM     | 5/6 | 6                   | 108      | 6        | 1296       | 1080       | 270.0            | 300.0     |

#### MCS parameters for optional 40 MHz, NSS = 3, EQM

| MCS Index | Modulation | R   | $N_{BPSCS(i_{SS})}$ | $N_{SD}$ | $N_{SP}$ | $N_{CBPS}$ | $N_{DBPS}$ | $N_{ES}$ | Data rate (Mb/s) |           |
|-----------|------------|-----|---------------------|----------|----------|------------|------------|----------|------------------|-----------|
|           |            |     |                     |          |          |            |            |          | 800 ns GI        | 400 ns GI |
| 16        | BPSK       | 1/2 | 1                   | 108      | 6        | 324        | 162        | 1        | 40.5             | 45.0      |
| 17        | QPSK       | 1/2 | 2                   | 108      | 6        | 648        | 324        | 1        | 81.0             | 90.0      |
| 18        | QPSK       | 3/4 | 2                   | 108      | 6        | 648        | 486        | 1        | 121.5            | 135.0     |
| 19        | 16-QAM     | 1/2 | 4                   | 108      | 6        | 1296       | 648        | 1        | 162.0            | 180.0     |
| 20        | 16-QAM     | 3/4 | 4                   | 108      | 6        | 1296       | 972        | 1        | 243.0            | 270.0     |
| 21        | 64-QAM     | 2/3 | 6                   | 108      | 6        | 1944       | 1296       | 2        | 324.0            | 360.0     |
| 22        | 64-QAM     | 3/4 | 6                   | 108      | 6        | 1944       | 1458       | 2        | 364.5            | 405.0     |
| 23        | 64-QAM     | 5/6 | 6                   | 108      | 6        | 1944       | 1620       | 2        | 405.0            | 450.0     |



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| Symbol            | Explanation  |
|-------------------|--|
| $N_{SS}$          | Number of spatial streams  |
| $R$               | Coding rate  |
| $N_{BPS}$         | Number of coded bits per single carrier (total across spatial streams)                       |
| $N_{BPS}(i_{SS})$ | Number of coded bits per single carrier for each spatial stream, $i_{SS} = 1, \dots, N_{SS}$ |
| $N_{SD}$          | Number of complex data numbers per spatial stream per OFDM symbol                            |
| $N_{p}$           | Number of pilot values per OFDM symbol   |
| $N_{CBPS}$        | Number of coded bits per OFDM symbol   |
| $N_{DBPS}$        | Number of data bits per OFDM symbol  |
| $N_{E1}$          | Number of BCC encoders for the DATA field  |
| $N_{TBPS}$        | Total bits per subcarrier  |

### Antennas

Antennas intended for use are classified into 3 gain groups:

- Ant. group 1: Antennas up to 6 dBi
- Ant. group 2: Antennas 7 to 9 dBi
- Ant. group 3: Antennas 10 to 14 dBi

The following listed antennas shall be used with the EUT:

Ant. group 1 antennas with max 0 to 6 dBi gain:

| Number | Characteristic | Certification name | Plug       | Frequency range (GHz) | Gain (dBi) |
|--------|----------------|--------------------|------------|-----------------------|------------|
| 1      | Omni           | ANT795-4MC         | N          | 2.4, 5                | 3, 5       |
| 2      | Omni           | ANT795-4MD         | N          | 2.4, 5                | 3, 5       |
| 3      | Omni           | ANT795-4MS         | R-SMA      | 2.4, 5                | 3, 5       |
| 4      | Omni           | ANT793-6MN         | N          | 5                     | 6          |
| 5      | Omni           | ANT793-4MN         | N          | 5                     | 6          |
| 6      | Omni           | ANT795-6MT         | 3*QMA      | 2.4, 5                | 5, 6       |
| 7      | Omni           | A5E002280427-06    | integrated | 2.4, 5                | 3, 5       |
| 8      | Rcoax          | Rcoax 5G           | N          | 5                     | 0          |

Ant. group 2 antennas with max 7 to 9 dBi gain:

| Number | Characteristic | Certification name | Plug  | Frequency range (GHz) | Gain (dBi) |
|--------|----------------|--------------------|-------|-----------------------|------------|
| 1      | Wide angle     | ANT793-6DT         | 3*QMA | 5                     | 9          |
| 2      | Wide angle     | ANT793-6DG         | N     | 5                     | 9          |
| 3      | Wide angle     | ANT795-6DC         | N     | 2.4, 5                | 9, 9       |
| 4      | Omni           | ANT795-4MN         | N     | 2.4, 5                | 6, 8       |

Ant. group 3 antennas with max 10 to 14 dBi gain:

| Number | Characteristic | Certification name | Plug | Frequency range (GHz) | Gain (dBi) | Cable loss | Effective Gain |
|--------|----------------|--------------------|------|-----------------------|------------|------------|----------------|
| 1      | Directed       | ANT793-8DJ         | N    | 5                     | 18         | 4.4        | 14.2           |
| 2      | Directed       | ANT793-8DK         | N    | 5                     | 23         | 8.8        | 13.6           |

Note: The directed antenna number 1 may be used only with minimum 5 m antenna cable, Type 6XV 1875-5CH50 with cable loss 4.4 dB at 5.7 GHz.  
The directed antenna number 2 may be used only with minimum 10 m antenna cable, Type 6XV 1875-5CN10 with cable loss 8.8 dB at 5.7 GHz.



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**FINAL ASSESSMENT:**

The equipment under test **fulfills** the EMI requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 19 March 2012

Testing concluded on : 11 April 2012

Checked by:

Tested by:

---

Thomas Weise  
Dipl. Ing.(FH)  
Laboratory Manager

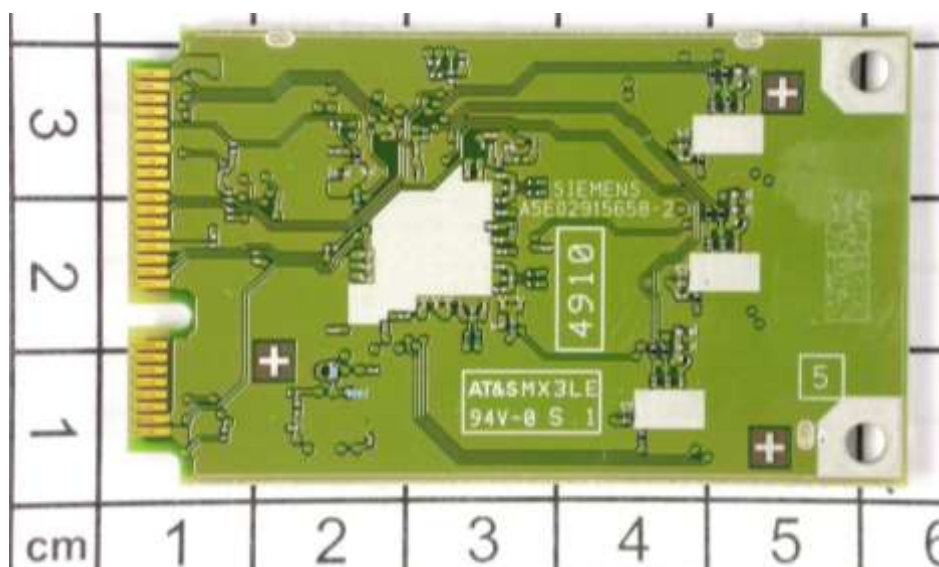
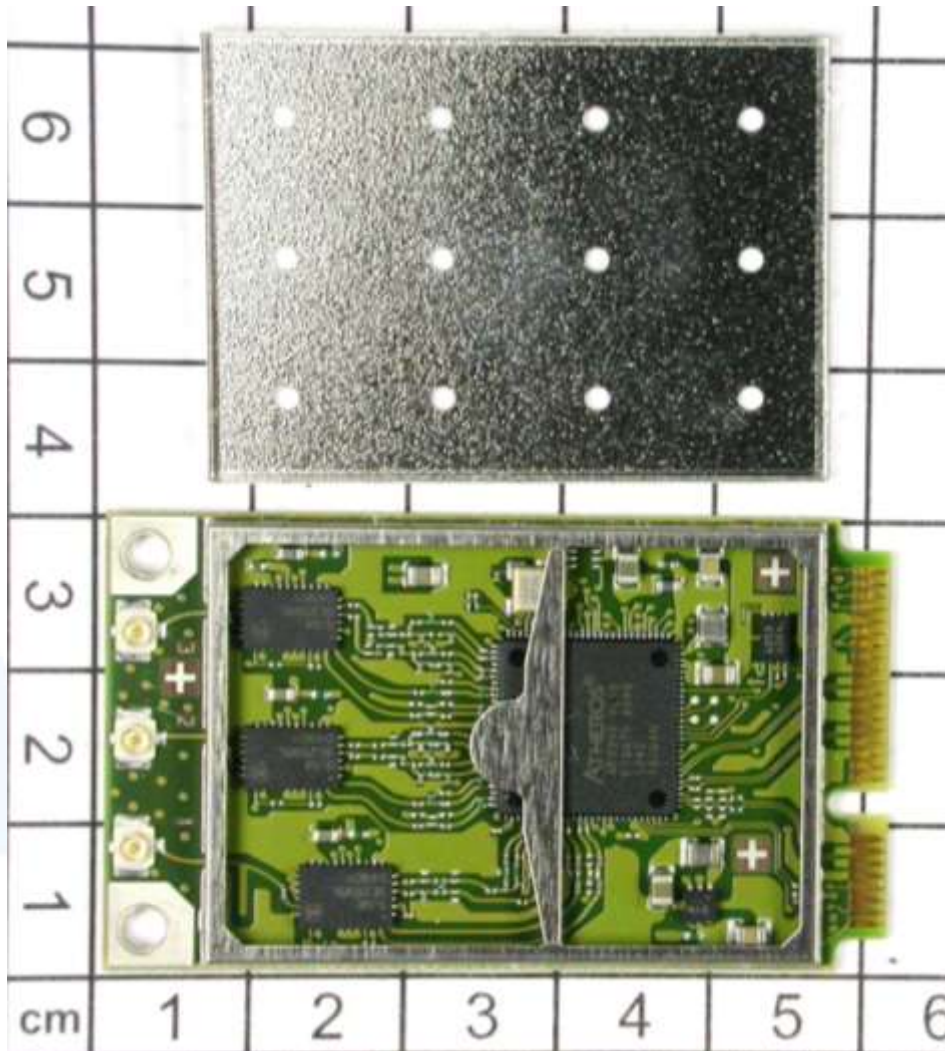
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Hermann Smetana  
Dipl.-Ing.(FH)  
Radio Expert

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### 3 EQUIPMENT UNDER TEST

#### 3.1 Photo documentation of the EUT



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Test jig:



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**3.2 Power supply system utilised**

Power supply voltage,  $V_{nom}$  : 24 VDC

The extreme voltages for the EUT are:  $V_{min} = 19.2$  VDC  
 $V_{max} = 28.8$  VDC

**3.3 Short description of the equipment under test (EUT)**

The EUT is a WLAN module for industrial applications in the 2.4 GHz and 5 GHz frequency range.

Number of tested samples: 1  
Serial number: #45

**EUT operation mode:**

The equipment under test was operated during the measurement under the following conditions:

- TX continuous, HT20 mode

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- TX continuous, HT40 mode

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- TX continuous, Legacy mode

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**EUT configuration:**

(The CDF filled by the applicant can be viewed at the test laboratory.)

**The following peripheral devices and interface cables were connected during the measurements:**

- Test jig Model : self-made
- LAN cable, 3m Model : CAT5
- Power supply cable, 1m Model : Self-made
- C-Plug-Adaptor for test mode control Model : Self-made



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## 4 TEST ENVIRONMENT

### 4.1 Address of the test laboratory

**mikes-testingpartners gmbh**  
**Ohmstrasse 2-4**  
**94342 STRASSKIRCHEN**  
**GERMANY**

### 4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 ° C

Humidity: 30-60 %

Atmospheric pressure: 86-106 kPa

### 4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader may notice that tolerances within the calibration of the equipment and facilities may cause additional uncertainty. The measurement uncertainty is calculated for all measurements listed in this test report acc. to CISPR 16-4-2 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurement“ and documented in the mikes-testingpartners gmbh quality system acc. to DIN EN ISO/IEC 17025. For all measurements shown in this report, the measurement uncertainty of the test laboratory, mikes-testingpartners gmbh, is below the measurement uncertainty as defined by CISPR. Therefore, no special measures must be taken into consideration with regard to the limits according to CISPR. Furthermore, component diversity and modifications in production process of devices may result in additional deviation. If necessary, refer to the test lab for the actual measurement uncertainty for the specific test. The manufacturer has the sole responsibility of continued compliance of the EUT.

### 4.4 Measurement protocol for FCC and IC

#### 4.4.1 GENERAL INFORMATION

##### 4.4.1.1 Test methodology

Conducted and radiated disturbance testing is performed according to the procedures set out by the International Special Committee on Radio Interference (CISPR) Publication 22, European Standard EN 55022 as shown under section 1 of this report.

The open area test site is a listed under the Canadian Test-Sites File-No:

**IC 3009A-1**

In compliance with RSS 210 testing for RSS compliance may be achieved by following the procedures set out in ANSI C63.4, ANSI C63.10 and applying the CISPR 22 limits.

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### 4.4.1.2 Justification

The equipment under test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral using the appropriate impedance characteristic or left without termination. Where appropriate, cables are manually manipulated with respect to each other thus obtaining maximum disturbances from the unit.

### 4.4.1.3 Details of test procedures

The test methods used comply with CISPR Publication 22, EN 55022 - "Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement" and with ANSI C63.4 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". In compliance with 47 CFR Part 15 Subpart A, Section 15.38 testing for FCC compliance may be achieved by following the procedures set out in ANSI C63.4, ANSI C63.10 and applying the CISPR 22 limits.

## 4.5 Determination of worst case measurement conditions

Measurements have been made in all three orthogonal axes and the settings of the EUT were changed to locate at which position and at what setting of the EUT produce the maximum of the emissions. For the further measurement the EUT is set in X position.

The tests are carried out in the following frequency bands:

### 5.25 - 5.35 GHz and 5.47 - 5.725 GHz

Preliminary tests were performed to find the worst case mode from all possible combinations between available modulations, data rates and small antenna system is determined through pre-scans. The maximum output power depends on used data rate. The worst case mode from all possible combinations between available modulations, data rates and small antenna system is determined through pre-scans. As worse case the HT20 mode (MCS 8 with 2 spatial streams, BW=20 MHz, 2 TX chains), HT40 mode (MCS 16 with 3 spatial streams, BW=40 MHz, 3 TX chains) and the legacy mode (data rate of 6 Mbps, BW=20 MHz, with 1 TX chain) is selected for final measurements.

Following channels and test modes were selected for the final test as listed below:

#### HT20 mode:

| Technology | Available channels | Tested channels             | Modulation | Modulation type | Data rate (Mbps)          |
|------------|--------------------|-----------------------------|------------|-----------------|---------------------------|
| 802.11n    | 52 - 140           | 52, 56, 64<br>100, 116, 140 | OFDM       | BPSK            | 6.5, MCS=0<br>(BW=20 MHz) |

#### HT40 mode:

| Technology | Available channels | Tested channels                   | Modulation | Modulation type | Data rate (Mbps)     |
|------------|--------------------|-----------------------------------|------------|-----------------|----------------------|
| 802.11n    | 52up – 132up       | 52up, 60up<br>100up, 108up, 132up | OFDM       | BPSK            | MCS=8<br>(BW=40 MHz) |

#### 802.11h mode:

| Technology | Available channels | Tested channels             | Modulation | Modulation type | Data rate (Mbps)      |
|------------|--------------------|-----------------------------|------------|-----------------|-----------------------|
| 802.11h    | 52 - 140           | 52, 56, 64<br>100, 116, 140 | OFDM       | BPSK            | 6 Mbps<br>(BW=20 MHz) |

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## **5 TEST CONDITIONS AND RESULTS**

### **5.1 Conducted emissions**

For test instruments and accessories used see section 6 Part A 4.

#### **5.1.1 Description of the test location**

Test location: NONE

Remarks: Not applicable, the EUT has no AC mains connection.

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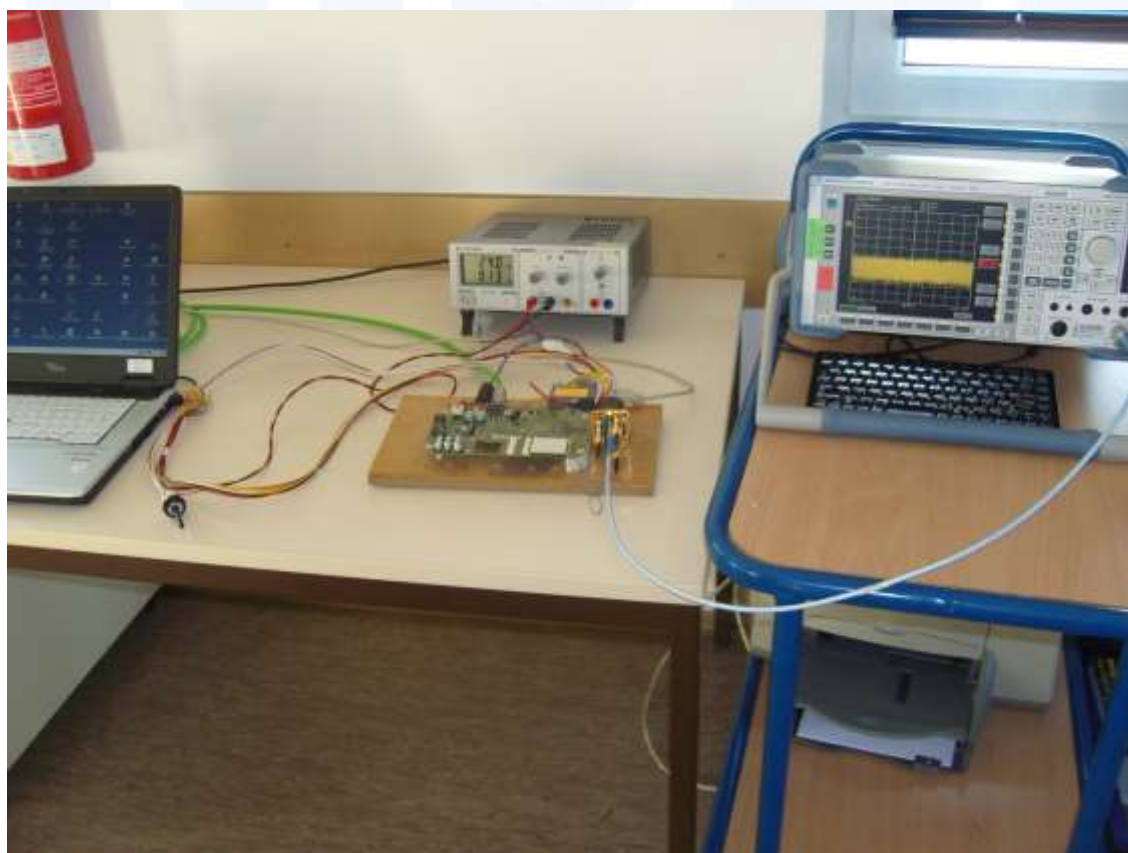
### **5.2 Duty cycle**

For test instruments and accessories used see section 6 Part DC.

#### **5.2.1 Description of the test location**

Test location: AREA4

#### **5.2.2 Photo documentation of the test set-up**





**FCC-ID: LYHMPCIE1V1**

**5.2.3 Applicable standard**

According to FCC Part 15C, Section 15.35(c):  
The emissions from intentional radiators shall not exceed the effective field strength limits.

**5.2.4 Description of Measurement**

The Duty cycle factor (dB) is calculated applying the following formula:

$$KE = 10 \log ((t_{on} * p) / T_w)$$

- KE: pulse operation correction factor (dB)
- t<sub>on</sub> pulse duration for one pulse (ms)
- t<sub>off</sub> duration for one pulse off-time (ms)
- T<sub>w</sub> a period of the pulse track (ms)
- p number of pulses in 100 ms

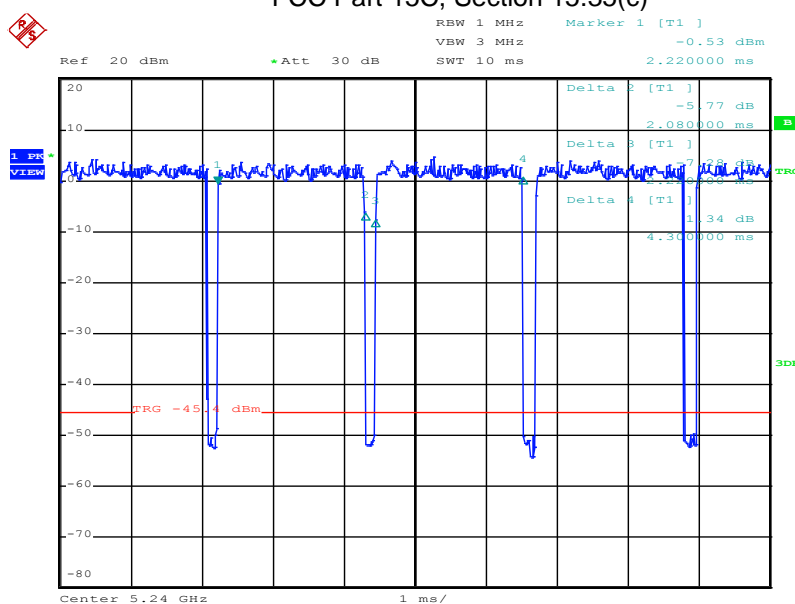
**5.2.5 Test result**

| Duty cycle    | t <sub>on</sub><br>(ms) | t <sub>off</sub><br>(ms) | T <sub>w</sub><br>(ms) | p      | KE<br>(dB) |
|---------------|-------------------------|--------------------------|------------------------|--------|------------|
| Duty cycle    | 2.08                    | 0.14                     | 2.22                   |        |            |
| Within 100 ms | 93.7                    | 6.3                      |                        | 45.045 | 0.3        |

**Remarks:** The puls is shorter 100 ms, the duty cycle is calculated within 100 ms.

**5.2.6 Test protocol duty cycle**

FCC Part 15C, Section 15.35(c)

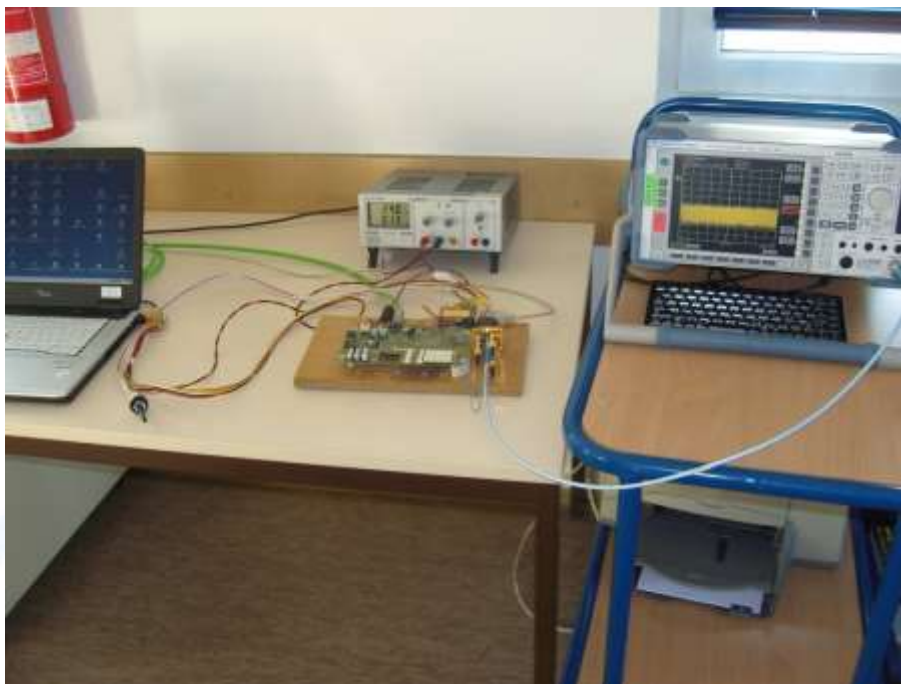


**FCC-ID: LYHMPCIE1V1****5.3 26 dB emission bandwidth and 99% OBW**

For test instruments and accessories used see section 6 Part MB.

**5.3.1 Description of the test location**

Test location: AREA4

**5.3.2 Photo documentation of the test set-up****5.3.3 Applicable standard**

According to FCC Part 15E, Section 15.407(i):

The emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier centre frequency and one above the carrier centre frequency, that are 26 dB down relative to the maximum of the modulated carrier.

**5.3.4 Description of Measurement**

The bandwidth is measured following the procedure set out in OET 789033 D01. The spectrum analyser function “n-dB-down” is used to determine the bandwidth. The RBW is approximately 1% of the EBW. For the 99% bandwidth RBW is approximately 1% of the span.

### FCC-ID: LYHMPCIE1V1

#### 5.3.5 Test result

##### HT20 mode, MCS8, Port1:

Spectrum analyser settings:

EBW Span: 40 MHz, RBW: 300 kHz, VBW: 1 MHz, Detector: Peak  
 OBW Span: 30 MHz, RBW: 300 kHz, VBW: 1 MHz, Detector: Peak

| Channel | Centre frequency<br>(MHz) | 26 dB bandwidth<br>(MHz) | 99% OBW<br>(MHz) |
|---------|---------------------------|--------------------------|------------------|
| 52      | 5260                      | 23.12                    | 18.42            |
| 56      | 5280                      | 23.84                    | 18.30            |
| 64      | 5320                      | 22.72                    | 18.36            |
| 100     | 5500                      | 23.60                    | 18.36            |
| 116     | 5580                      | 23.36                    | 18.42            |
| 140     | 5700                      | 23.28                    | 18.42            |

##### HT20 mode, MCS8, Port2:

| Channel | Centre frequency<br>(MHz) | 26 dB bandwidth<br>(MHz) | 99% OBW<br>(MHz) |
|---------|---------------------------|--------------------------|------------------|
| 52      | 5260                      | 24.00                    | 18.54            |
| 56      | 5280                      | 22.32                    | 18.54            |
| 64      | 5320                      | 23.84                    | 18.54            |
| 100     | 5500                      | 22.16                    | 18.48            |
| 116     | 5580                      | 21.28                    | 18.48            |
| 140     | 5700                      | 23.76                    | 18.54            |

##### HT40 mode, MCS16, Port1:

Spectrum analyser settings:

EBW Span: 80 MHz, RBW: 300 kHz, VBW: 1 MHz, Detector: Peak  
 OBW Span: 60 MHz, RBW: 1 MHz, VBW: 3 MHz, Detector: Peak

| Channel | Centre frequency<br>(MHz) | 26 dB bandwidth<br>(MHz) | 99% OBW<br>(MHz) |
|---------|---------------------------|--------------------------|------------------|
| 52up    | 5270                      | 49.76                    | 38.64            |
| 60up    | 5310                      | 49.60                    | 38.64            |
| 100up   | 5510                      | 49.28                    | 38.64            |
| 108up   | 5550                      | 46.72                    | 38.76            |
| 132up   | 5670                      | 48.80                    | 38.76            |

##### HT40 mode, MCS16, Port2:

| Channel | Centre frequency<br>(MHz) | 26 dB bandwidth<br>(MHz) | 99% OBW<br>(MHz) |
|---------|---------------------------|--------------------------|------------------|
| 52up    | 5270                      | 49.60                    | 38.76            |
| 60up    | 5310                      | 50.72                    | 39.00            |
| 100up   | 5510                      | 49.12                    | 38.76            |
| 108up   | 5550                      | 49.12                    | 39.00            |
| 132up   | 5670                      | 50.24                    | 38.76            |

**FCC-ID: LYHMPCIE1V1**

**HT40 mode, MCS16, Port3:**

| Channel | Centre frequency<br>(MHz) | 26 dB bandwidth<br>(MHz) | 99% OBW<br>(MHz) |
|---------|---------------------------|--------------------------|------------------|
| 52up    | 5270                      | 47.36                    | 38.52            |
| 60up    | 5310                      | 49.12                    | 38.28            |
| 100up   | 5510                      | 47.52                    | 38.28            |
| 108up   | 5550                      | 44.16                    | 38.64            |
| 132up   | 5670                      | 46.88                    | 38.52            |

**802.11h mode, 6 Mbps, Port1:**

Spectrum analyser settings:

EBW Span: 40 MHz, RBW: 300 kHz, VBW: 1 MHz, Detector: Peak  
 OBW Span: 30 MHz, RBW: 300 kHz, VBW: 1 MHz, Detector: Peak

| Channel | Centre frequency<br>(MHz) | 26 dB bandwidth<br>(MHz) | 99% OBW<br>(MHz) |
|---------|---------------------------|--------------------------|------------------|
| 52      | 5260                      | 23.04                    | 17.34            |
| 56      | 5280                      | 22.24                    | 17.34            |
| 64      | 5320                      | 23.36                    | 17.34            |
| 100     | 5500                      | 23.28                    | 17.40            |
| 116     | 5580                      | 22.00                    | 17.46            |
| 140     | 5700                      | 23.20                    | 17.52            |

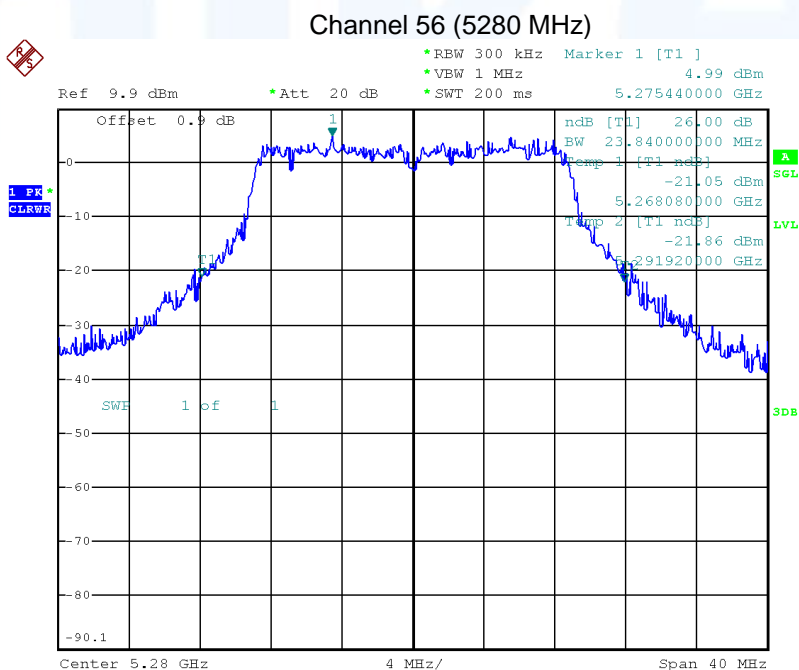
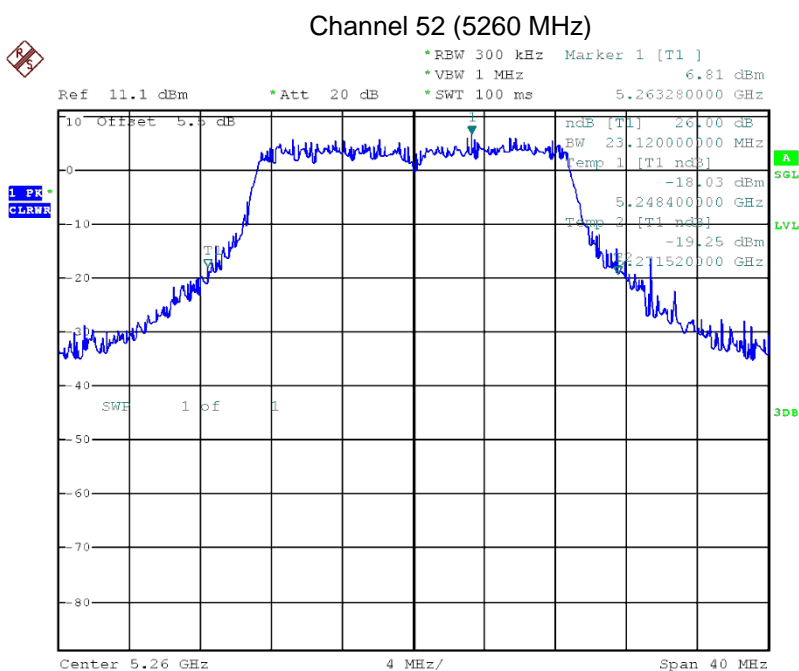
Note: The RSS Gen defines no limit for the OBW!

**Remarks:** For detailed test results please see the following test protocols. Only the worst case of the plots are listed.

**FCC-ID: LYHMPCIE1V1**

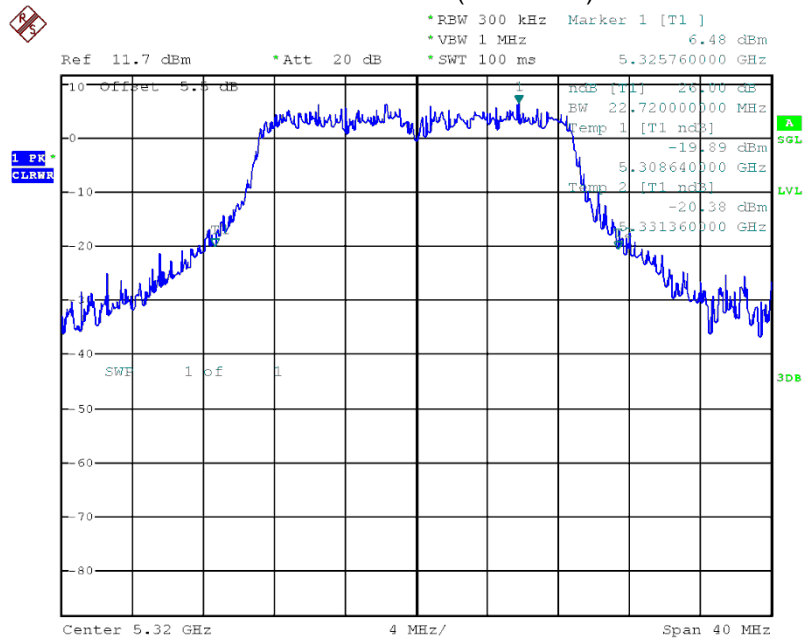
**5.3.6 Test protocols EBW 26 dB**

**5.3.6.1 Measurement plots, HT20, Port1**

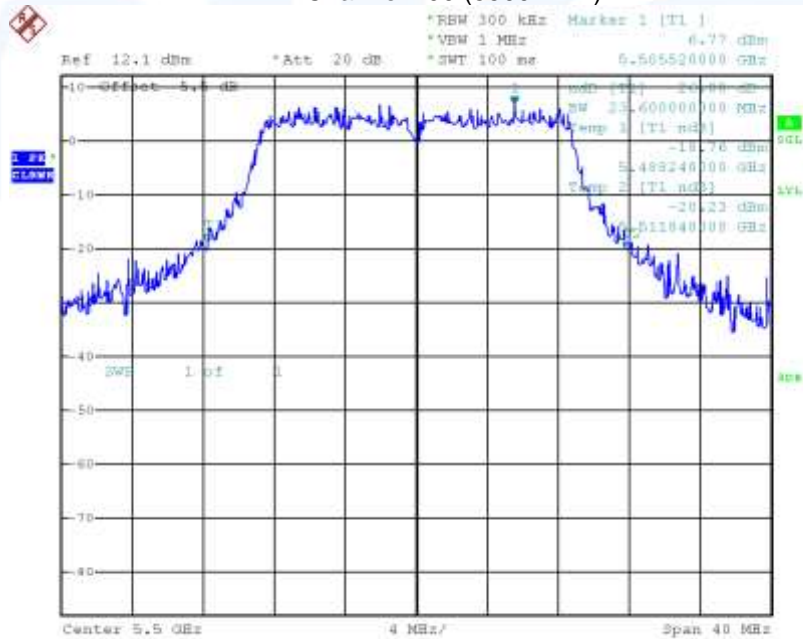


**FCC-ID: LYHMPCIE1V1**

**Channel 64 (5320 MHz)**

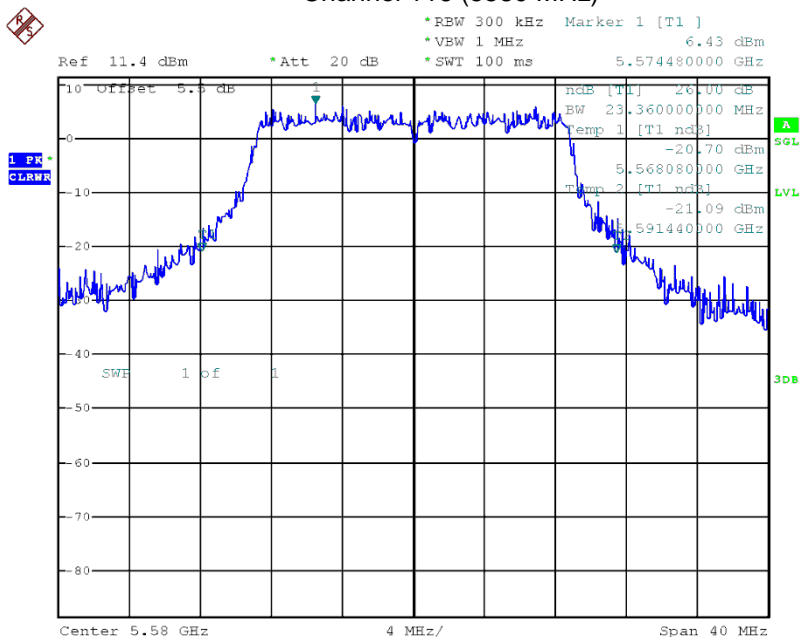


**Channel 100 (5500 MHz)**

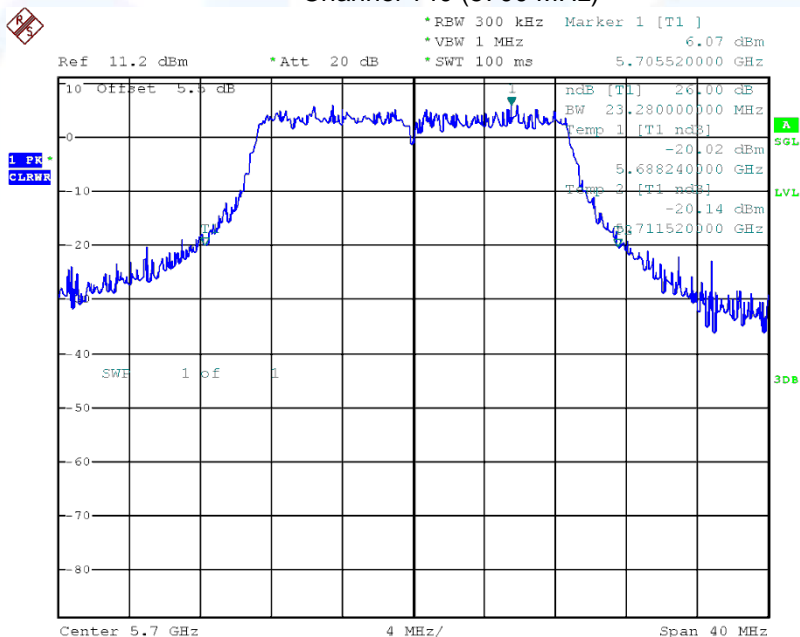


**FCC-ID: LYHMPCIE1V1**

**Channel 116 (5580 MHz)**



**Channel 140 (5700 MHz)**

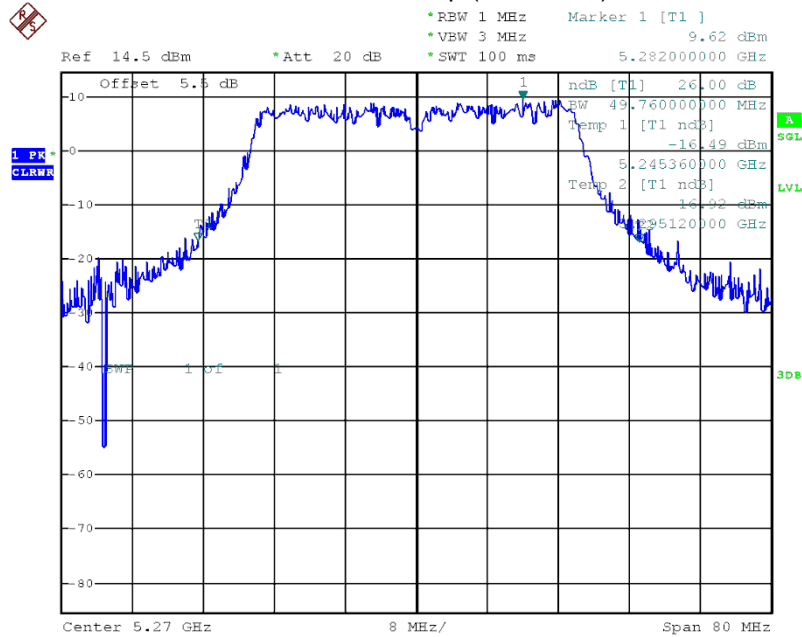




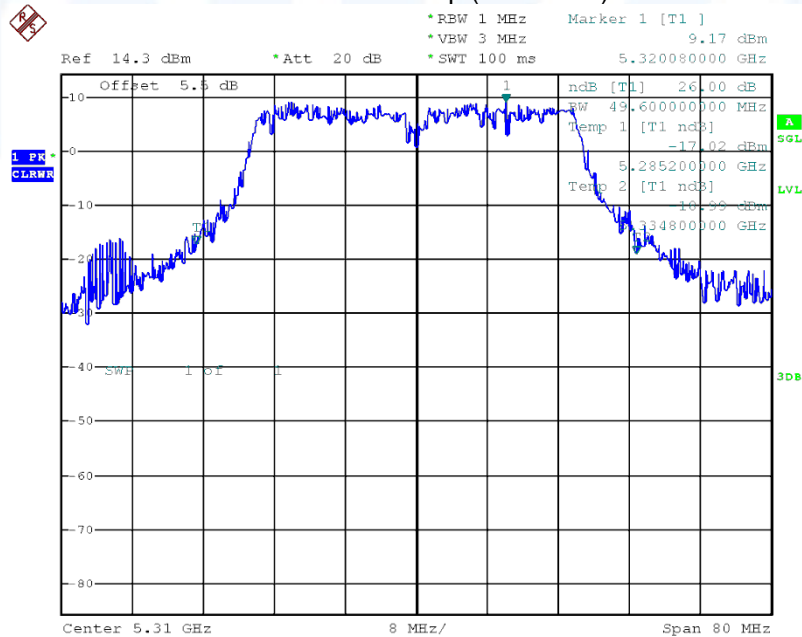
**FCC-ID: LYHMPCIE1V1**

**5.3.6.2 Measurement plots, HT40, Port1**

**Channel 52up (5270 MHz)**

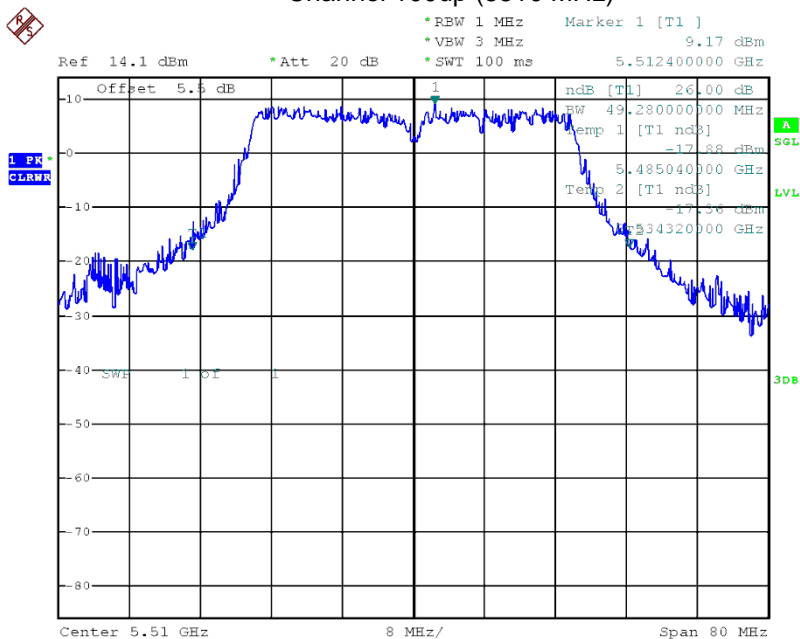


**Channel 60up (5310 MHz)**

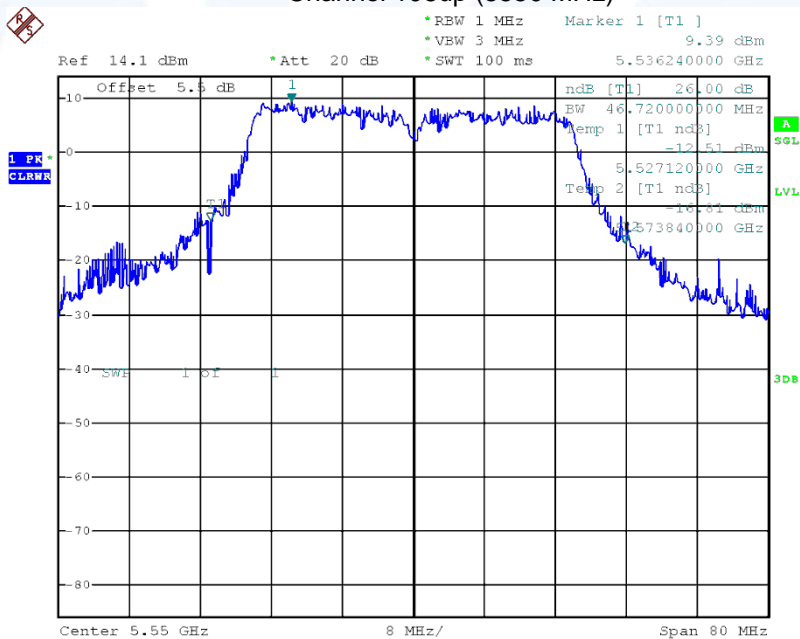


**FCC-ID: LYHMPCIE1V1**

**Channel 100up (5510 MHz)**

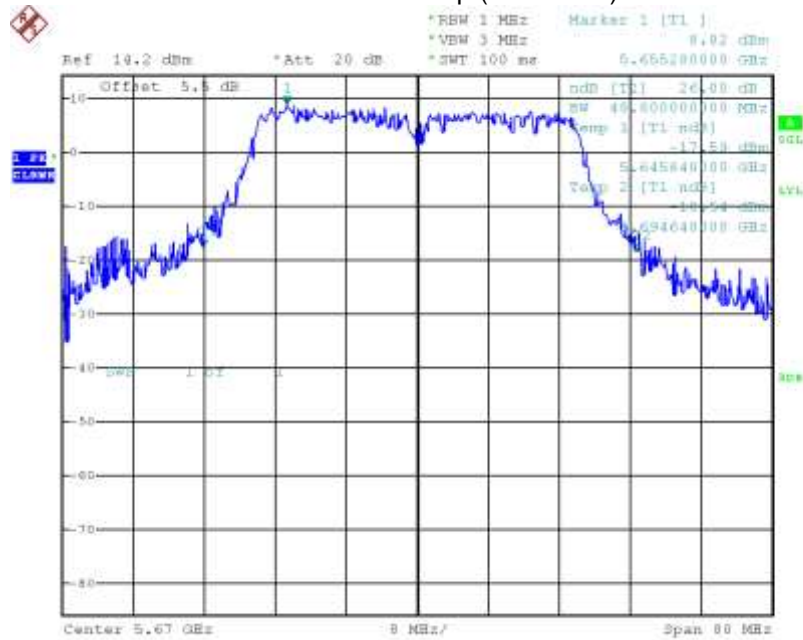


**Channel 108up (5550 MHz)**



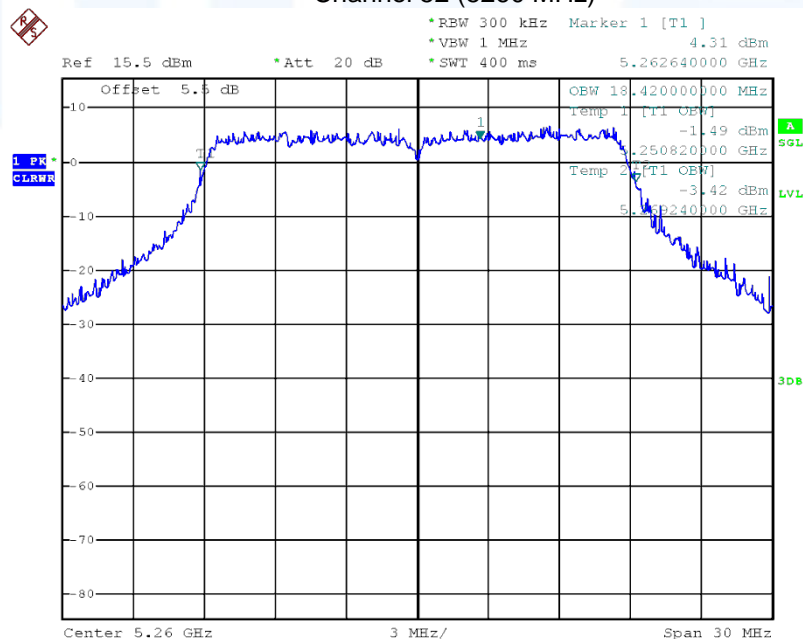
**FCC-ID: LYHMPCIE1V1**

Channel 132up (5670 MHz)



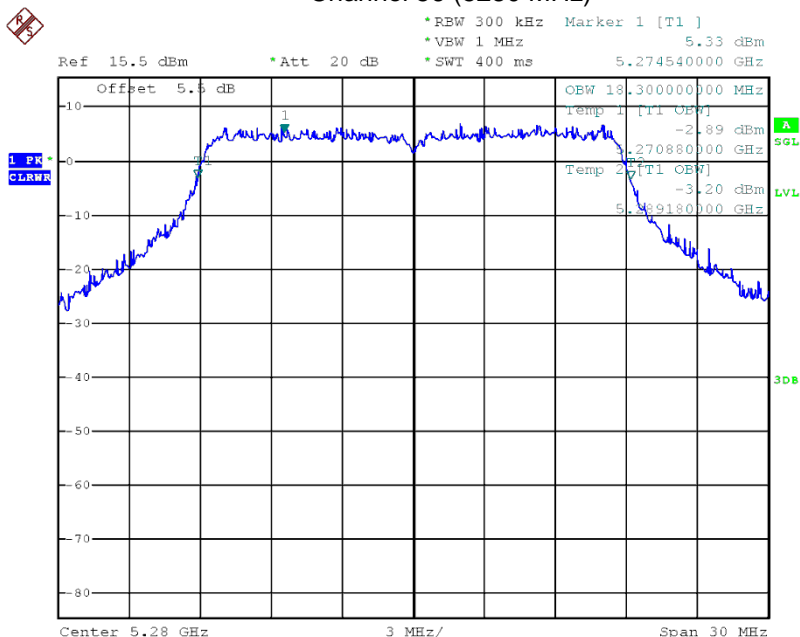
**5.3.6.3 OBW 99% Measurement plots, HT20, Port1**

Channel 52 (5260 MHz)

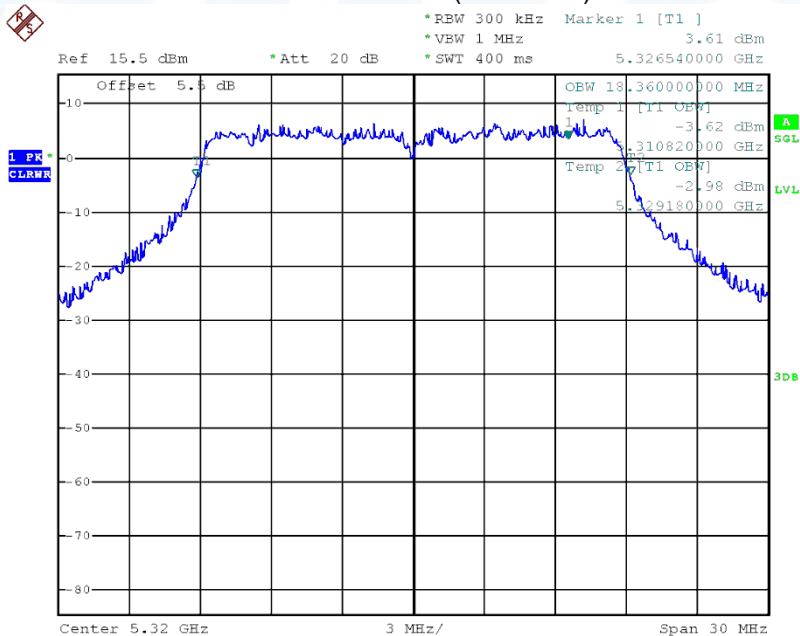


**FCC-ID: LYHMPCIE1V1**

**Channel 56 (5280 MHz)**

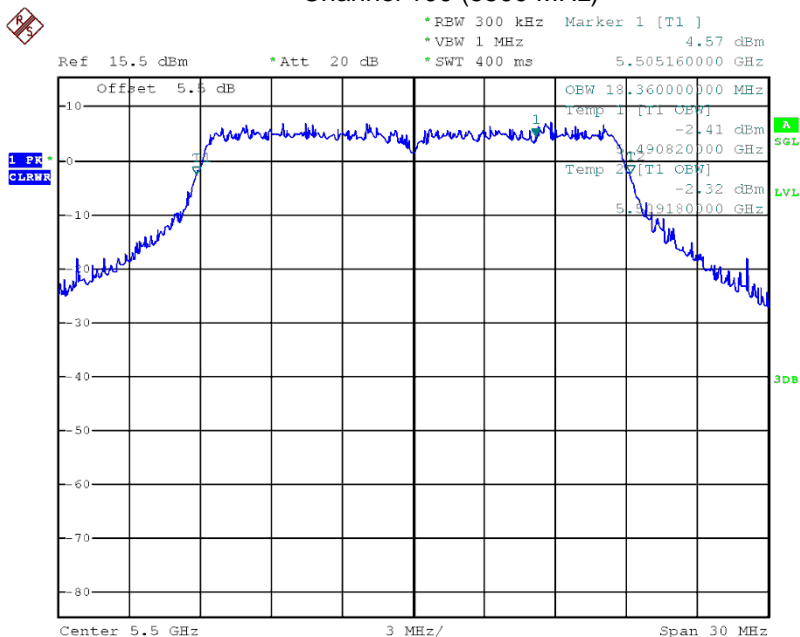


**Channel 64 (5320 MHz)**

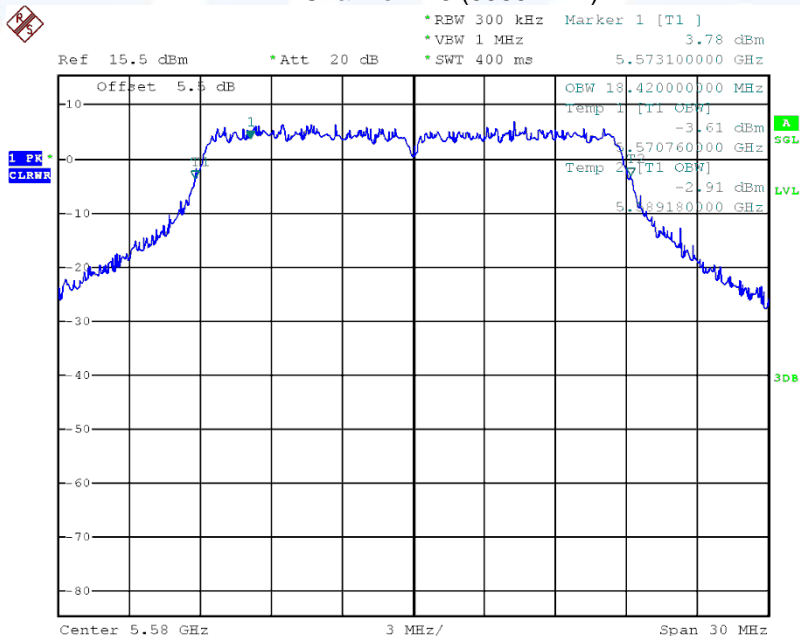


**FCC-ID: LYHMPCIE1V1**

**Channel 100 (5500 MHz)**

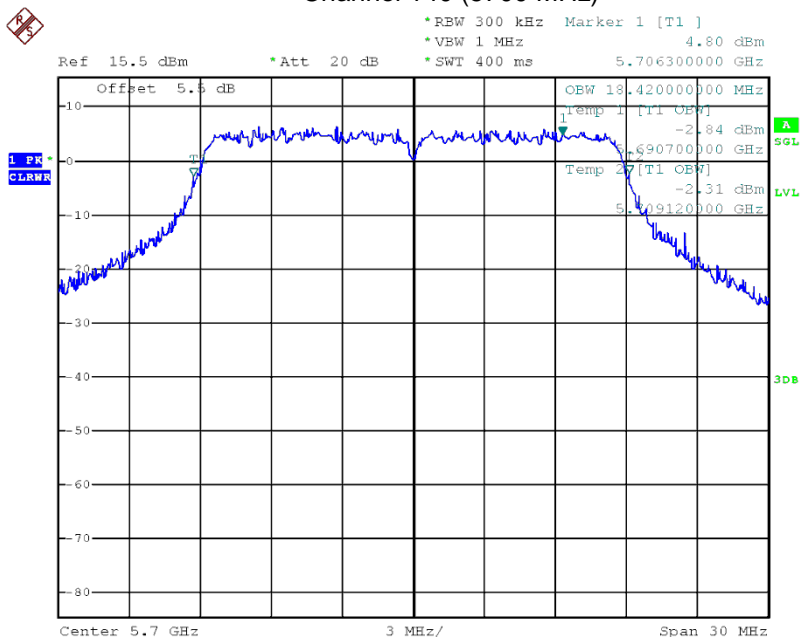


**Channel 116 (5580 MHz)**



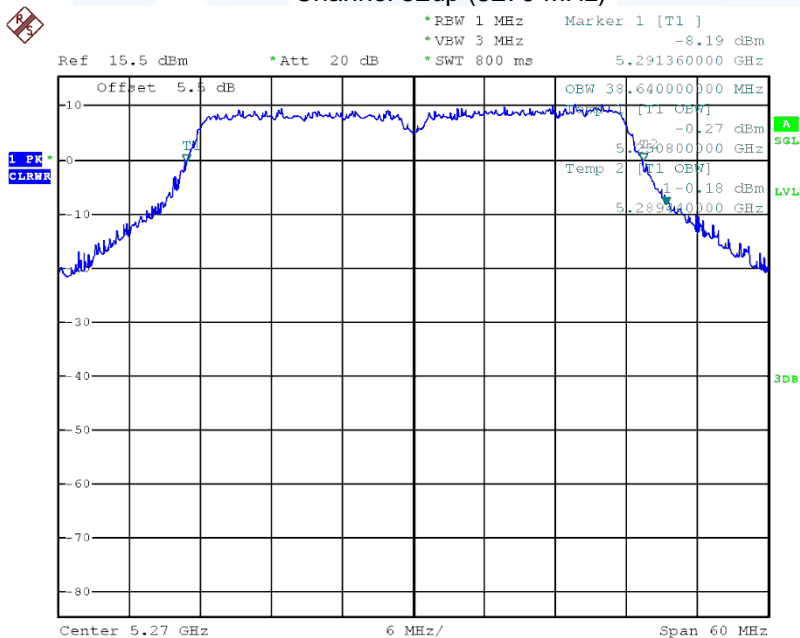
**FCC-ID: LYHMPCIE1V1**

**Channel 140 (5700 MHz)**



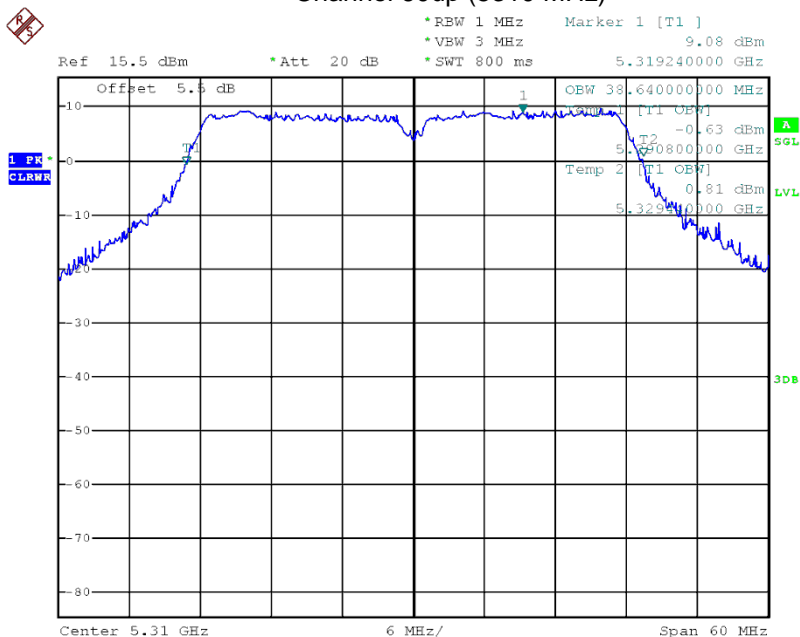
**5.3.6.4 OBW 99% Measurement plots, HT40**

**Channel 52up (5270 MHz)**

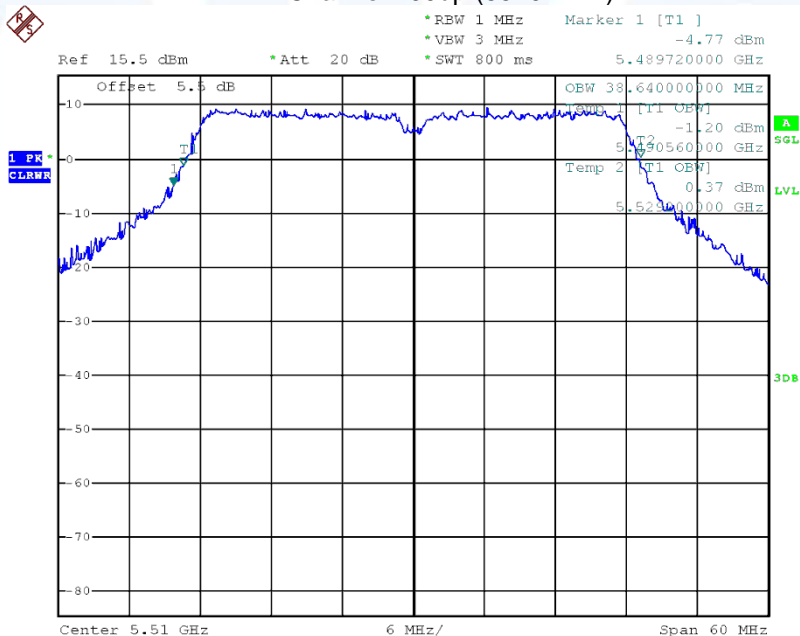


**FCC-ID: LYHMPCIE1V1**

**Channel 60up (5310 MHz)**



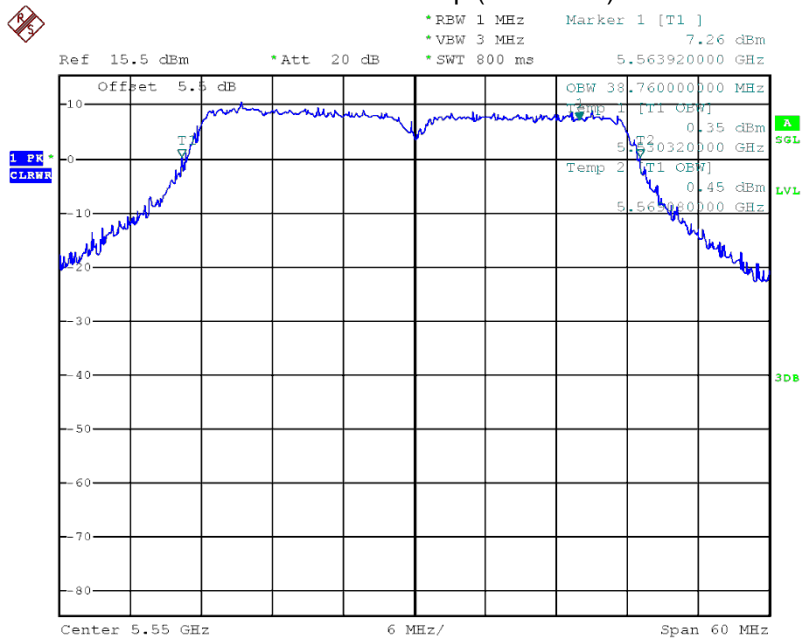
**Channel 100up (5510 MHz)**



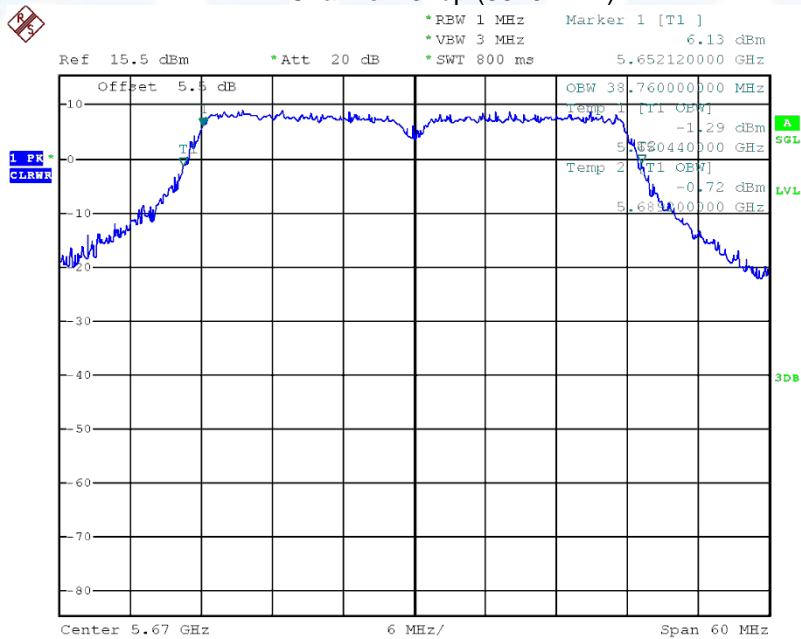


FCC-ID: LYHMPCIE1V1

Channel 108up (5550 MHz)



Channel 132up (5670 MHz)

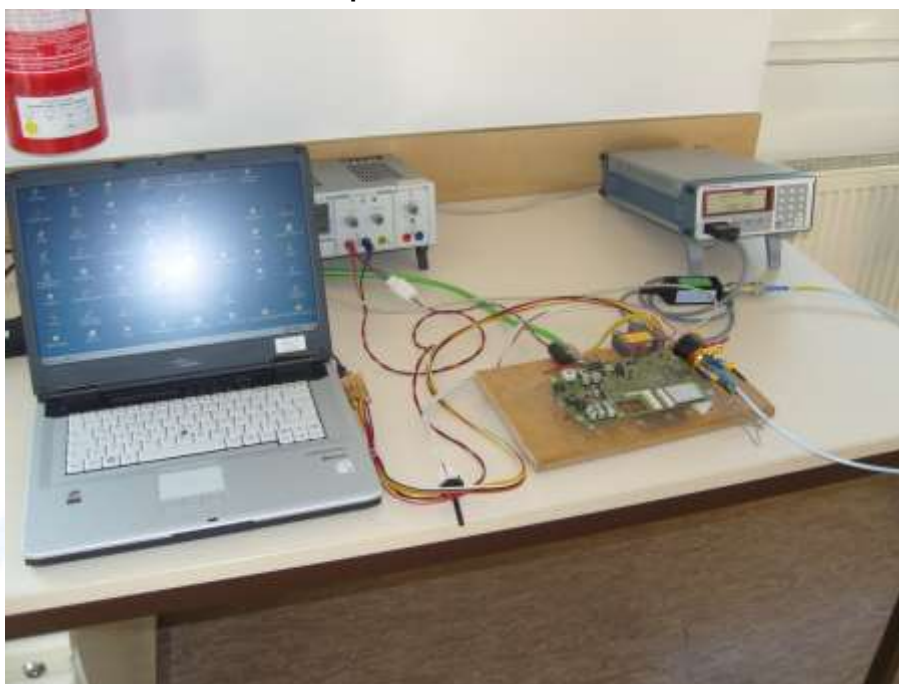


**FCC-ID: LYHMPCIE1V1****5.4 Maximum conducted output power**

For test instruments and accessories used see section 6 Part **CPC 3**.

**5.4.1 Description of the test location**

Test location: AREA4

**5.4.2 Photo documentation of the test set-up****5.4.3 Applicable standard**

According to FCC Part 15E, Section 15.407(a):

The maximum conducted output power over the frequency band of operation shall not exceed the effective values. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**5.4.4 Description of Measurement**

The output power is measured using the power meter method according ANSI C63.10, clause 6.10.2.2. The EUT is set while measuring in TX continuous mode with a duty cycle,  $x = 0.937$ , duty cycle correction 0.3 dB at the level displayed under "A" in the calculation tables. The total output power is summed over all active antenna terminals of the multiple antenna system.

### FCC-ID: LYHMPCIE1V1

#### 5.4.5 Test result

| Test conditions:  |              |         |         |
|-------------------|--------------|---------|---------|
| HT20, MCS8        | Test results |         |         |
| Duty cycle: 93.7% | A [P11]      | A [P17] | A [P20] |
| <b>Chain1</b>     | (dBm)        | (dBm)   | (dBm)   |
| CH52              | 6.6          | 12.0    | 14.2    |
| CH56              | 6.8          | 12.3    | 14.4    |
| CH64              | 6.4          | 12.2    | 14.0    |
| CH100             | 7.0          | 12.4    | 14.5    |
| CH116             | 6.5          | 12.3    | 14.1    |
| CH140             | 6.1          | 12.3    | 14.3    |

| Test conditions:  |              |         |         |
|-------------------|--------------|---------|---------|
| HT20, MCS8        | Test results |         |         |
| Duty cycle: 93.7% | A [P11]      | A [P17] | A [P20] |
| <b>Chain2</b>     | (dBm)        | (dBm)   | (dBm)   |
| CH52              | 6.1          | 12.0    | 14.0    |
| CH56              | 7.1          | 13.1    | 15.0    |
| CH64              | 7.2          | 13.0    | 15.3    |
| CH100             | 6.3          | 11.8    | 13.7    |
| CH116             | 6.9          | 12.3    | 14.4    |
| CH140             | 7.7          | 12.8    | 14.8    |

Calculating of the conducted power and EIRP:

| Test conditions:  |              |          |         |       |        |       |       |        |
|-------------------|--------------|----------|---------|-------|--------|-------|-------|--------|
| CH52              | Test results |          |         |       |        |       |       |        |
|                   | P set        | Ant gain | A1 + A2 | Limit | Margin | EIRP  | Limit | Margin |
| <b>Chain1 + 2</b> |              | (dBi)    | (dBm)   | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1        | P20          | 6.0      | 17.4    | 24.0  | -6.6   | 23.4  | 30.0  | -6.6   |
| Ant_group2        | P17          | 9.0      | 15.3    | 24.0  | -8.7   | 24.3  | 30.0  | -5.7   |
| Ant_group3        | P11          | 14.2     | 9.7     | 24.0  | -14.3  | 23.9  | 30.0  | -6.1   |

Note: The duty cycle is corrected with 0.3 dB at the level of A1 + A2.

| Test conditions:  |              |          |         |       |        |       |       |        |
|-------------------|--------------|----------|---------|-------|--------|-------|-------|--------|
| CH56              | Test results |          |         |       |        |       |       |        |
|                   | P set        | Ant gain | A1 + A2 | Limit | Margin | EIRP  | Limit | Margin |
| <b>Chain1 + 2</b> |              | (dBi)    | (dBm)   | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1        | P20          | 6.0      | 18.0    | 24.0  | -6.0   | 24.0  | 30.0  | -6.0   |
| Ant_group2        | P17          | 9.0      | 16.0    | 24.0  | -8.0   | 25.0  | 30.0  | -5.0   |
| Ant_group3        | P11          | 14.2     | 10.3    | 24.0  | -13.7  | 24.5  | 30.0  | -5.5   |

| Test conditions:  |              |          |         |       |        |       |       |        |
|-------------------|--------------|----------|---------|-------|--------|-------|-------|--------|
| CH64              | Test results |          |         |       |        |       |       |        |
|                   | P set        | Ant gain | A1 + A2 | Limit | Margin | EIRP  | Limit | Margin |
| <b>Chain1 + 2</b> |              | (dBi)    | (dBm)   | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1        | P20          | 6.0      | 18.0    | 24.0  | -6.0   | 24.0  | 30.0  | -6.0   |
| Ant_group2        | P17          | 9.0      | 15.9    | 24.0  | -8.1   | 24.9  | 30.0  | -5.1   |
| Ant_group3        | P11          | 14.2     | 10.1    | 24.0  | -13.9  | 24.3  | 30.0  | -5.7   |

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| Test conditions: |              |          |         |       |        |       |       |        |
|------------------|--------------|----------|---------|-------|--------|-------|-------|--------|
| CH100            | Test results |          |         |       |        |       |       |        |
|                  | P set        | Ant gain | A1 + A2 | Limit | Margin | EIRP  | Limit | Margin |
| Chain1 + 2       |              | (dBi)    | (dBm)   | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1       | P20          | 6.0      | 17.5    | 24.0  | -6.5   | 23.5  | 30.0  | -6.5   |
| Ant_group2       | P17          | 9.0      | 15.4    | 24.0  | -8.6   | 24.4  | 30.0  | -5.6   |
| Ant_group3       | P11          | 14.2     | 10.0    | 24.0  | -14.0  | 24.2  | 30.0  | -5.8   |

| Test conditions: |              |          |         |       |        |       |       |        |
|------------------|--------------|----------|---------|-------|--------|-------|-------|--------|
| CH116            | Test results |          |         |       |        |       |       |        |
|                  | P set        | Ant gain | A1 + A2 | Limit | Margin | EIRP  | Limit | Margin |
| Chain1 + 2       |              | (dBi)    | (dBm)   | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1       | P20          | 6.0      | 17.5    | 24.0  | -6.5   | 23.5  | 30.0  | -6.5   |
| Ant_group2       | P17          | 9.0      | 15.6    | 24.0  | -8.4   | 24.6  | 30.0  | -5.4   |
| Ant_group3       | P11          | 14.2     | 10.0    | 24.0  | -14.0  | 24.2  | 30.0  | -5.8   |

| Test conditions: |              |          |         |       |        |       |       |        |
|------------------|--------------|----------|---------|-------|--------|-------|-------|--------|
| CH140            | Test results |          |         |       |        |       |       |        |
|                  | P set        | Ant gain | A1 + A2 | Limit | Margin | EIRP  | Limit | Margin |
| Chain1 + 2       |              | (dBi)    | (dBm)   | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1       | P20          | 6.0      | 17.9    | 24.0  | -6.1   | 23.9  | 30.0  | -6.1   |
| Ant_group2       | P17          | 9.0      | 15.9    | 24.0  | -8.1   | 24.9  | 30.0  | -5.1   |
| Ant_group3       | P11          | 14.2     | 10.3    | 24.0  | -13.7  | 24.5  | 30.0  | -5.5   |

| Test conditions:  |              |         |         |
|-------------------|--------------|---------|---------|
| HT40, MCS16       | Test results |         |         |
| Duty cycle: 93.7% | A [P11]      | A [P17] | A [P20] |
| Chain1            | (dBm)        | (dBm)   | (dBm)   |
| CH52up            | 5.1          | 10.6    | 13.6    |
| CH60up            | 4.9          | 10.6    | 13.5    |
| CH100up           | 4.6          | 10.2    | 13.4    |
| CH108up           | 4.8          | 10.0    | 13.4    |
| CH132up           | 4.4          | 9.8     | 13.0    |

| Test conditions:  |              |         |         |
|-------------------|--------------|---------|---------|
| HT40, MCS16       | Test results |         |         |
| Duty cycle: 93.7% | A [P11]      | A [P17] | A [P20] |
| Chain2            | (dBm)        | (dBm)   | (dBm)   |
| CH52up            | 4.1          | 10.2    | 13.2    |
| CH60up            | 5.1          | 11.0    | 14.0    |
| CH100up           | 3.7          | 9.3     | 12.2    |
| CH108up           | 3.6          | 9.0     | 11.8    |
| CH132up           | 5.5          | 10.7    | 13.7    |

### FCC-ID: LYHMPCIE1V1

| Test conditions:  |              |         |         |
|-------------------|--------------|---------|---------|
| HT40, MCS16       | Test results |         |         |
| Duty cycle: 93.7% | A [P11]      | A [P17] | A [P20] |
| Chain3            | (dBm)        | (dBm)   | (dBm)   |
| CH52up            | 5.7          | 11.6    | 14.3    |
| CH60up            | 5.3          | 11.9    | 14.4    |
| CH100up           | 4.1          | 10.2    | 12.7    |
| CH108up           | 4.8          | 10.9    | 13.1    |
| CH132up           | 5.9          | 11.2    | 14.1    |

Calculating of the conducted power and EIRP:

| Test conditions: |              |          |        |       |        |       |       |        |
|------------------|--------------|----------|--------|-------|--------|-------|-------|--------|
| CH52up           | Test results |          |        |       |        |       |       |        |
|                  | P set        | Ant gain | A1+2+3 | Limit | Margin | EIRP  | Limit | Margin |
| Chain1 + 2 + 3   |              | (dBi)    | (dBm)  | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1       | P20          | 6.0      | 18.8   | 24.0  | -5.2   | 24.8  | 30.0  | -5.2   |
| Ant_group2       | P17          | 9.0      | 14.8   | 24.0  | -9.2   | 23.8  | 30.0  | -6.2   |
| Ant_group3       | P11          | 14.2     | 10.1   | 24.0  | -13.9  | 24.3  | 30.0  | -5.7   |

Note: The summed power is calculated from the measured power of Port1, Port2 and Port3;

| Test conditions: |              |          |        |       |        |       |       |        |
|------------------|--------------|----------|--------|-------|--------|-------|-------|--------|
| CH60up           | Test results |          |        |       |        |       |       |        |
|                  | P set        | Ant gain | A1+2+3 | Limit | Margin | EIRP  | Limit | Margin |
| Chain1 + 2 + 3   |              | (dBi)    | (dBm)  | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1       | P20          | 6.0      | 19.1   | 24.0  | -4.9   | 25.1  | 30.0  | -4.9   |
| Ant_group2       | P17          | 9.0      | 15.3   | 24.0  | -8.7   | 24.3  | 30.0  | -5.7   |
| Ant_group3       | P11          | 14.2     | 10.2   | 24.0  | -13.8  | 24.4  | 30.0  | -5.6   |

| Test conditions: |              |          |        |       |        |       |       |        |
|------------------|--------------|----------|--------|-------|--------|-------|-------|--------|
| CH100up          | Test results |          |        |       |        |       |       |        |
|                  | P set        | Ant gain | A1+2+3 | Limit | Margin | EIRP  | Limit | Margin |
| Chain1 + 2 + 3   |              | (dBi)    | (dBm)  | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1       | P20          | 6.0      | 17.9   | 24.0  | -6.1   | 23.9  | 30.0  | -6.1   |
| Ant_group2       | P17          | 9.0      | 13.7   | 24.0  | -10.3  | 22.7  | 30.0  | -7.3   |
| Ant_group3       | P11          | 14.2     | 9.2    | 24.0  | -14.8  | 23.4  | 30.0  | -6.6   |

| Test conditions: |              |          |        |       |        |       |       |        |
|------------------|--------------|----------|--------|-------|--------|-------|-------|--------|
| CH108up          | Test results |          |        |       |        |       |       |        |
|                  | P set        | Ant gain | A1+2+3 | Limit | Margin | EIRP  | Limit | Margin |
| Chain1 + 2 + 3   |              | (dBi)    | (dBm)  | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1       | P20          | 6.0      | 17.9   | 24.0  | -6.1   | 23.9  | 30.0  | -6.1   |
| Ant_group2       | P17          | 9.0      | 14.0   | 24.0  | -10.0  | 23.0  | 30.0  | -7.0   |
| Ant_group3       | P11          | 14.2     | 9.5    | 24.0  | -14.5  | 23.7  | 30.0  | -6.3   |

| Test conditions: |              |          |        |       |        |       |       |        |
|------------------|--------------|----------|--------|-------|--------|-------|-------|--------|
| CH132up          | Test results |          |        |       |        |       |       |        |
|                  | P set        | Ant gain | A1+2+3 | Limit | Margin | EIRP  | Limit | Margin |
| Chain1 + 2 + 3   |              | (dBi)    | (dBm)  | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1       | P20          | 6.0      | 18.7   | 24.0  | -5.3   | 24.7  | 30.0  | -5.3   |
| Ant_group2       | P17          | 9.0      | 14.7   | 24.0  | -9.3   | 23.7  | 30.0  | -6.3   |
| Ant_group3       | P11          | 14.2     | 10.4   | 24.0  | -13.6  | 24.6  | 30.0  | -5.4   |

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| Test conditions:  |              |         |         |
|-------------------|--------------|---------|---------|
| Legacy, 6 Mbps    | Test results |         |         |
| Duty cycle: 93.7% | A [P11]      | A [P17] | A [P20] |
| Chain1            | (dBm)        | (dBm)   | (dBm)   |
| CH52              | 9.5          | 14.3    | 14.3    |
| CH56              | 9.7          | 14.4    | 14.4    |
| CH64              | 9.3          | 13.7    | 13.8    |
| CH100             | 9.8          | 14.3    | 14.2    |
| CH116             | 9.7          | 14.2    | 14.2    |
| CH140             | 9.0          | 14.2    | 14.2    |

Calculating of the conducted power and EIRP:

| Test conditions: |              |          |       |       |        |       |       |        |
|------------------|--------------|----------|-------|-------|--------|-------|-------|--------|
| CH52             | Test results |          |       |       |        |       |       |        |
|                  | P set        | Ant gain | A1    | Limit | Margin | EIRP  | Limit | Margin |
| Chain1           |              | (dBi)    | (dBm) | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1       | P20          | 6.0      | 14.6  | 24.0  | -9.4   | 20.6  | 30.0  | -9.4   |
| Ant_group2       | P17          | 9.0      | 14.6  | 24.0  | -9.4   | 23.6  | 30.0  | -6.4   |
| Ant_group3       | P11          | 14.2     | 9.8   | 24.0  | -14.2  | 24.0  | 30.0  | -6.0   |

| Test conditions: |              |          |       |       |        |       |       |        |
|------------------|--------------|----------|-------|-------|--------|-------|-------|--------|
| CH56             | Test results |          |       |       |        |       |       |        |
|                  | P set        | Ant gain | A1    | Limit | Margin | EIRP  | Limit | Margin |
| Chain1           |              | (dBi)    | (dBm) | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1       | P20          | 6.0      | 14.7  | 24.0  | -9.3   | 20.7  | 30.0  | -9.3   |
| Ant_group2       | P17          | 9.0      | 14.7  | 24.0  | -9.3   | 23.7  | 30.0  | -6.3   |
| Ant_group3       | P11          | 14.2     | 10.0  | 24.0  | -14.0  | 24.2  | 30.0  | -5.8   |

| Test conditions: |              |          |       |       |        |       |       |        |
|------------------|--------------|----------|-------|-------|--------|-------|-------|--------|
| CH64             | Test results |          |       |       |        |       |       |        |
|                  | P set        | Ant gain | A1    | Limit | Margin | EIRP  | Limit | Margin |
| Chain1           |              | (dBi)    | (dBm) | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1       | P20          | 6.0      | 14.1  | 24.0  | -9.9   | 20.1  | 30.0  | -9.9   |
| Ant_group2       | P17          | 9.0      | 14.0  | 24.0  | -10.0  | 23.0  | 30.0  | -7.0   |
| Ant_group3       | P11          | 14.2     | 9.6   | 24.0  | -14.4  | 23.8  | 30.0  | -6.2   |

| Test conditions: |              |          |       |       |        |       |       |        |
|------------------|--------------|----------|-------|-------|--------|-------|-------|--------|
| CH100            | Test results |          |       |       |        |       |       |        |
|                  | P set        | Ant gain | A1    | Limit | Margin | EIRP  | Limit | Margin |
| Chain1           |              | (dBi)    | (dBm) | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1       | P20          | 6.0      | 14.5  | 24.0  | -9.5   | 20.5  | 30.0  | -9.5   |
| Ant_group2       | P17          | 9.0      | 14.6  | 24.0  | -9.4   | 23.6  | 30.0  | -6.4   |
| Ant_group3       | P11          | 14.2     | 10.1  | 24.0  | -13.9  | 24.3  | 30.0  | -5.7   |

| Test conditions: |              |          |       |       |        |       |       |        |
|------------------|--------------|----------|-------|-------|--------|-------|-------|--------|
| CH116            | Test results |          |       |       |        |       |       |        |
|                  | P set        | Ant gain | A1    | Limit | Margin | EIRP  | Limit | Margin |
| Chain1           |              | (dBi)    | (dBm) | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1       | P20          | 6.0      | 14.5  | 24.0  | -9.6   | 20.5  | 30.0  | -9.6   |
| Ant_group2       | P17          | 9.0      | 14.5  | 24.0  | -9.5   | 23.5  | 30.0  | -6.5   |
| Ant_group3       | P11          | 14.2     | 10.0  | 24.0  | -14.0  | 24.2  | 30.0  | -5.8   |

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| Test conditions: |              |          |       |       |        |       |       |        |
|------------------|--------------|----------|-------|-------|--------|-------|-------|--------|
| CH140            | Test results |          |       |       |        |       |       |        |
|                  | P set        | Ant gain | A1    | Limit | Margin | EIRP  | Limit | Margin |
| Chain1           |              | (dBi)    | (dBm) | (dBm) | (dB)   | (dBm) | (dBm) | (dB)   |
| Ant_group1       | P20          | 6.0      | 14.5  | 24.0  | -9.5   | 20.5  | 30.0  | -9.5   |
| Ant_group2       | P17          | 9.0      | 14.5  | 24.0  | -9.5   | 23.5  | 30.0  | -6.5   |
| Ant_group3       | P11          | 14.2     | 9.3   | 24.0  | -14.7  | 23.5  | 30.0  | -6.5   |

Peak power limit according to FCC Part 15E, Section 15.407(a):

The lower limit applies. The defacto EIRP limit is based on a 6 dBi antenna.

| Frequency<br>(GHz) | Conducted power limit     |       |       | EIRP<br>limit |
|--------------------|---------------------------|-------|-------|---------------|
|                    |                           | (dBm) | (dBm) | (dBm)         |
| 5.250 - 5.350      | HT20, $11 + 10 \log B =$  | 24.8  | 24.0  | 30.0          |
|                    | HT40, $11 + 10 \log B =$  | 28.1  | 24.0  | 30.0          |
|                    | Legacy, $4 + 10 \log B =$ | 24.7  | 24.0  | 30.0          |
| 5.470 - 5.725      | HT20, $11 + 10 \log B =$  | 24.8  | 24.0  | 30.0          |
|                    | HT40, $11 + 10 \log B =$  | 28.0  | 24.0  | 30.0          |
|                    | Legacy, $4 + 10 \log B =$ | 24.0  | 24.0  | 30.0          |

The requirements are **FULFILLED**.

Remarks:

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**FCC-ID: LYHMPCIE1V1****5.5 Peak power spectral density**

For test instruments and accessories used see section 6 Part **CPC 3**.

**5.5.1 Description of the test location**

Test location: AREA4

**5.5.2 Photo documentation of the test set-up****5.5.3 Applicable standard**

According to FCC Part 15E, Section 15.407(a):

For the defined operating bands the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than the appropriate limit in any 1 MHz band during any time interval of continuous transmission.

**5.5.4 Description of Measurement**

The measurement is performed using the procedure set out in 789033 D01, PPSD Method SA-2. For this MIMO transmitter the antenna outputs are measured and summed according OET 660up911. A duty cycle of 0.3 dB is taken into account.

Settings on the spectrum analyser:

RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto, Detector: RMS, Sweep count: 100

### FCC-ID: LYHMPCIE1V1

#### 5.5.5 Test result

| Test conditions: HT20, MCS8, conducted |               |              |           |           |            |        |
|--|---------------|--------------|-----------|-----------|------------|--------|
| Duty cycle: 93.7%                      |               | Test results |           |           |            |        |
| Chain1, 2                              | Power setting | D1           | D2        | D1 + D2   | PPSD limit | Margin |
|  |               | (dBm/MHz)    | (dBm/MHz) | (dBm/MHz) | (dBm/MHz)  | (dB)   |
| CH52                                   | P11           | -5.1         | -5.4      | -1.9      | 11.0       | -12.9  |
|  | P17           | 0.5          | 0.4       | 3.8       | 11.0       | -7.2   |
|  | P20           | 2.6          | 2.3       | 5.8       | 11.0       | -5.2   |
| CH56                                   | P11           | -4.8         | -4.7      | -1.4      | 11.0       | -12.4  |
|  | P17           | 0.8          | 1.4       | 4.4       | 11.0       | -6.6   |
|  | P20           | 2.9          | 3.1       | 6.3       | 11.0       | -4.7   |
| CH64                                   | P11           | -5.2         | -4.4      | -1.5      | 11.0       | -12.5  |
|  | P17           | 0.7          | 1.4       | 4.3       | 11.0       | -6.7   |
|  | P20           | 2.5          | 3.7       | 6.4       | 11.0       | -4.6   |
| CH100                                  | P11           | -4.7         | -5.4      | -1.7      | 11.0       | -12.7  |
|  | P17           | 0.7          | 0.1       | 3.7       | 11.0       | -7.3   |
|  | P20           | 3.0          | 2.1       | 5.9       | 11.0       | -5.1   |
| CH116                                  | P11           | -5.2         | -4.8      | -1.7      | 11.0       | -12.7  |
|  | P17           | 0.9          | 0.7       | 4.1       | 11.0       | -6.9   |
|  | P20           | 2.8          | 2.6       | 6.0       | 11.0       | -5.0   |
| CH140                                  | P11           | -5.6         | -3.9      | -1.4      | 11.0       | -12.4  |
|  | P17           | 0.6          | 1.0       | 4.1       | 11.0       | -6.9   |
|  | P20           | 2.6          | 2.9       | 6.0       | 11.0       | -5.0   |

| Test conditions: HT40, MCS16, conducted |               |              |           |           |           |            |        |
|---|---------------|--------------|-----------|-----------|-----------|------------|--------|
| Duty cycle: 93.7%                       |               | Test results |           |           |           |            |        |
| Chain1, 2, 3                            | Power setting | D1           | D2        | D3        | D1+D2+D3  | PPSD limit | Margin |
|   |               | (dBm/MHz)    | (dBm/MHz) | (dBm/MHz) | (dBm/MHz) | (dBm/MHz)  | (dB)   |
| CH54                                    | P11           | -8.6         | -9.7      | -8.0      | -3.7      | 11.0       | -14.7  |
|   | P17           | -2.8         | -3.8      | -1.8      | 2.4       | 11.0       | -8.6   |
|   | P20           | 0.1          | -0.2      | 0.9       | 5.4       | 11.0       | -5.6   |
| CH62                                    | P11           | -9.0         | -8.8      | -8.8      | -3.8      | 11.0       | -14.8  |
|   | P17           | -3.1         | -2.8      | -1.7      | 2.6       | 11.0       | -8.4   |
|   | P20           | -0.2         | 0.3       | 0.8       | 5.4       | 11.0       | -5.6   |
| CH102                                   | P11           | -8.7         | -9.7      | -9.3      | -4.2      | 11.0       | -15.2  |
|   | P17           | -3.2         | -4.3      | -3.5      | 1.4       | 11.0       | -9.6   |
|   | P20           | -0.4         | -1.5      | -1.2      | 4.1       | 11.0       | -6.9   |
| CH110                                   | P11           | -8.2         | -9.6      | -8.1      | -3.5      | 11.0       | -14.5  |
|   | P17           | -2.8         | -4.8      | -1.9      | 2.1       | 11.0       | -8.9   |
|   | P20           | 0.1          | -1.7      | 0.2       | 4.7       | 11.0       | -6.3   |
| CH134                                   | P11           | -9.3         | -8.5      | -7.8      | -3.4      | 11.0       | -14.4  |
|   | P17           | -3.6         | -3.0      | -2.5      | 2.1       | 11.0       | -8.9   |
|   | P20           | -0.7         | -0.2      | 0.0       | 4.8       | 11.0       | -6.2   |

**FCC-ID: LYHMPCIE1V1**

| <b>Test conditions: Legacy, 6 Mbps, conducted</b> |               |                 |                         |                |
|---|---------------|-----------------|-------------------------|----------------|
| Duty cycle: 93.7%                                 | Test results  |                 |                         |                |
| Chain1  | Power setting | D1<br>(dBm/MHz) | PPSD limit<br>(dBm/MHz) | Margin<br>(dB) |
| CH52  | P11           | -1.3            | 11.0                    | -12.3          |
|   | P17           | 3.5             | 11.0                    | -7.5           |
|   | P20           | 3.5             | 11.0                    | -7.5           |
| CH56  | P11           | -1.1            | 11.0                    | -12.1          |
|   | P17           | 3.6             | 11.0                    | -7.4           |
|   | P20           | 3.4             | 11.0                    | -7.6           |
| CH64  | P11           | -1.5            | 11.0                    | -12.5          |
|   | P17           | 3.0             | 11.0                    | -8.1           |
|   | P20           | 3.1             | 11.0                    | -8.0           |
| CH100   | P11           | -1.1            | 11.0                    | -12.1          |
|   | P17           | 3.4             | 11.0                    | -7.7           |
|   | P20           | 3.4             | 11.0                    | -7.6           |
| CH116   | P11           | -1.1            | 11.0                    | -12.1          |
|   | P17           | 3.4             | 11.0                    | -7.6           |
|   | P20           | 3.4             | 11.0                    | -7.6           |
| CH140   | P11           | -2.0            | 11.0                    | -13.0          |
|   | P17           | 3.2             | 11.0                    | -7.8           |
|   | P20           | 3.3             | 11.0                    | -7.8           |

Peak power limit according to FCC Part 15E, Section 15.407(a):

| Frequency<br>(GHz) | Peak power spectral density limit<br>(dBm/MHz) |
|--------------------|--|
| 5.150 - 5.250      | 4  |
| 5.250 - 5.350      | 11   |
| 5.470 - 5.725      | 11   |

The requirements are **FULFILLED**.

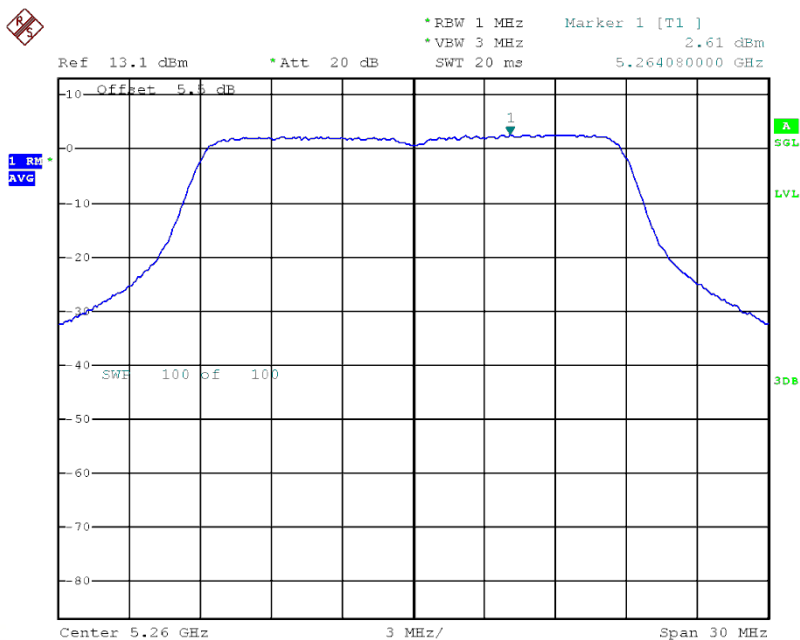
**Remarks:** For detailed test results please see the following test protocols. Only the worst case of the plots are listed

**FCC-ID: LYHMPCIE1V1**

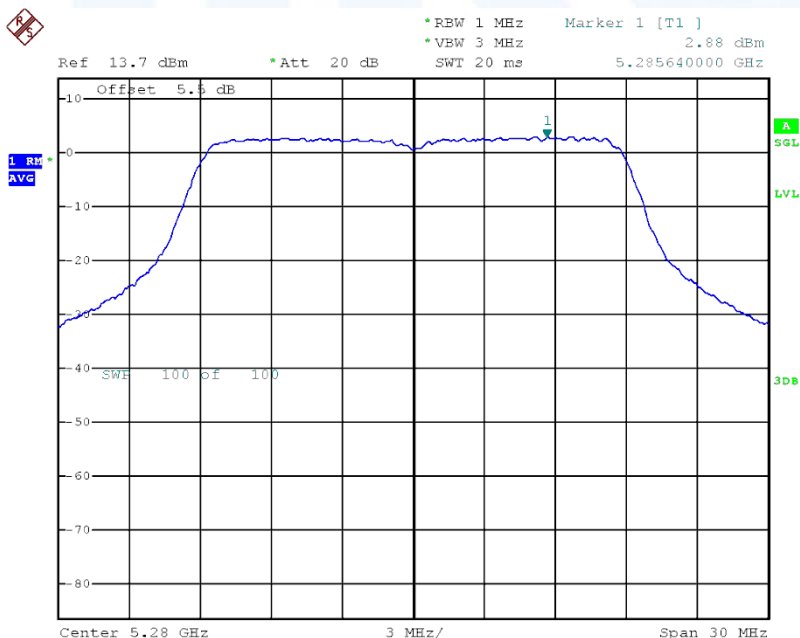
**5.5.6 Peak Power spectral density plots**

**5.5.6.1 HT20, Port1:**

**Channel 52 (5260 MHz)**

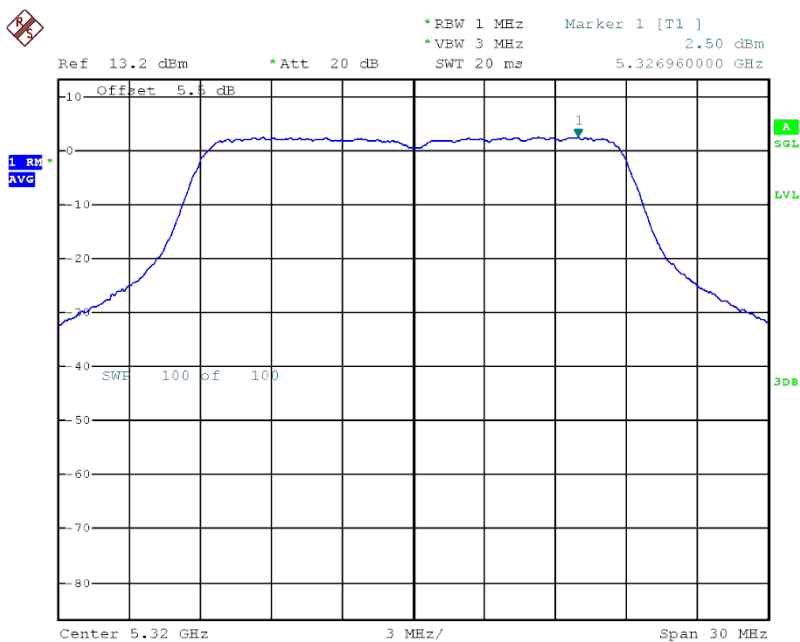


**Channel 56 (5280 MHz)**

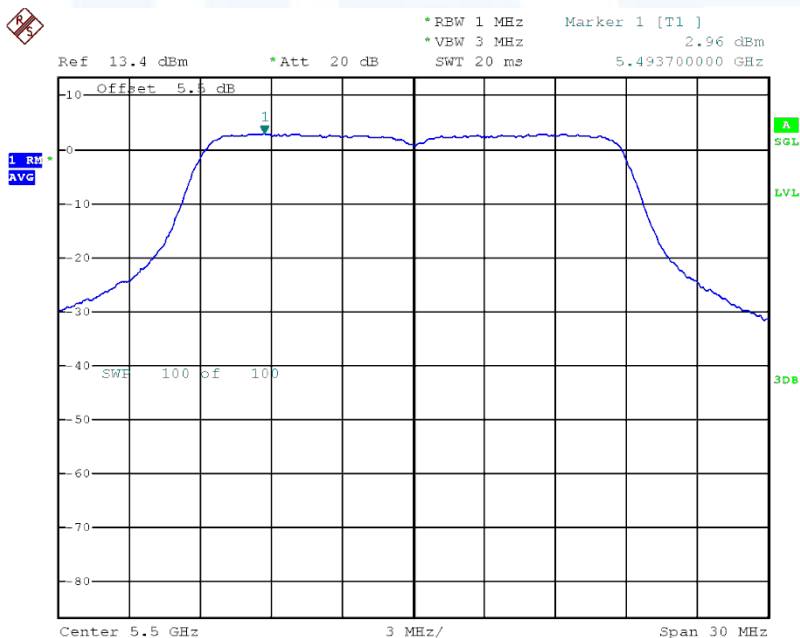


**FCC-ID: LYHMPCIE1V1**

**Channel 64 (5320 MHz)**

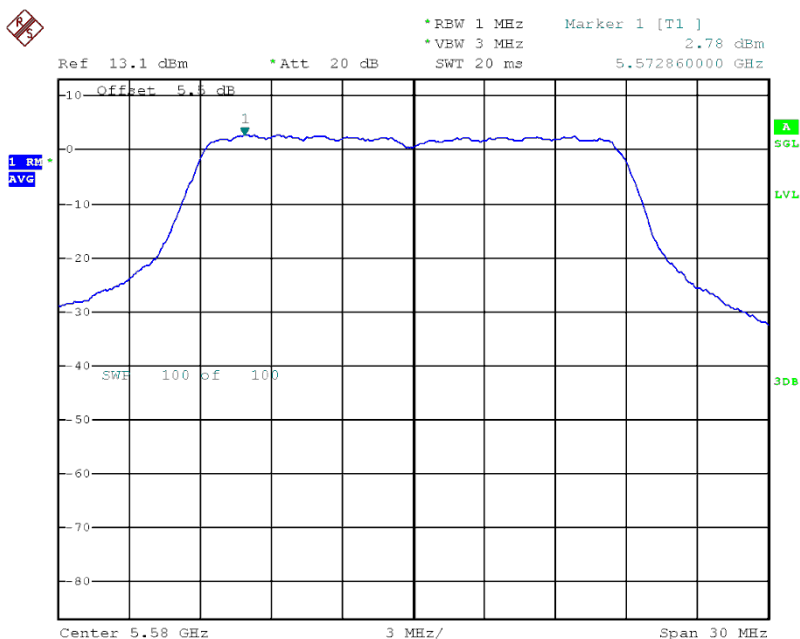


**Channel 100 (5500 MHz)**

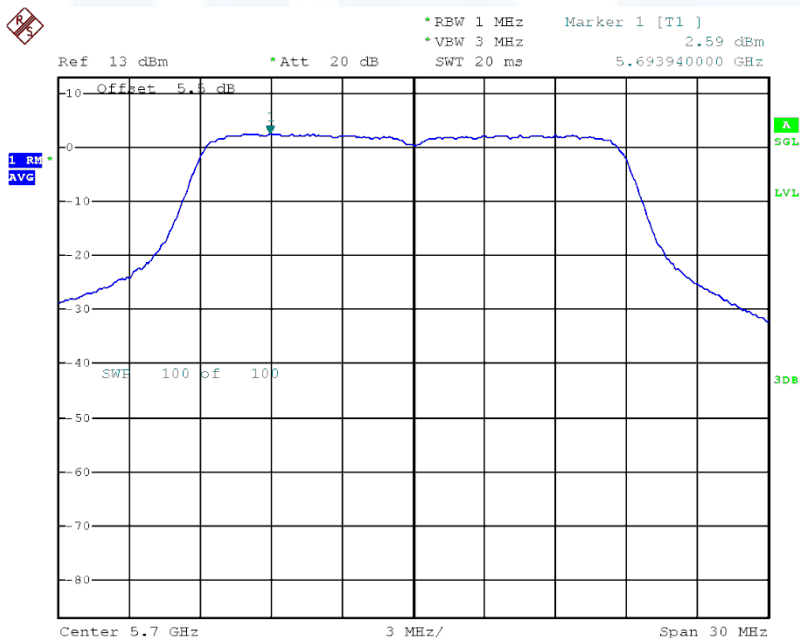


**FCC-ID: LYHMPCIE1V1**

**Channel 116 (5580 MHz)**



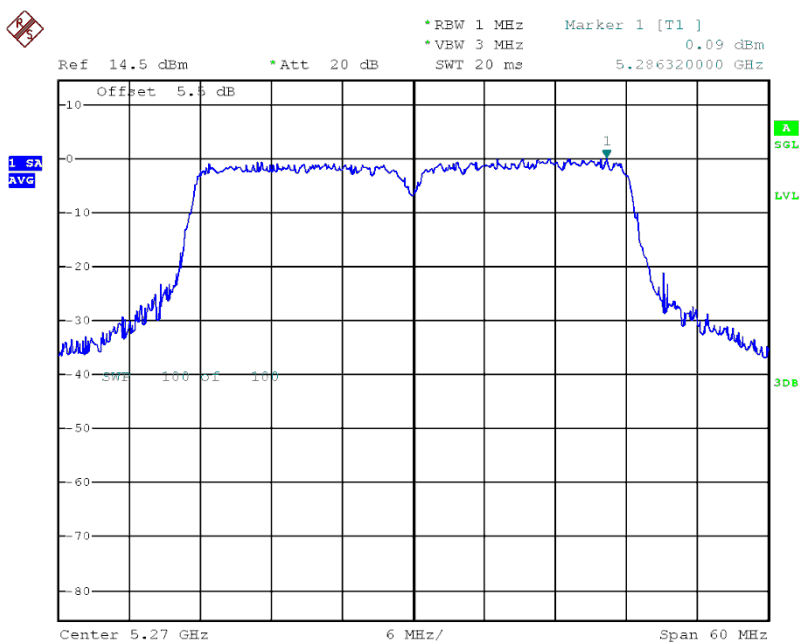
**Channel 140 (5700 MHz)**



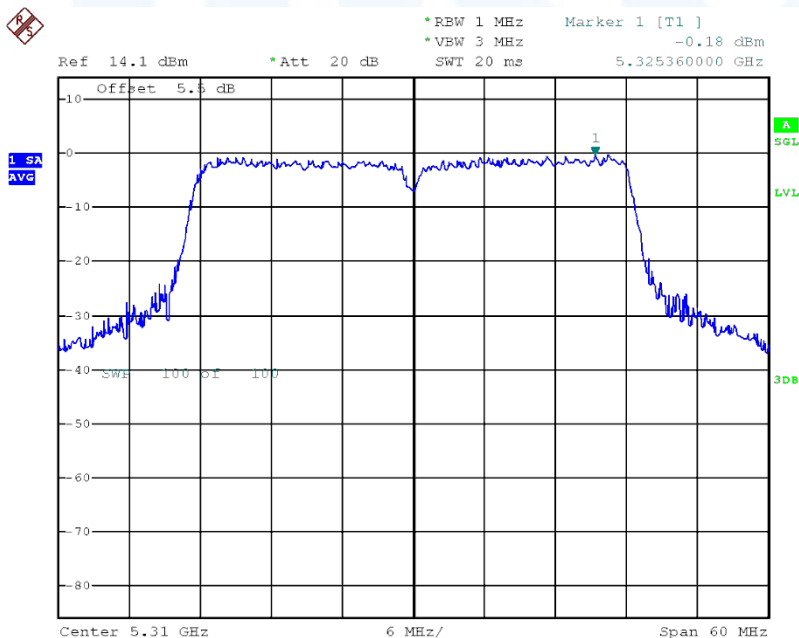
**FCC-ID: LYHMPCIE1V1**

**5.5.6.2 HT40, Port1:**

**Channel 52up (5270 MHz)**



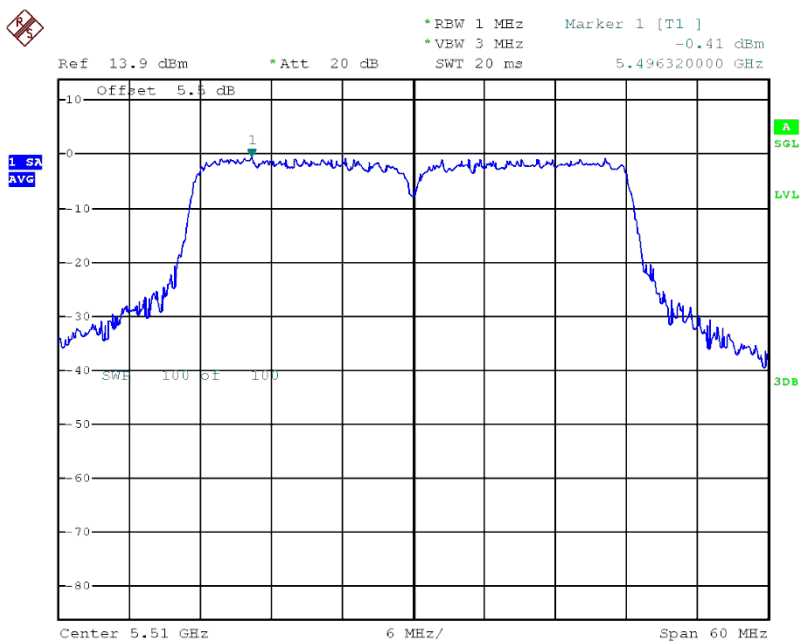
**Channel 60up (5310 MHz)**



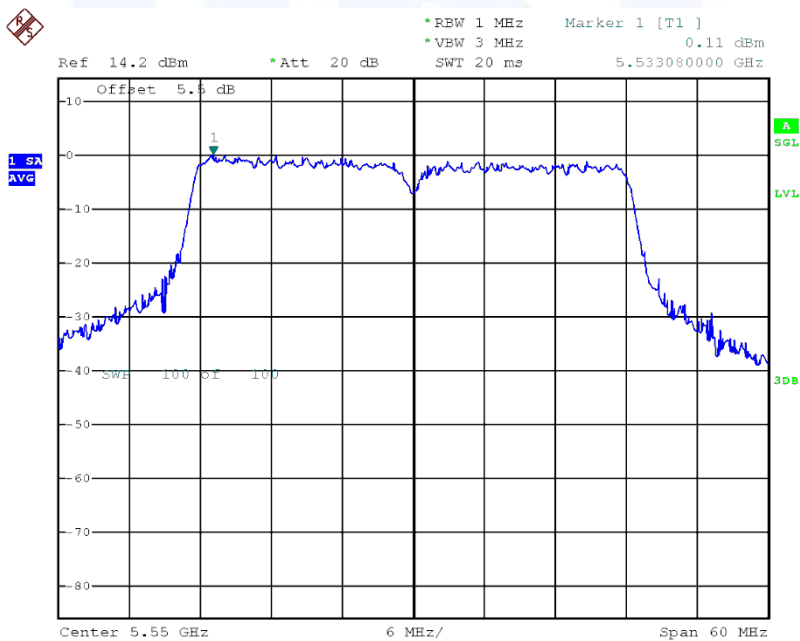


**FCC-ID: LYHMPCIE1V1**

**Channel 100up (5510 MHz)**

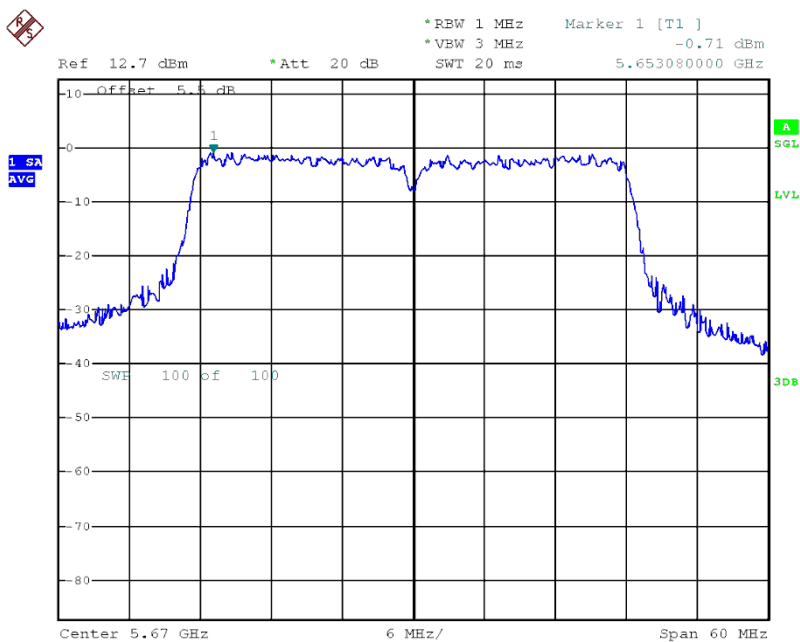


**Channel 108up (5550 MHz)**



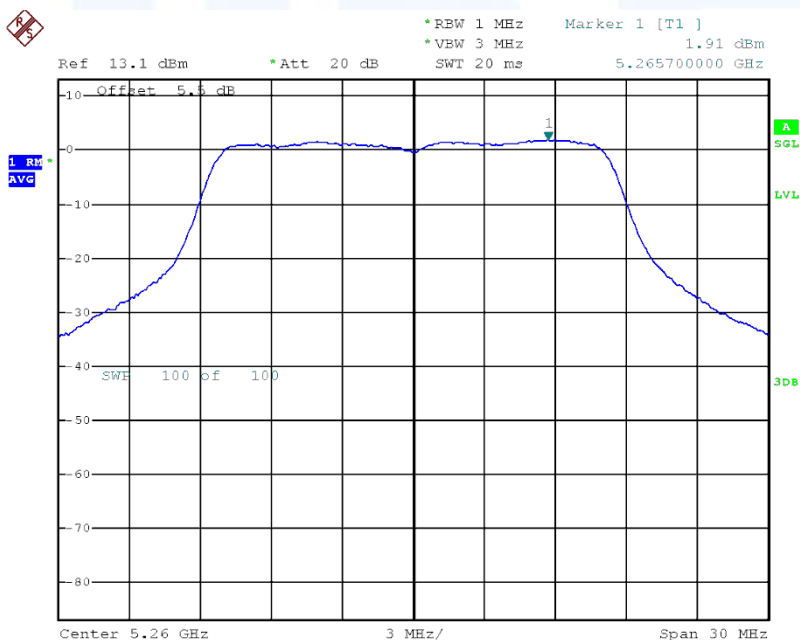
**FCC-ID: LYHMPCIE1V1**

**Channel 132up (5670 MHz)**



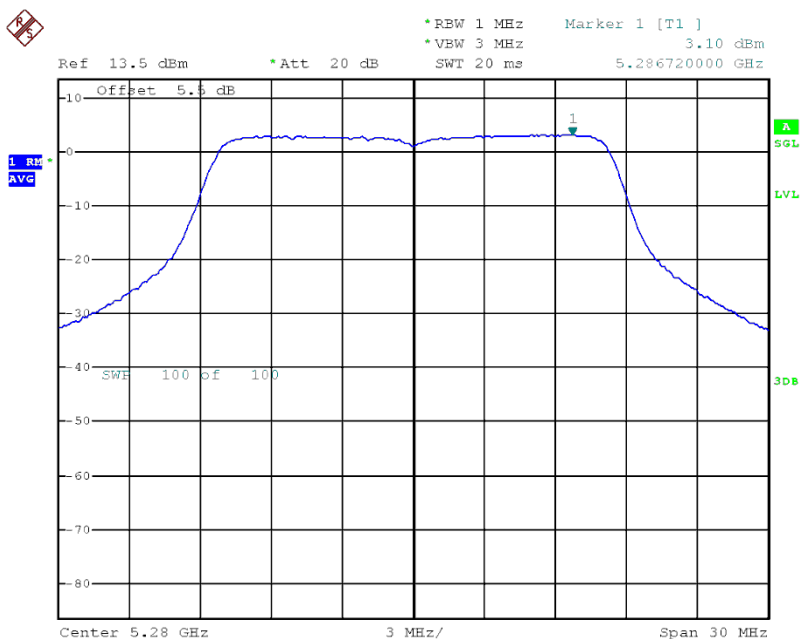
**5.5.6.3 802.11a, Port1:**

**Channel 52 (5260 MHz)**

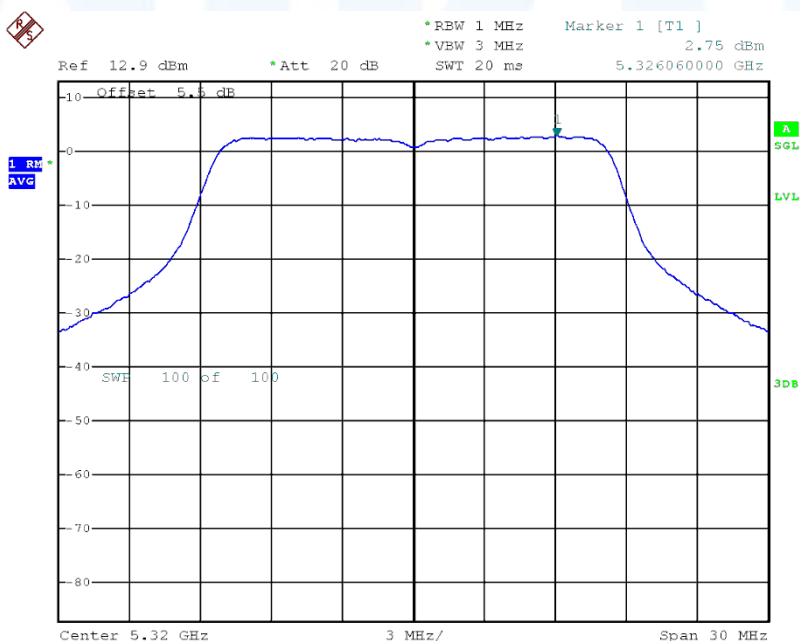


### FCC-ID: LYHMPCIE1V1

#### Channel 56 (5280 MHz)

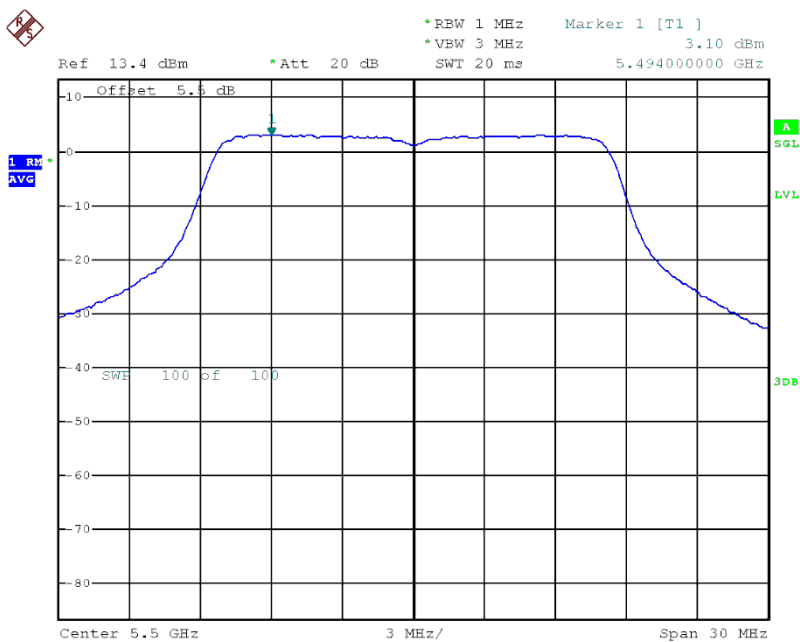


#### Channel 64 (5320 MHz)

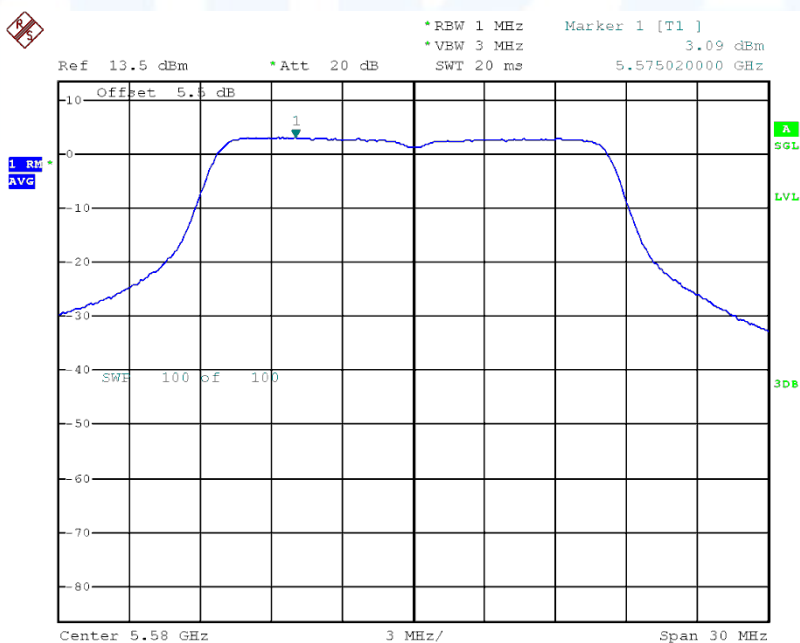


**FCC-ID: LYHMPCIE1V1**

**Channel 100 (5500 MHz)**

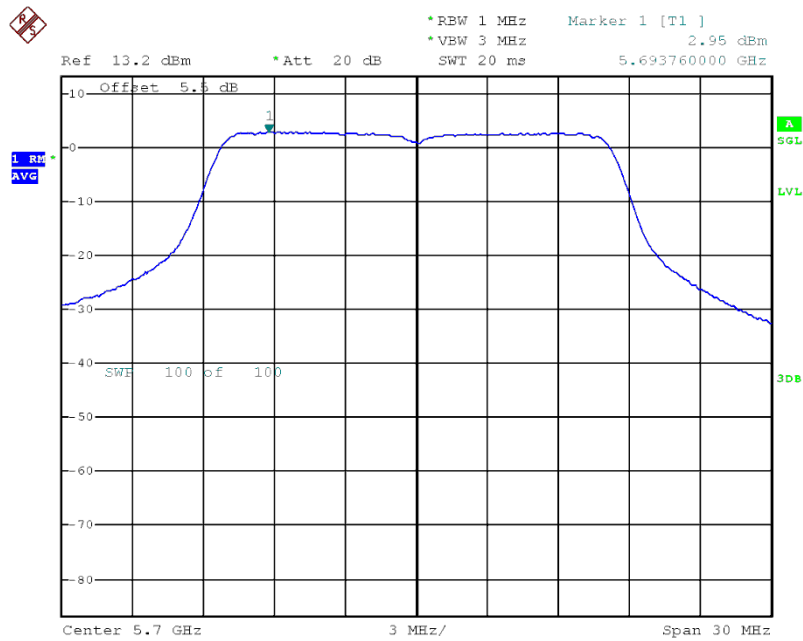


**Channel 116 (5580 MHz)**



**FCC-ID: LYHMPCIE1V1**

Channel 140 (5700 MHz)



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**FCC-ID: LYHMPCIE1V1**

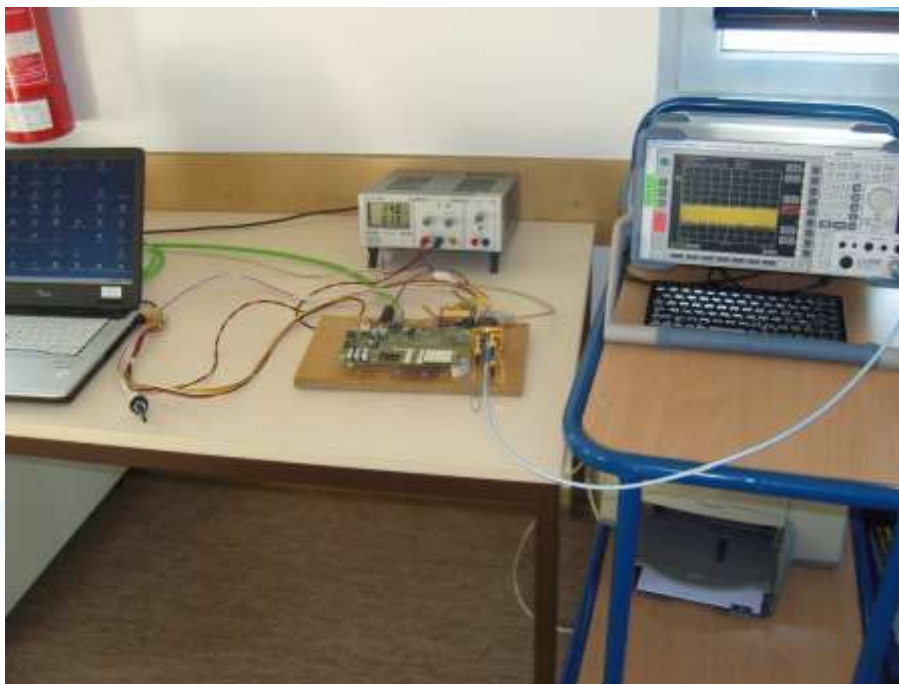
**5.6 Peak excursion**

For test instruments and accessories used see section 6 Part **MB**.

**5.6.1 Description of the test location**

Test location: AREA4

**5.6.2 Photo documentation of the test set-up**



**5.6.3 Applicable standard**

According to FCC Part 15E, Section 15.407(a)(6):

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

**5.6.4 Description of Measurement**

The transmitter output is connected to the spectrum analyser. Using peak detector and “MAX HOLD” function for Trace 1 with 1 MHz RBW and 3 MHz VBW and Trace 2 with 1 MHz RBW and 300 kHz VBW both traces are recorded. The largest difference between Trace 1 and Trace 2 in any 1 MHz band is noted as maximum *Peak Excursion* value.

**FCC-ID: LYHMPCIE1V1**

**5.6.5 Test result**

| <b>Test conditions: HT20, MCS8, conducted</b> |               |              |           |        |
|---|---------------|--------------|-----------|--------|
| Duty cycle: 93.7%                             |               | Test results |           |        |
| Chain1  | Power setting | PEX          | PEX limit | Margin |
|   |               | (dB)         | (dB)      | (dB)   |
| CH52  | P20           | 11.7         | 13        | -1.3   |
| CH56  | P20           | 12.1         | 13        | -0.9   |
| CH64  | P20           | 11.3         | 13        | -1.7   |
| CH100   | P20           | 10.9         | 13        | -2.1   |
| CH116   | P20           | 11.2         | 13        | -1.8   |
| CH140   | P20           | 11.9         | 13        | -1.2   |

| <b>Test conditions: HT20, MCS8, conducted</b> |               |              |           |        |
|---|---------------|--------------|-----------|--------|
| Duty cycle: 93.7%                             |               | Test results |           |        |
| Chain2  | Power setting | PEX          | PEX limit | Margin |
|   |               | (dB)         | (dB)      | (dB)   |
| CH52  | P20           | 11.7         | 13        | -1.3   |
| CH56  | P20           | 11.1         | 13        | -1.9   |
| CH64  | P20           | 11.3         | 13        | -1.7   |
| CH100   | P20           | 10.8         | 13        | -2.2   |
| CH116   | P20           | 11.5         | 13        | -1.5   |
| CH140   | P20           | 11.8         | 13        | -1.2   |

| <b>Test conditions: HT40, MCS16, conducted</b> |               |              |           |        |
|--|---------------|--------------|-----------|--------|
| Duty cycle: 93.7%                              |               | Test results |           |        |
| Chain1   | Power setting | PEX          | PEX limit | Margin |
|  |               | (dB)         | (dB)      | (dB)   |
| CH52up   | P20           | 11.9         | 13        | -1.1   |
| CH60up   | P20           | 11.8         | 13        | -1.2   |
| CH100up  | P20           | 11.2         | 13        | -1.8   |
| CH108up  | P20           | 11.3         | 13        | -1.7   |
| CH132up  | P20           | 11.4         | 13        | -1.6   |

| <b>Test conditions: HT40, MCS16, conducted</b> |               |              |           |        |
|--|---------------|--------------|-----------|--------|
| Duty cycle: 93.7%                              |               | Test results |           |        |
| Chain2   | Power setting | PEX          | PEX limit | Margin |
|  |               | (dB)         | (dB)      | (dB)   |
| CH52up   | P20           | 11.1         | 13        | -1.9   |
| CH60up   | P20           | 12.1         | 13        | -0.9   |
| CH100up  | P20           | 11.9         | 13        | -1.1   |
| CH108up  | P20           | 12.2         | 13        | -0.8   |
| CH132up  | P20           | 12.3         | 13        | -0.8   |

| <b>Test conditions: HT40, MCS16, conducted</b> |               |              |           |        |
|--|---------------|--------------|-----------|--------|
| Duty cycle: 93.7%                              |               | Test results |           |        |
| Chain3   | Power setting | PEX          | PEX limit | Margin |
|  |               | (dB)         | (dB)      | (dB)   |
| CH52up   | P20           | 10.5         | 13        | -2.5   |
| CH60up   | P20           | 11.5         | 13        | -1.5   |
| CH100up  | P20           | 11.6         | 13        | -1.4   |
| CH108up  | P20           | 11.9         | 13        | -1.2   |
| CH132up  | P20           | 10.2         | 13        | -2.8   |



**FCC-ID: LYHMPCIE1V1**

| Test conditions: Legacy, 6 Mbps, conducted |               |              |                   |                |
|--|---------------|--------------|-------------------|----------------|
| Duty cycle: 93.7%                          |               | Test results |                   |                |
| Chain1                                     | Power setting | PEX<br>(dB)  | PEX limit<br>(dB) | Margin<br>(dB) |
| CH52                                       | P20           | 12.6         | 13                | -0.4           |
| CH56                                       | P20           | 12.6         | 13                | -0.4           |
| CH64                                       | P20           | 12.7         | 13                | -0.3           |
| CH100                                      | P20           | 11.9         | 13                | -1.1           |
| CH116                                      | P20           | 10.8         | 13                | -2.2           |
| CH140                                      | P20           | 11.7         | 13                | -1.3           |

Limit according to FCC Part 15E, Section 15.407(a)(6):

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured like before) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

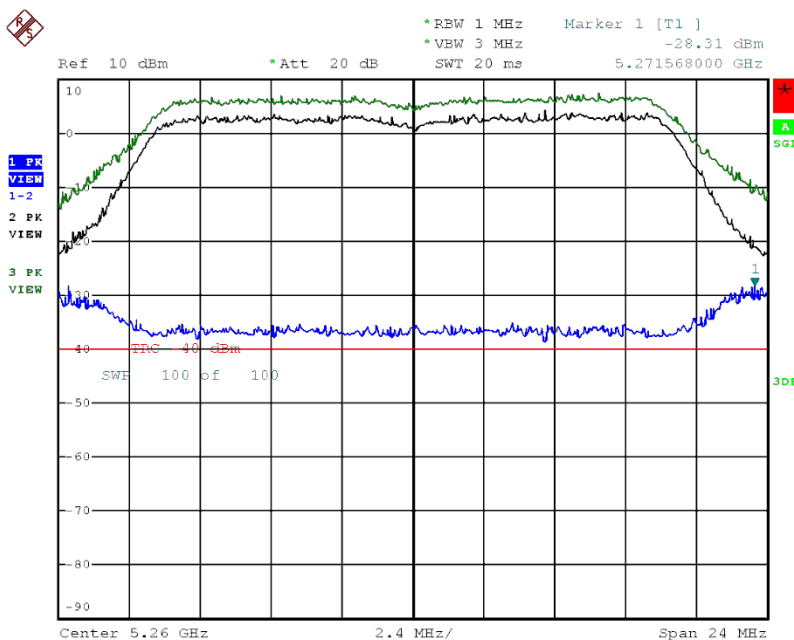
The requirements are **FULFILLED**.

**Remarks:** For detailed test results please see the following test protocols. Only the worst case of the plots are listed.

**5.6.6 Peak excursion plots**

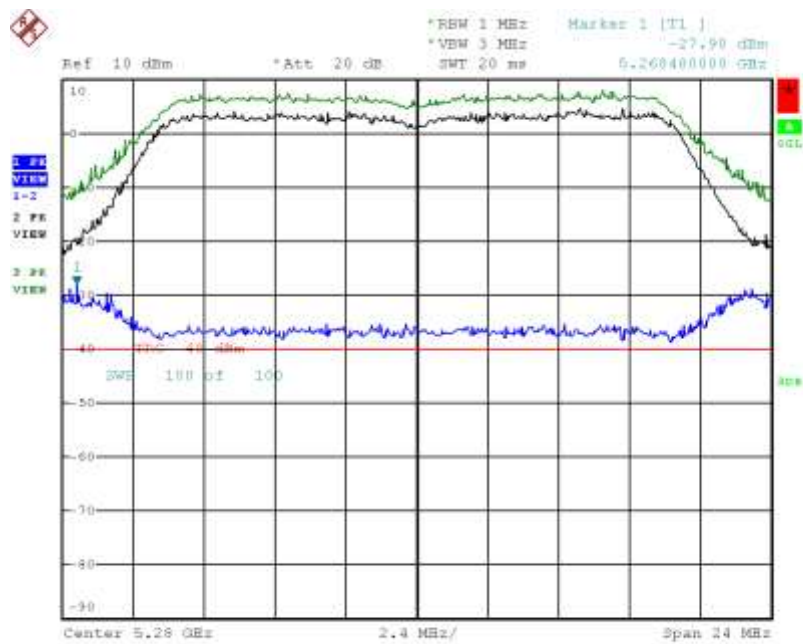
**5.6.6.1 HT20, Port1**

Channel 52 (5260 MHz)

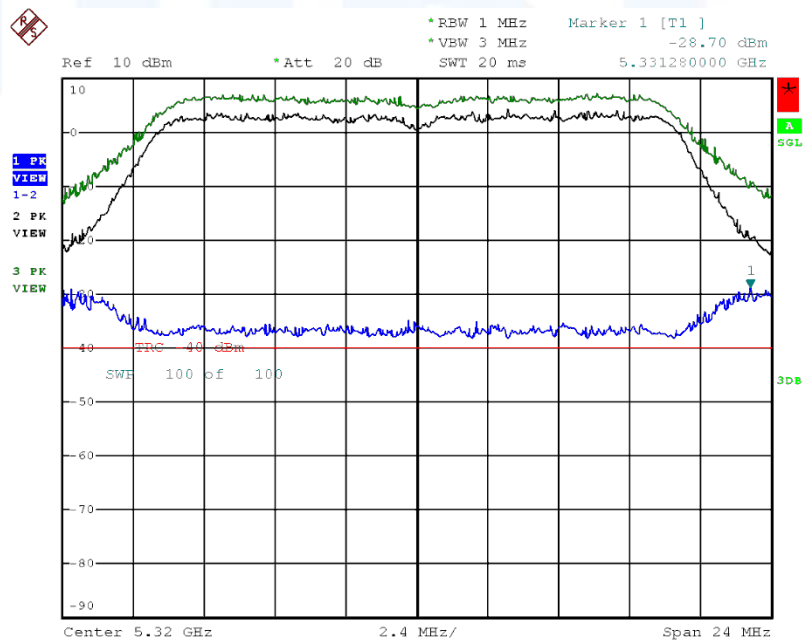


**FCC-ID: LYHMPCIE1V1**

Channel 56 (5280 MHz)

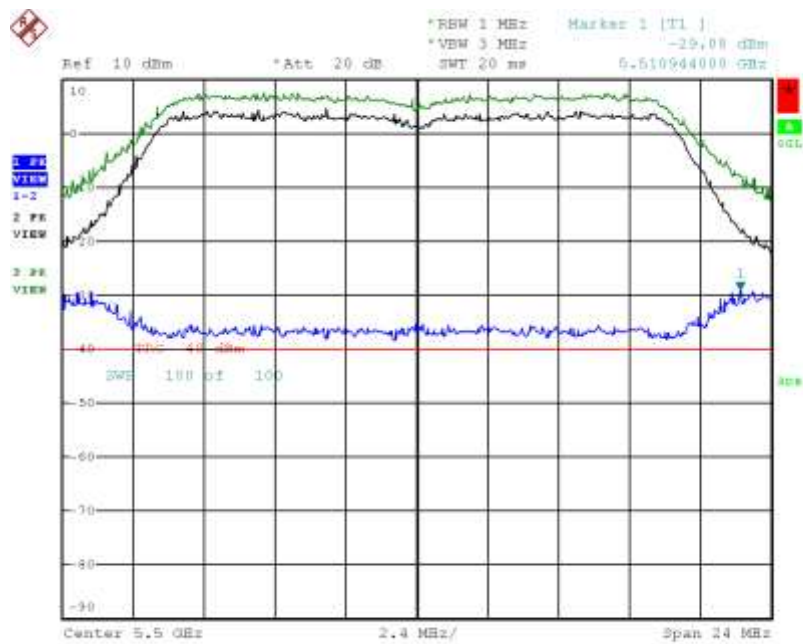


Channel 64 (5320 MHz)

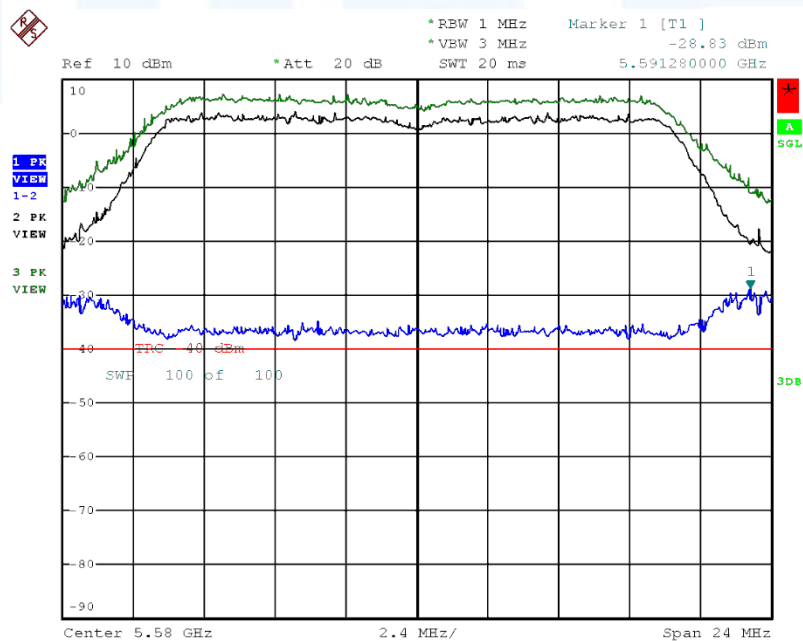


**FCC-ID: LYHMPCIE1V1**

Channel 100 (5500 MHz)

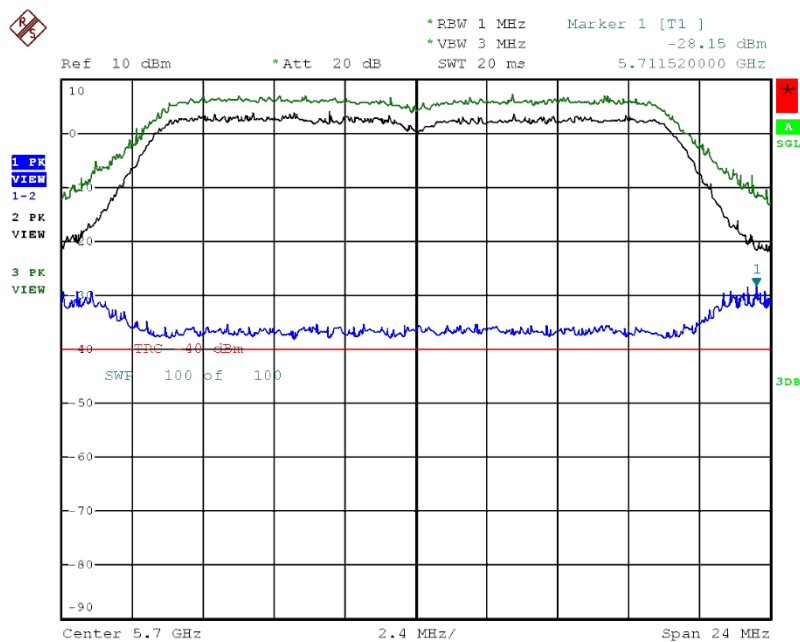


Channel 116 (5580 MHz)



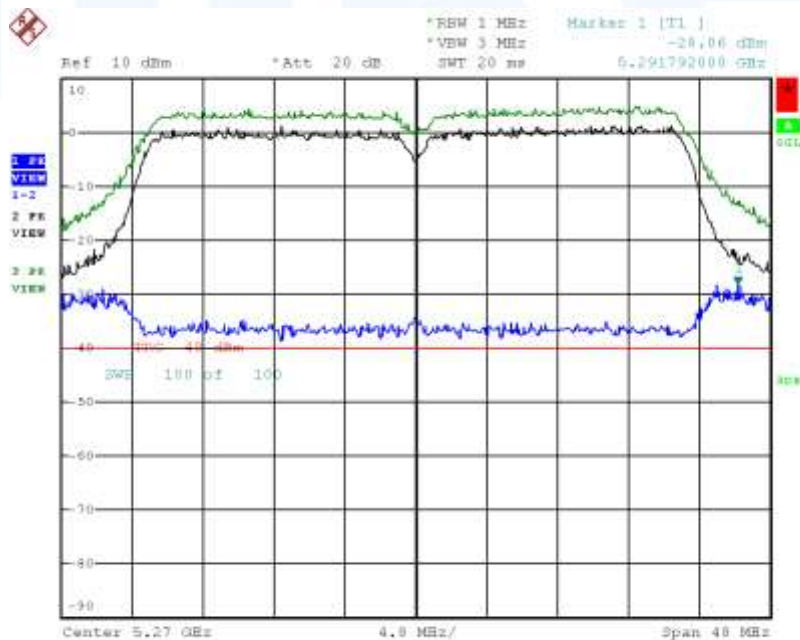
**FCC-ID: LYHMPCIE1V1**

Channel 140 (5700 MHz)



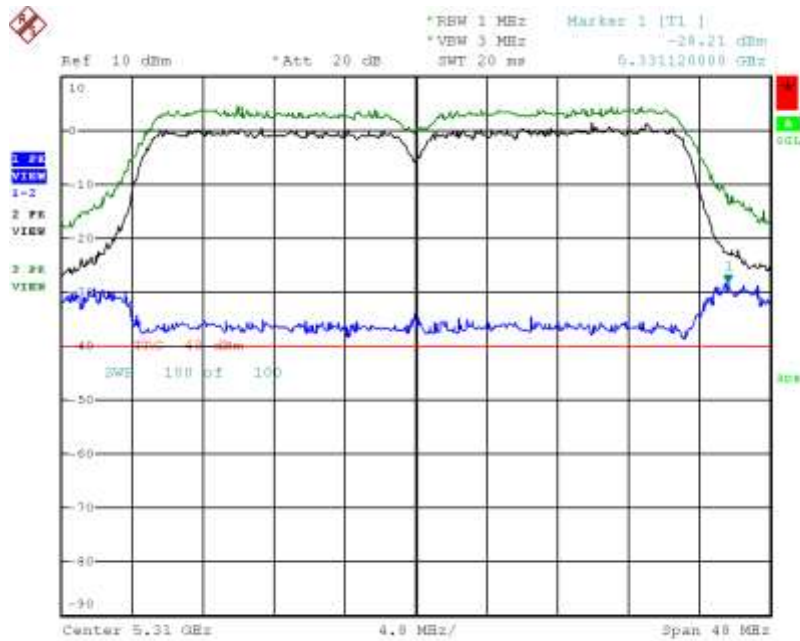
**5.6.6.2 HT40, Port1**

Channel 52up (5270 MHz)

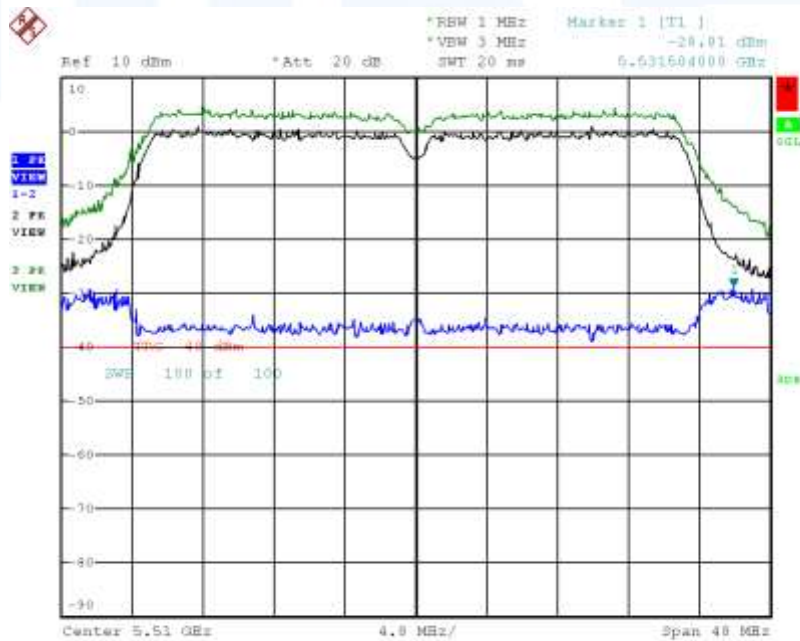


**FCC-ID: LYHMPCIE1V1**

Channel 60up (5310 MHz)

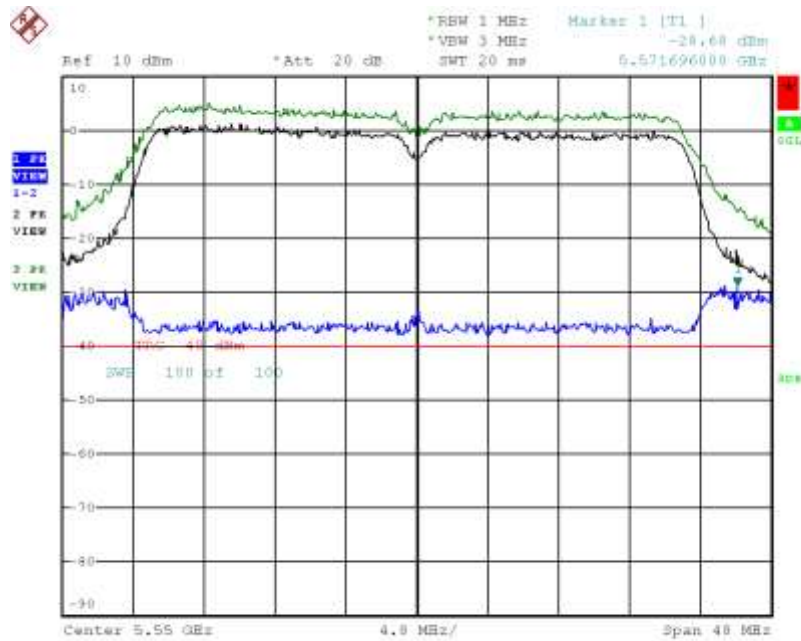


Channel 100up (5510 MHz)

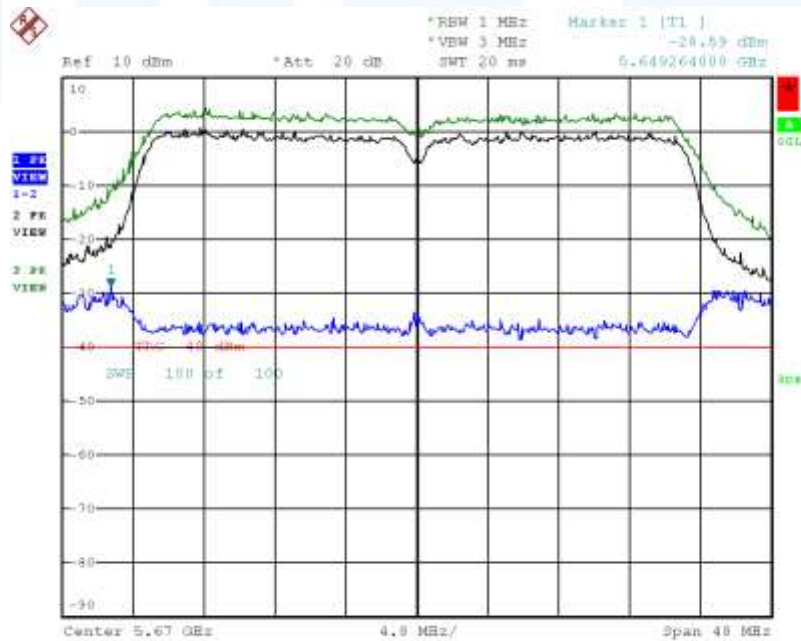


**FCC-ID: LYHMPCIE1V1**

Channel 108up (5550 MHz)



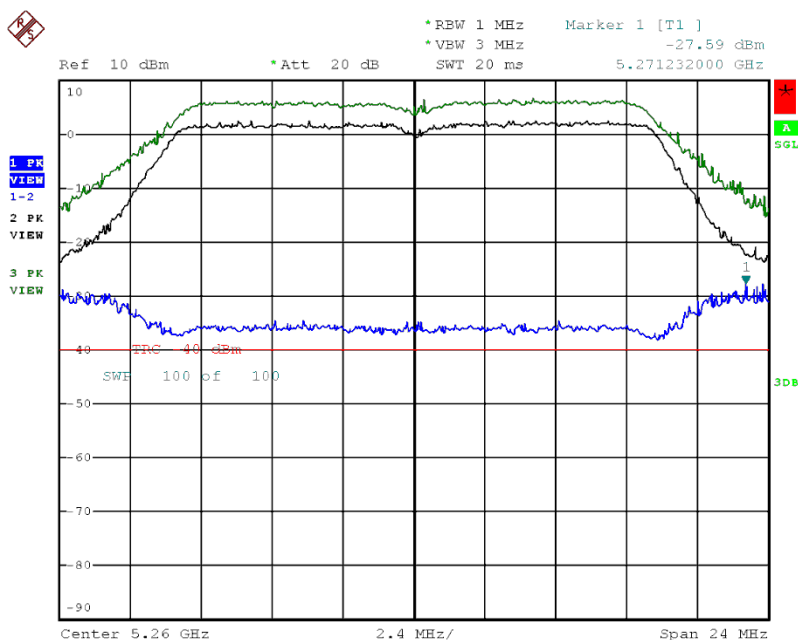
Channel 132up (5670 MHz)



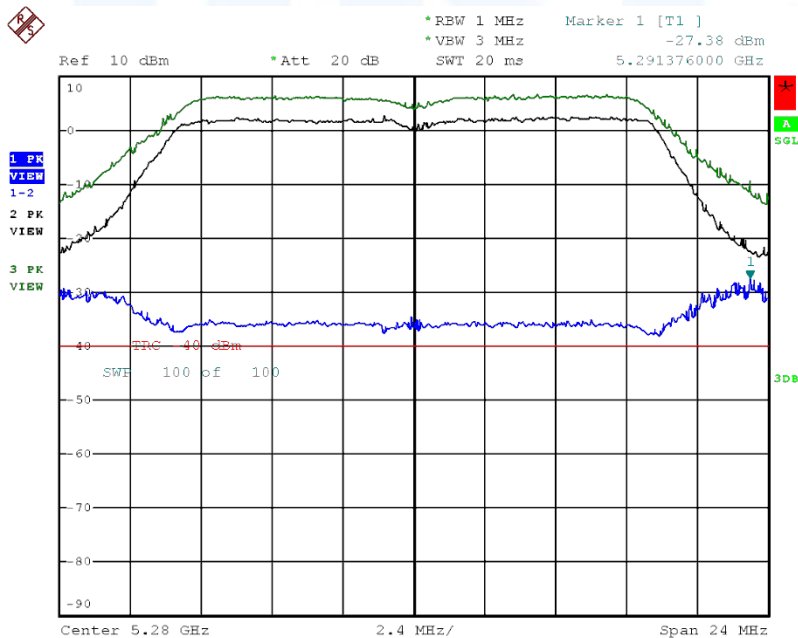
**FCC-ID: LYHMPCIE1V1**

**5.6.6.3 802.11h, Port1:**

**Channel 52 (5260 MHz)**

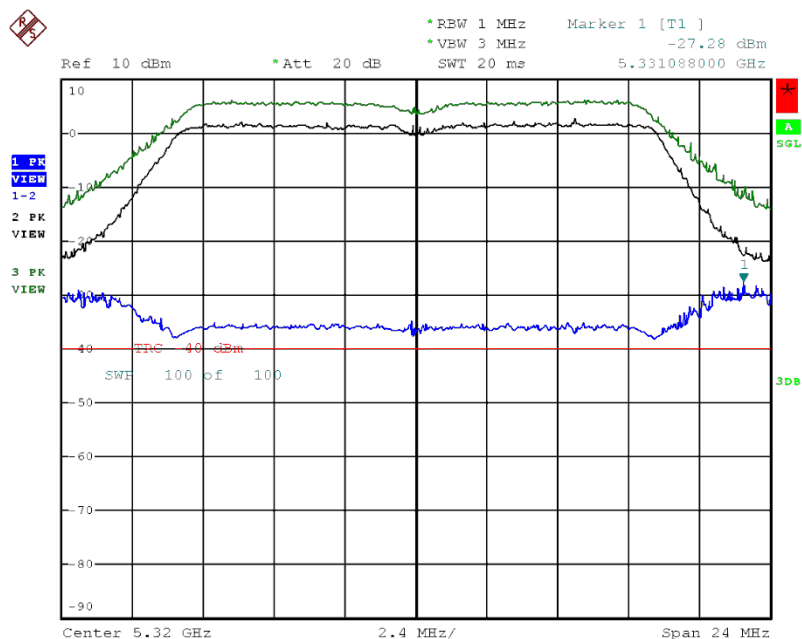


**Channel 56 (5280 MHz)**

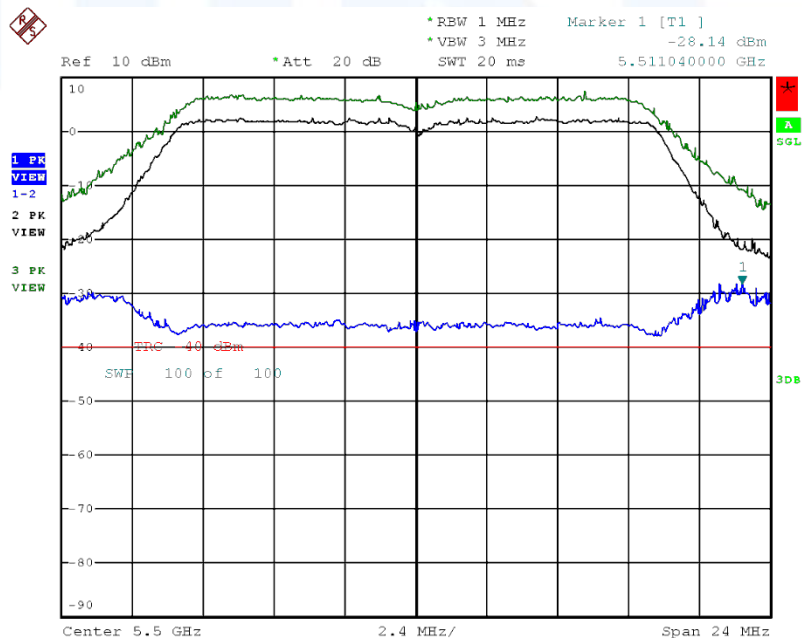


**FCC-ID: LYHMPCIE1V1**

**Channel 64 (5320 MHz)**



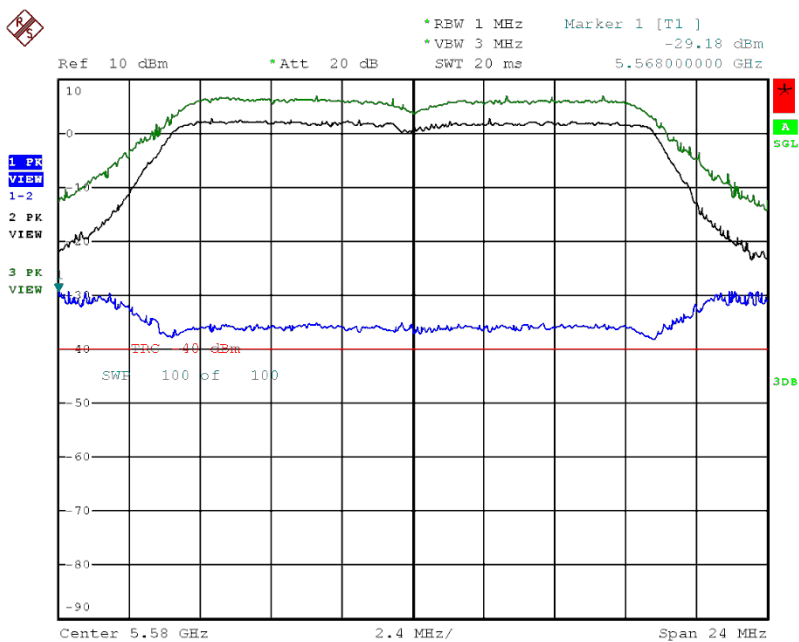
**Channel 100 (5500 MHz)**



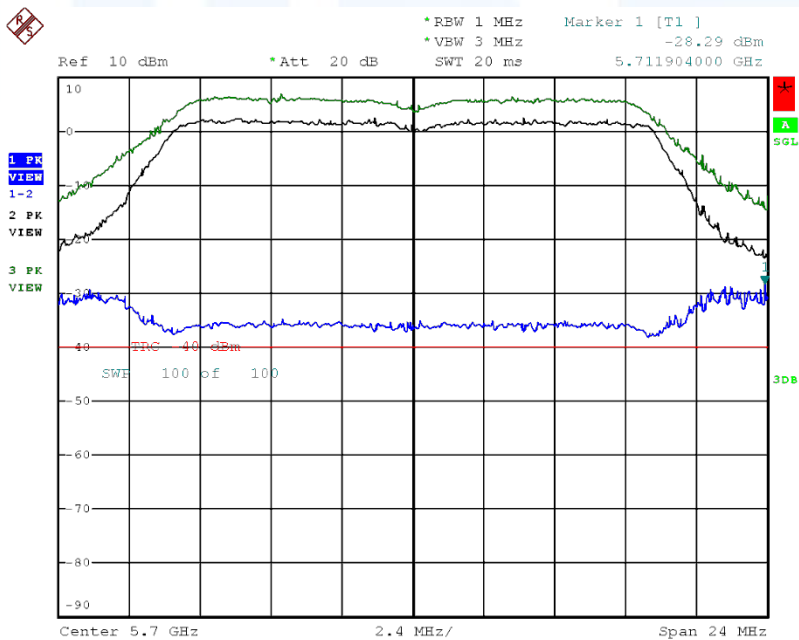


**FCC-ID: LYHMPCIE1V1**

**Channel 116 (5580 MHz)**



**Channel 140 (5700 MHz)**



**FCC-ID: LYHMPCIE1V1****5.7 Spurious emissions conducted**

For test instruments and accessories used see section 6 Part **SEC 3**.

**5.7.1 Description of the test location**

Test location: AREA4

**5.7.2 Photo documentation of the test set-up****5.7.3 Applicable standard**

According to FCC Part 15E, Section 15.407(b):

Undesirable Emission Limits: Except as shown in Paragraph (b)(6) of this section, the peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of  $-27$  dBm/MHz. Devices operating in the 5.25–5.35 GHz band that generate emissions in the 5.15–5.25 GHz band must meet all applicable technical requirements for operation in the 5.15–5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of  $-27$  dBm/MHz in the 5.15–5.25 GHz band.

(3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of  $-27$  dBm/MHz.

**5.7.4 Description of Measurement**

This measurement is done conducted scanning the frequencies from 1000 MHz to 40000 MHz according the guidelines 789033 D01, 25-10-2011.

Spectrum analyser settings for peak values:

RBW: 1 MHz, VBW: 3 MHz, Sweep: Auto

## FCC-ID: LYHMPCIE1V1

### 5.7.5 Test result

#### 5.7.5.1 Frequency band: 5.25 GHz to 5.35 GHz

HT20:

Ant. group 1

| PK-measurement                   |               |       |                  |       |                  |       |        |
|----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Lowest frequency: CH52           |               |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P20, MCS8 |               |       |                  |       |                  |       |        |
| Chain1                           |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5150          | 1000  | 4999.8           | -43.8 | 6.0              | -27.0 | -10.8  |
| 5350                             | 12000         | 1000  | 5377.1           | -41.4 | 6.0              | -27.0 | -8.4   |
| 12000                            | 20000         | 1000  | 18718.0          | -50.6 | 6.0              | -27.0 | -17.6  |
| 20000                            | 40000         | 1000  | 39989.2          | -37.4 | 6.0              | -27.0 | -4.4   |
| Measurement uncertainty          |               |       |                  | ±3 dB |                  |       |        |

| PK-measurement                   |               |       |                  |       |                  |       |        |
|----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Middle frequency: CH56           |               |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P20, MCS8 |               |       |                  |       |                  |       |        |
| Chain1                           |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5150          | 1000  | 4999.4           | -44.2 | 6.0              | -27.0 | -11.2  |
| 5350                             | 12000         | 1000  | 5373.8           | -40.7 | 6.0              | -27.0 | -7.7   |
| 12000                            | 20000         | 1000  | 18712.4          | -50.1 | 6.0              | -27.0 | -17.1  |
| 20000                            | 40000         | 1000  | 39995.6          | -37.9 | 6.0              | -27.0 | -4.9   |
| Measurement uncertainty          |               |       |                  | ±3 dB |                  |       |        |

| PK-measurement                   |               |       |                  |       |                  |       |        |
|----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Highest frequency: CH64          |               |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P20, MCS8 |               |       |                  |       |                  |       |        |
| Chain1                           |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5150          | 1000  | 4999.4           | -43.5 | 6.0              | -27.0 | -10.5  |
| 5350                             | 12000         | 1000  | 5353.0           | -34.0 | 6.0              | -27.0 | -1.0   |
| 12000                            | 20000         | 1000  | 18132.1          | -50.4 | 6.0              | -27.0 | -17.4  |
| 20000                            | 40000         | 1000  | 39943.7          | -38.0 | 6.0              | -27.0 | -5.0   |
| Measurement uncertainty          |               |       |                  | ±3 dB |                  |       |        |

Ant. group 2

| PK-measurement                   |               |       |                  |       |                  |       |        |
|----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Lowest frequency: CH52           |               |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P17, MCS8 |               |       |                  |       |                  |       |        |
| Chain1                           |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5150          | 1000  | 4999.6           | -44.2 | 9.0              | -27.0 | -8.2   |
| 5350                             | 12000         | 1000  | 5396.1           | -41.6 | 9.0              | -27.0 | -5.6   |
| 12000                            | 20000         | 1000  | 18193.4          | -50.6 | 9.0              | -27.0 | -14.6  |
| 20000                            | 40000         | 1000  | 39998.6          | -37.5 | 9.0              | -27.0 | -1.5   |
| Measurement uncertainty          |               |       |                  | ±3 dB |                  |       |        |

### FCC-ID: LYHMPCIE1V1

| PK-measurement                   |               |       |                  |       |                  |       |        |
|----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Middle frequency: CH56           |               |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P17, MCS8 |               |       |                  |       |                  |       |        |
| Chain1                           |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5150          | 1000  | 4999.8           | -44.5 | 9.0              | -27.0 | -8.5   |
| 5350                             | 12000         | 1000  | 5410.1           | -42.2 | 9.0              | -27.0 | -6.2   |
| 12000                            | 20000         | 1000  | 19745.9          | -50.6 | 9.0              | -27.0 | -14.6  |
| 20000                            | 40000         | 1000  | 39984.6          | -37.2 | 9.0              | -27.0 | -1.2   |
| Measurement uncertainty          |               |       |                  | ±3 dB |                  |       |        |

| PK-measurement                   |               |       |                  |       |                  |       |        |
|----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Highest frequency: CH64          |               |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P17, MCS8 |               |       |                  |       |                  |       |        |
| Chain1                           |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5150          | 1000  | 4999.2           | -45.9 | 9.0              | -27.0 | -9.9   |
| 5350                             | 12000         | 1000  | 5351.0           | -30.9 | 9.0              | -27.0 | 5.1    |
| 12000                            | 20000         | 1000  | 19698.6          | -50.2 | 9.0              | -27.0 | -14.2  |
| 20000                            | 40000         | 1000  | 39959.1          | -37.2 | 9.0              | -27.0 | -1.2   |
| Measurement uncertainty          |               |       |                  | ±3 dB |                  |       |        |

Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

| PK-measurement - Marker-Delta-Method, Bandedge 5350 MHz |       |             |              |             |                  |       |        |
|---|-------|-------------|--------------|-------------|------------------|-------|--------|
| Highest frequency: CH64                                 |       |             |              |             |                  |       |        |
| Test conditions: 2 TX, P17, MCS8                        |       |             |              |             |                  |       |        |
| Chain1  |       |             | Test results |             |                  |       |        |
| Ref. Level  | RBW   | Delta level | RBW          | Emis. Level | G <sub>out</sub> | Limit | Margin |
| (dBm)   | (kHz) | (dB)        | (kHz)        | (dBm)       | (dBi)            | (dBm) | (dB)   |
| 9.3   | 1000  | 49.8        | 100          | -40.5       | 9.0              | -27.0 | -4.5   |

Note: Emission level takes 2 transmit chains into account with  $10\log(2) = 3$  dB;

Ant. group 3

| PK-measurement                   |               |       |                  |       |                  |       |        |
|----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Lowest frequency: CH52           |               |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P11, MCS8 |               |       |                  |       |                  |       |        |
| Chain1                           |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5150          | 1000  | 4999.8           | -48.2 | 14.2             | -27.0 | -7.0   |
| 5350                             | 12000         | 1000  | 5376.7           | -46.6 | 14.2             | -27.0 | -5.4   |
| 12000                            | 20000         | 1000  | 19791.0          | -50.7 | 14.2             | -27.0 | -9.5   |
| 20000                            | 40000         | 1000  | 39961.3          | -37.2 | 14.2             | -27.0 | 4.0    |
| Measurement uncertainty          |               |       |                  | ±3 dB |                  |       |        |

### FCC-ID: LYHMPCIE1V1

| PK-measurement                   |        |       |                  |       |                  |       |        |
|----------------------------------|--------|-------|------------------|-------|------------------|-------|--------|
| Middle frequency: CH56           |        |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P11, MCS8 |        |       |                  |       |                  |       |        |
| Chain1                           |        |       | Test results     |       |                  |       |        |
| Start f                          | Stop f | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)  | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5150   | 1000  | 4999.4           | -47.3 | 14.2             | -27.0 | -6.1   |
| 5350                             | 12000  | 1000  | 5392.3           | -45.3 | 14.2             | -27.0 | -4.1   |
| 12000                            | 20000  | 1000  | 18591.4          | -50.6 | 14.2             | -27.0 | -9.4   |
| 20000                            | 40000  | 0     | 39981.0          | -37.2 | 14.2             | -27.0 | 4.0    |
| Measurement uncertainty          |        |       |                  | ±3 dB |                  |       |        |

| PK-measurement                   |        |       |                  |       |                  |       |        |
|----------------------------------|--------|-------|------------------|-------|------------------|-------|--------|
| Highest frequency: CH64          |        |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P11, MCS8 |        |       |                  |       |                  |       |        |
| Chain1                           |        |       | Test results     |       |                  |       |        |
| Start f                          | Stop f | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)  | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5150   | 1000  | 4999.4           | -47.2 | 14.2             | -27.0 | -6.0   |
| 5350                             | 12000  | 1000  | 5351.4           | -42.6 | 14.2             | -27.0 | -1.4   |
| 12000                            | 20000  | 1000  | 18128.7          | -50.3 | 14.2             | -27.0 | -9.1   |
| 20000                            | 40000  | 1000  | 39985.6          | -37.5 | 14.2             | -27.0 | 3.7    |
| Measurement uncertainty          |        |       |                  | ±3 dB |                  |       |        |

**Note:** At 39 GHz the noise of the measurement system causes the exceeding the limit line with RBW=1 MHz. It does not result from emissions of the EUT. This is verified by a measurement, RBW=100 KHz, with 10 dB more dynamic.

#### HT40:

Ant. group 1

| PK-measurement                    |        |       |                  |       |                  |       |        |
|-----------------------------------|--------|-------|------------------|-------|------------------|-------|--------|
| Lowest frequency: CH52up          |        |       |                  |       |                  |       |        |
| Test conditions: 3 TX, P20, MCS16 |        |       |                  |       |                  |       |        |
| Chain1                            |        |       | Test results     |       |                  |       |        |
| Start f                           | Stop f | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                             | (MHz)  | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                              | 5150   | 1000  | 5148.7           | -41.4 | 6.0              | -27.0 | -8.4   |
| 5350                              | 12000  | 1000  | 5353.6           | -38.5 | 6.0              | -27.0 | -5.5   |
| 12000                             | 20000  | 1000  | 18727.5          | -48.9 | 6.0              | -27.0 | -15.9  |
| 20000                             | 40000  | 1000  | 39951.3          | -35.8 | 6.0              | -27.0 | -2.8   |
| Measurement uncertainty           |        |       |                  | ±3 dB |                  |       |        |

| PK-measurement                    |        |       |                  |       |                  |       |        |
|-----------------------------------|--------|-------|------------------|-------|------------------|-------|--------|
| Highest frequency: CH60up         |        |       |                  |       |                  |       |        |
| Test conditions: 3 TX, P15, MCS16 |        |       |                  |       |                  |       |        |
| Chain1                            |        |       | Test results     |       |                  |       |        |
| Start f                           | Stop f | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                             | (MHz)  | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                              | 5150   | 1000  | 4999.6           | -41.8 | 6.0              | -27.0 | -8.8   |
| 5350                              | 12000  | 1000  | 5353.8           | -28.0 | 6.0              | -27.0 | 5.0    |
| 12000                             | 20000  | 1000  | 18710.2          | -48.9 | 6.0              | -27.0 | -15.9  |
| 20000                             | 40000  | 1000  | 39998.4          | -36.0 | 6.0              | -27.0 | -3.0   |
| Measurement uncertainty           |        |       |                  | ±3 dB |                  |       |        |

### FCC-ID: LYHMPCIE1V1

Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

|  |       |             |                     |             |                  |       |        |
|--|-------|-------------|---------------------|-------------|------------------|-------|--------|
| PK-measurement - Marker-Delta-Methode, Bandedge 5350 MHz |       |             |                     |             |                  |       |        |
| Highest frequency: CH60up                                |       |             |                     |             |                  |       |        |
| Test conditions: 3 TX, P15, MCS16                        |       |             |                     |             |                  |       |        |
| <b>Chain1</b>  |       |             | <b>Test results</b> |             |                  |       |        |
| Ref. Level   | RBW   | Delta level | RBW                 | Emis. Level | G <sub>out</sub> | Limit | Margin |
| (dBm)  | (kHz) | (dB)        | (kHz)               | (dBm)       | (dBi)            | (dBm) | (dB)   |
| 4.5  | 1000  | 46.2        | 100                 | -36.9       | 9.0              | -27.0 | -0.9   |

Note: Emission level takes 3 transmit chains into account with  $10\log(3) = 4.8$  dB;

Ant. group 2

|                                   |               |       |                     |       |                  |       |        |
|-----------------------------------|---------------|-------|---------------------|-------|------------------|-------|--------|
| PK-measurement                    |               |       |                     |       |                  |       |        |
| Lowest frequency: CH52up          |               |       |                     |       |                  |       |        |
| Test conditions: 3 TX, P17, MCS16 |               |       |                     |       |                  |       |        |
| <b>Chain1</b>                     |               |       | <b>Test results</b> |       |                  |       |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission    |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)               | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                              | 5150          | 1000  | 4999.4              | -43.5 | 9.0              | -27.0 | -7.5   |
| 5350                              | 12000         | 1000  | 5387.7              | -40.4 | 9.0              | -27.0 | -4.4   |
| 12000                             | 20000         | 1000  | 17055.9             | -49.0 | 9.0              | -27.0 | -13.0  |
| 20000                             | 40000         | 1000  | 39951.5             | -35.2 | 9.0              | -27.0 | 0.8    |
| Measurement uncertainty           |               |       |                     | ±3 dB |                  |       |        |

|                                   |               |       |                     |       |                  |       |        |
|-----------------------------------|---------------|-------|---------------------|-------|------------------|-------|--------|
| PK-measurement                    |               |       |                     |       |                  |       |        |
| Highest frequency: CH60up         |               |       |                     |       |                  |       |        |
| Test conditions: 3 TX, P11, MCS16 |               |       |                     |       |                  |       |        |
| <b>Chain1</b>                     |               |       | <b>Test results</b> |       |                  |       |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission    |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)               | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                              | 5150          | 1000  | 4999.2              | -45.3 | 9.0              | -27.0 | -9.3   |
| 5350                              | 12000         | 1000  | 5356.4              | -40.7 | 9.0              | -27.0 | -4.7   |
| 12000                             | 20000         | 1000  | 18137.1             | -49.0 | 9.0              | -27.0 | -13.0  |
| 20000                             | 40000         | 1000  | 39996.6             | -35.8 | 9.0              | -27.0 | 0.2    |
| Measurement uncertainty           |               |       |                     | ±3 dB |                  |       |        |

Ant. group 3

|                                   |               |       |                     |       |                  |       |        |
|-----------------------------------|---------------|-------|---------------------|-------|------------------|-------|--------|
| PK-measurement                    |               |       |                     |       |                  |       |        |
| Lowest frequency: CH52up          |               |       |                     |       |                  |       |        |
| Test conditions: 3 TX, P11, MCS16 |               |       |                     |       |                  |       |        |
| <b>Chain1</b>                     |               |       | <b>Test results</b> |       |                  |       |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission    |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)               | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                              | 5150          | 1000  | 4999.2              | -46.1 | 14.2             | -27.0 | -4.9   |
| 5350                              | 12000         | 1000  | 5360.2              | -43.5 | 14.2             | -27.0 | -2.3   |
| 12000                             | 20000         | 1000  | 19715.4             | -48.7 | 14.2             | -27.0 | -7.5   |
| 20000                             | 40000         | 1000  | 39990.8             | -35.5 | 14.2             | -27.0 | 5.7    |
| Measurement uncertainty           |               |       |                     | ±3 dB |                  |       |        |

### FCC-ID: LYHMPCIE1V1

| PK-measurement                    |        |       |                  |       |                  |       |        |
|-----------------------------------|--------|-------|------------------|-------|------------------|-------|--------|
| Highest frequency: CH60up         |        |       |                  |       |                  |       |        |
| Test conditions: 3 TX, P11, MCS16 |        |       |                  |       |                  |       |        |
| Chain1                            |        |       | Test results     |       |                  |       |        |
| Start f                           | Stop f | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                             | (MHz)  | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                              | 5150   | 1000  | 4999.4           | -45.2 | 14.2             | -27.0 | -4.0   |
| 5350                              | 12000  | 1000  | 5353.2           | -40.7 | 14.2             | -27.0 | 0.5    |
| 12000                             | 20000  | 1000  | 19683.4          | -48.6 | 14.2             | -27.0 | -7.4   |
| 20000                             | 40000  | 1000  | 39995.0          | -35.6 | 14.2             | -27.0 | 5.6    |
| Measurement uncertainty           |        |       |                  |       | ±3 dB            |       |        |

**Note:** At 39 GHz the noise of the measurement system causes the exceeding the limit line with RBW=1 MHz. It does not result from emissions of the EUT. This is verified by a measurement, RBW=100 KHz, with 10 dB more dynamic.

Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

| PK-measurement - Marker-Delta-Method, Bandedge 5350 MHz |       |             |              |             |                  |       |        |
|---|-------|-------------|--------------|-------------|------------------|-------|--------|
| Highest frequency: CH60up                               |       |             |              |             |                  |       |        |
| Test conditions: 3 TX, P11, MCS16                       |       |             |              |             |                  |       |        |
| Chain1  |       |             | Test results |             |                  |       |        |
| Ref. Level  | RBW   | Delta level | RBW          | Emis. Level | G <sub>out</sub> | Limit | Margin |
| (dBm)   | (kHz) | (dB)        | (kHz)        | (dBm)       | (dBi)            | (dBm) | (dB)   |
| 1.4   | 1000  | 48.5        | 100          | -42.3       | 14.2             | -27.0 | -1.1   |

Note: Emission level takes 3 transmit chains into account with  $10\log(3) = 4.8$  dB;

### WLAN Standard 802.11h:

Ant. group 1

| PK-measurement                     |        |       |                  |       |                  |       |        |
|------------------------------------|--------|-------|------------------|-------|------------------|-------|--------|
| Lowest frequency: CH52             |        |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P20, 6 Mbps |        |       |                  |       |                  |       |        |
| Chain1                             |        |       | Test results     |       |                  |       |        |
| Start f                            | Stop f | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)  | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5150   | 1000  | 4999.8           | -46.9 | 6.0              | -27.0 | -13.9  |
| 5350                               | 12000  | 1000  | 5366.6           | -44.2 | 6.0              | -27.0 | -11.2  |
| 12000                              | 20000  | 1000  | 18105.0          | -53.7 | 6.0              | -27.0 | -20.7  |
| 20000                              | 40000  | 1000  | 39939.1          | -40.5 | 6.0              | -27.0 | -7.5   |
| Measurement uncertainty            |        |       |                  |       | ±3 dB            |       |        |

| PK-measurement                     |        |       |                  |       |                  |       |        |
|------------------------------------|--------|-------|------------------|-------|------------------|-------|--------|
| Middle frequency: CH56             |        |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P20, 6 Mbps |        |       |                  |       |                  |       |        |
| Chain1                             |        |       | Test results     |       |                  |       |        |
| Start f                            | Stop f | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)  | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5150   | 1000  | 4999.8           | -47.2 | 6.0              | -27.0 | -14.2  |
| 5350                               | 12000  | 1000  | 5371.4           | -43.7 | 6.0              | -27.0 | -10.7  |
| 12000                              | 20000  | 1000  | 19743.1          | -53.8 | 6.0              | -27.0 | -20.8  |
| 20000                              | 40000  | 1000  | 39996.0          | -40.6 | 6.0              | -27.0 | -7.6   |
| Measurement uncertainty            |        |       |                  |       | ±3 dB            |       |        |



### FCC-ID: LYHMPCIE1V1

| PK-measurement                     |               |       |                  |       |                  |       |        |
|------------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Highest frequency: CH64            |               |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P20, 6 Mbps |               |       |                  |       |                  |       |        |
| Chain1                             |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5150          | 1000  | 4999.2           | -48.2 | 6.0              | -27.0 | -15.2  |
| 5350                               | 12000         | 1000  | 5351.2           | -32.5 | 6.0              | -27.0 | 0.5    |
| 12000                              | 20000         | 1000  | 19715.4          | -53.9 | 6.0              | -27.0 | -20.9  |
| 20000                              | 40000         | 1000  | 39967.1          | -40.2 | 6.0              | -27.0 | -7.2   |
| Measurement uncertainty            |               |       |                  | ±3 dB |                  |       |        |

Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

| PK-measurement - Marker-Delta-Method, Bandedge 5350 MHz |       |             |              |             |                  |       |        |
|---|-------|-------------|--------------|-------------|------------------|-------|--------|
| Highest frequency: CH64                                 |       |             |              |             |                  |       |        |
| Test conditions: 1 TX, P20, 6 Mbps                      |       |             |              |             |                  |       |        |
| Chain1  |       |             | Test results |             |                  |       |        |
| Ref. Level  | RBW   | Delta level | RBW          | Emis. Level | G <sub>out</sub> | Limit | Margin |
| (dBm)   | (kHz) | (dB)        | (kHz)        | (dBm)       | (dBi)            | (dBm) | (dB)   |
| 11.3  | 1000  | 47.3        | 100          | -36.0       | 6.0              | -27.0 | -3.0   |

Ant. group 2

| PK-measurement                     |               |       |                  |       |                  |       |        |
|------------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Lowest frequency: CH52             |               |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P17, 6 Mbps |               |       |                  |       |                  |       |        |
| Chain1                             |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5150          | 1000  | 4999.2           | -47.7 | 9.0              | -27.0 | -11.7  |
| 5350                               | 12000         | 1000  | 5402.5           | -44.4 | 9.0              | -27.0 | -8.4   |
| 12000                              | 20000         | 1000  | 18706.4          | -53.3 | 9.0              | -27.0 | -17.3  |
| 20000                              | 40000         | 1000  | 39984.0          | -40.0 | 9.0              | -27.0 | -4.0   |
| Measurement uncertainty            |               |       |                  | ±3 dB |                  |       |        |

| PK-measurement                     |               |       |                  |       |                  |       |        |
|------------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Middle frequency: CH56             |               |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P17, 6 Mbps |               |       |                  |       |                  |       |        |
| Chain1                             |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5150          | 1000  | 4999.6           | -47.2 | 9.0              | -27.0 | -11.2  |
| 5350                               | 12000         | 1000  | 5371.0           | -43.3 | 9.0              | -27.0 | -7.3   |
| 12000                              | 20000         | 1000  | 19660.3          | -53.7 | 9.0              | -27.0 | -17.7  |
| 20000                              | 40000         | 1000  | 39993.2          | -40.3 | 9.0              | -27.0 | -4.3   |
| Measurement uncertainty            |               |       |                  | ±3 dB |                  |       |        |



### FCC-ID: LYHMPCIE1V1

| PK-measurement                     |               |       |                  |       |                  |       |        |
|------------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Highest frequency: CH64            |               |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P17, 6 Mbps |               |       |                  |       |                  |       |        |
| Chain1                             |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5150          | 1000  | 4999.4           | -46.2 | 9.0              | -27.0 | -10.2  |
| 5350                               | 12000         | 1000  | 5351.6           | -32.7 | 9.0              | -27.0 | 3.3    |
| 12000                              | 20000         | 1000  | 19729.3          | -53.5 | 9.0              | -27.0 | -17.5  |
| 20000                              | 40000         | 1000  | 39995.6          | -39.6 | 9.0              | -27.0 | -3.6   |
| Measurement uncertainty            |               |       |                  | ±3 dB |                  |       |        |

Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

| PK-measurement - Marker-Delta-Method, Bandedge 5350 MHz |       |             |              |             |                  |       |        |
|---|-------|-------------|--------------|-------------|------------------|-------|--------|
| Highest frequency: CH64                                 |       |             |              |             |                  |       |        |
| Test conditions: 1 TX, P17, 6 Mbps                      |       |             |              |             |                  |       |        |
| Chain1  |       |             | Test results |             |                  |       |        |
| Ref. Level  | RBW   | Delta level | RBW          | Emis. Level | G <sub>out</sub> | Limit | Margin |
| (dBm)   | (kHz) | (dB)        | (kHz)        | (dBm)       | (dBi)            | (dBm) | (dB)   |
| 10.6  | 1000  | 47.3        | 100          | -36.7       | 9.0              | -27.0 | -0.7   |

Ant. group 3

| PK-measurement                     |               |       |                  |       |                  |       |        |
|------------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Lowest frequency: CH52             |               |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P11, 6 Mbps |               |       |                  |       |                  |       |        |
| Chain1                             |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5150          | 1000  | 4999.4           | -50.9 | 14.2             | -27.0 | -9.7   |
| 5350                               | 12000         | 1000  | 5387.1           | -48.0 | 14.2             | -27.0 | -6.8   |
| 12000                              | 20000         | 1000  | 18584.0          | -53.0 | 14.2             | -27.0 | -11.8  |
| 20000                              | 40000         | 1000  | 39987.0          | -39.9 | 14.2             | -27.0 | 1.3    |
| Measurement uncertainty            |               |       |                  | ±3 dB |                  |       |        |

| PK-measurement                     |               |       |                  |       |                  |       |        |
|------------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Middle frequency: CH56             |               |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P11, 6 Mbps |               |       |                  |       |                  |       |        |
| Chain1                             |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5150          | 1000  | 4999.6           | -50.6 | 14.2             | -27.0 | -9.4   |
| 5350                               | 12000         | 1000  | 5430.2           | -47.5 | 14.2             | -27.0 | -6.3   |
| 12000                              | 20000         | 1000  | 17016.0          | -53.7 | 14.2             | -27.0 | -12.5  |
| 20000                              | 40000         | 1000  | 39999.8          | -39.2 | 14.2             | -27.0 | 2.0    |
| Measurement uncertainty            |               |       |                  | ±3 dB |                  |       |        |

### FCC-ID: LYHMPCIE1V1

| PK-measurement                     |               |       |                  |       |                  |       |        |
|------------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Highest frequency: CH64            |               |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P11, 6 Mbps |               |       |                  |       |                  |       |        |
| Chain1                             |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5150          | 1000  | 4999.0           | -49.7 | 14.2             | -27.0 | -8.5   |
| 5350                               | 12000         | 1000  | 5357.6           | -44.7 | 14.2             | -27.0 | -3.5   |
| 12000                              | 20000         | 1000  | 17075.2          | -52.8 | 14.2             | -27.0 | -11.6  |
| 20000                              | 40000         | 1000  | 39977.8          | -40.2 | 14.2             | -27.0 | 1.0    |
| Measurement uncertainty            |               |       |                  |       | ±3 dB            |       |        |

**Note:** At 39 GHz the noise of the measurement system causes the exceeding the limit line with RBW=1 MHz. It does not result from emissions of the EUT. This is verified by a measurement, RBW=100 KHz, with 10 dB more dynamic.

#### 5.7.5.2 Frequency band: 5.47 GHz to 5.725 GHz

HT20:

Ant. group 1

| PK-measurement                   |               |       |                  |       |                  |       |        |
|----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Lowest frequency: CH100          |               |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P17, MCS8 |               |       |                  |       |                  |       |        |
| Chain1                           |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5470          | 1000  | 5468.3           | -31.0 | 6.0              | -27.0 | 2.0    |
| 5725                             | 12000         | 1000  | 5730.0           | -50.3 | 6.0              | -27.0 | -17.3  |
| 12000                            | 20000         | 1000  | 19672.7          | -50.5 | 6.0              | -27.0 | -17.5  |
| 20000                            | 40000         | 1000  | 39996.8          | -36.9 | 6.0              | -27.0 | -3.9   |
| Measurement uncertainty          |               |       |                  |       | ±3 dB            |       |        |

Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

| PK-measurement - Marker-Delta-Method, Bandedge 5470 MHz |       |             |              |             |                  |       |        |
|---|-------|-------------|--------------|-------------|------------------|-------|--------|
| Lowest frequency: CH100                                 |       |             |              |             |                  |       |        |
| Test conditions: 2 TX, P17, MCS8                        |       |             |              |             |                  |       |        |
| Chain1  |       |             | Test results |             |                  |       |        |
| Ref. Level  | RBW   | Delta level | RBW          | Emis. level | G <sub>out</sub> | Limit | Margin |
| (dBm)   | (kHz) | (dB)        | (kHz)        | (dBm)       | (dBi)            | (dBm) | (dB)   |
| 10.2  | 1000  | 47.0        | 100          | -33.8       | 6.0              | -27.0 | -0.8   |

Note: Emission level takes 2 transmit chains into account with  $10\log(2) = 3$  dB;

| PK-measurement                   |               |       |                  |       |                  |       |        |
|----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Middle frequency: CH116          |               |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P20, MCS8 |               |       |                  |       |                  |       |        |
| Chain1                           |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5470          | 1000  | 5409.4           | -39.7 | 6.0              | -27.0 | -6.7   |
| 5725                             | 12000         | 1000  | 5905.2           | -48.7 | 6.0              | -27.0 | -15.7  |
| 12000                            | 20000         | 1000  | 18733.7          | -50.5 | 6.0              | -27.0 | -17.5  |
| 20000                            | 40000         | 1000  | 39956.7          | -37.8 | 6.0              | -27.0 | -4.8   |
| Measurement uncertainty          |               |       |                  |       | ±3 dB            |       |        |

### FCC-ID: LYHMPCIE1V1

| PK-measurement                   |               |       |                  |       |                         |       |        |
|----------------------------------|---------------|-------|------------------|-------|-------------------------|-------|--------|
| Highest frequency: CH140         |               |       |                  |       |                         |       |        |
| Test conditions: 2 TX, P17, MCS8 |               |       |                  |       |                         |       |        |
| Chain1                           |               |       | Test results     |       |                         |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | <i>G</i> <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)                   | (dBm) | (dB)   |
| 1000                             | 5470          | 1000  | 5386.8           | -37.0 | 6.0                     | -27.0 | -4.0   |
| 5725                             | 12000         | 1000  | 5726.6           | -31.4 | 6.0                     | -27.0 | 1.6    |
| 12000                            | 20000         | 1000  | 19707.8          | -49.6 | 6.0                     | -27.0 | -16.6  |
| 20000                            | 40000         | 1000  | 39972.5          | -37.4 | 6.0                     | -27.0 | -4.4   |
| Measurement uncertainty          |               |       |                  |       | ±3 dB                   |       |        |

Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

| PK-measurement - Marker-Delta-Method, Bandedge 5725 MHz |       |             |              |             |                         |       |        |
|---|-------|-------------|--------------|-------------|-------------------------|-------|--------|
| Highest frequency: CH140                                |       |             |              |             |                         |       |        |
| Test conditions: 2 TX, P17, MCS8                        |       |             |              |             |                         |       |        |
| Chain1  |       |             | Test results |             |                         |       |        |
| Ref. Level  | RBW   | Delta level | RBW          | Emis. level | <i>G</i> <sub>out</sub> | Limit | Margin |
| (dBm)   | (kHz) | (dB)        | (kHz)        | (dBm)       | (dBi)                   | (dBm) | (dB)   |
| 9.7   | 1000  | 45.8        | 100          | -33.1       | 6.0                     | -27.0 | -0.1   |

Note: Emission level takes 2 transmit chains into account with  $\log(2) = 3$  dB;

Ant. group 2

| PK-measurement                   |               |       |                  |       |                         |       |        |
|----------------------------------|---------------|-------|------------------|-------|-------------------------|-------|--------|
| Lowest frequency: CH100          |               |       |                  |       |                         |       |        |
| Test conditions: 2 TX, P14, MCS8 |               |       |                  |       |                         |       |        |
| Chain1                           |               |       | Test results     |       |                         |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | <i>G</i> <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)                   | (dBm) | (dB)   |
| 1000                             | 5470          | 1000  | 5468.9           | -32.4 | 9.0                     | -27.0 | 3.6    |
| 5725                             | 12000         | 1000  | 5800.0           | -51.4 | 9.0                     | -27.0 | -15.4  |
| 12000                            | 20000         | 1000  | 17075.4          | -50.6 | 9.0                     | -27.0 | -14.6  |
| 20000                            | 40000         | 1000  | 39998.6          | -37.5 | 9.0                     | -27.0 | -1.5   |
| Measurement uncertainty          |               |       |                  |       | ±3 dB                   |       |        |

Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

| PK-measurement - Marker-Delta-Method, Bandedge 5470 MHz |       |             |              |             |                         |       |        |
|---|-------|-------------|--------------|-------------|-------------------------|-------|--------|
| Lowest frequency: CH100                                 |       |             |              |             |                         |       |        |
| Test conditions: 2 TX, P14, MCS8                        |       |             |              |             |                         |       |        |
| Chain1  |       |             | Test results |             |                         |       |        |
| Ref. Level  | RBW   | Delta level | RBW          | Emis. level | <i>G</i> <sub>out</sub> | Limit | Margin |
| (dBm)   | (kHz) | (dB)        | (kHz)        | (dBm)       | (dBi)                   | (dBm) | (dB)   |
| 7.5   | 1000  | 49.4        | 100          | -38.9       | 9.0                     | -27.0 | -2.9   |

Note: Emission level takes 2 transmit chains into account with  $10\log(2) = 3$  dB;

### FCC-ID: LYHMPCIE1V1

| PK-measurement                   |               |       |                  |       |                  |       |        |
|----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Middle frequency: CH116          |               |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P17, MCS8 |               |       |                  |       |                  |       |        |
| Chain1                           |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5470          | 1000  | 5276.8           | -41.2 | 9.0              | -27.0 | -5.2   |
| 5725                             | 12000         | 1000  | 5897.3           | -48.7 | 9.0              | -27.0 | -12.7  |
| 12000                            | 20000         | 1000  | 18706.8          | -50.3 | 9.0              | -27.0 | -14.3  |
| 20000                            | 40000         | 1000  | 36987.8          | -39.1 | 9.0              | -27.0 | -3.1   |
| Measurement uncertainty          |               |       |                  | ±3 dB |                  |       |        |

| PK-measurement                   |               |       |                  |       |                  |       |        |
|----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Highest frequency: CH140         |               |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P14, MCS8 |               |       |                  |       |                  |       |        |
| Chain1                           |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5470          | 1000  | 5373.3           | -39.1 | 9.0              | -27.0 | -3.1   |
| 5725                             | 12000         | 1000  | 5725.6           | -33.4 | 9.0              | -27.0 | 2.6    |
| 12000                            | 20000         | 1000  | 18099.6          | -50.7 | 9.0              | -27.0 | -14.7  |
| 20000                            | 40000         | 1000  | 39946.3          | -37.0 | 9.0              | -27.0 | -1.0   |
| Measurement uncertainty          |               |       |                  | ±3 dB |                  |       |        |

Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

| PK-measurement - Marker-Delta-Method, Bandedge 5725 MHz |       |             |              |             |                  |       |        |
|---|-------|-------------|--------------|-------------|------------------|-------|--------|
| Highest frequency: CH140                                |       |             |              |             |                  |       |        |
| Test conditions: 2 TX, P14, MCS8                        |       |             |              |             |                  |       |        |
| Chain1  |       |             | Test results |             |                  |       |        |
| Ref. Level  | RBW   | Delta level | RBW          | Emis. level | G <sub>out</sub> | Limit | Margin |
| (dBm)   | (kHz) | (dB)        | (kHz)        | (dBm)       | (dBi)            | (dBm) | (dB)   |
| 7.3   | 1000  | 48.4        | 100          | -38.1       | 9.0              | -27.0 | -2.1   |

Note: Emission level takes 2 transmit chains into account with  $10\log(2) = 3$  dB;

Ant. group 3

| PK-measurement                   |               |       |                  |       |                  |       |        |
|----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Lowest frequency: CH100          |               |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P11, MCS8 |               |       |                  |       |                  |       |        |
| Chain1                           |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5470          | 1000  | 5467.8           | -42.0 | 14.2             | -27.0 | -0.8   |
| 5725                             | 12000         | 1000  | 5740.4           | -54.1 | 14.2             | -27.0 | -12.9  |
| 12000                            | 20000         | 1000  | 18051.5          | -50.3 | 14.2             | -27.0 | -9.1   |
| 20000                            | 40000         | 1000  | 39993.2          | -37.1 | 14.2             | -27.0 | 4.1    |
| Measurement uncertainty          |               |       |                  | ±3 dB |                  |       |        |

### FCC-ID: LYHMPCIE1V1

| PK-measurement                   |               |       |                  |       |                  |       |        |
|----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Middle frequency: CH116          |               |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P11, MCS8 |               |       |                  |       |                  |       |        |
| Chain1                           |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5470          | 1000  | 5451.4           | -44.8 | 14.2             | -27.0 | -3.6   |
| 5725                             | 12000         | 1000  | 5733.8           | -52.5 | 14.2             | -27.0 | -11.3  |
| 12000                            | 20000         | 1000  | 18134.9          | -50.2 | 14.2             | -27.0 | -9.0   |
| 20000                            | 40000         | 0     | 39981.0          | -37.2 | 14.2             | -27.0 | 4.0    |
| Measurement uncertainty          |               |       |                  | ±3 dB |                  |       |        |

| PK-measurement                   |               |       |                  |       |                  |       |        |
|----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Highest frequency: CH140         |               |       |                  |       |                  |       |        |
| Test conditions: 2 TX, P11, MCS8 |               |       |                  |       |                  |       |        |
| Chain1                           |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5470          | 1000  | 5379.0           | -44.4 | 14.2             | -27.0 | -3.2   |
| 5725                             | 12000         | 1000  | 5725.2           | -40.3 | 14.2             | -27.0 | 0.9    |
| 12000                            | 20000         | 1000  | 18663.5          | -50.8 | 14.2             | -27.0 | -9.6   |
| 20000                            | 40000         | 1000  | 39959.3          | -37.0 | 14.2             | -27.0 | 4.2    |
| Measurement uncertainty          |               |       |                  | ±3 dB |                  |       |        |

**Note:** At 39 GHz the noise of the measurement system causes the exceeding the limit line with RBW=1 MHz. It does not result from emissions of the EUT. This is verified by a measurement, RBW=100 KHz, with 10 dB more dynamic.

Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

| PK-measurement - Marker-Delta-Method, Bandedge 5725 MHz |       |             |              |             |                  |       |        |
|---|-------|-------------|--------------|-------------|------------------|-------|--------|
| Highest frequency: CH140                                |       |             |              |             |                  |       |        |
| Test conditions: 2 TX, P11, MCS8                        |       |             |              |             |                  |       |        |
| Chain1  |       |             | Test results |             |                  |       |        |
| Ref. Level  | RBW   | Delta level | RBW          | Emis. level | G <sub>out</sub> | Limit | Margin |
| (dBm)   | (kHz) | (dB)        | (kHz)        | (dBm)       | (dBi)            | (dBm) | (dB)   |
| 4.2   | 1000  | 48.6        | 100          | -41.4       | 14.2             | -27.0 | -0.2   |

Note: Emission level takes 2 transmit chains into account with  $10\log(2) = 3$  dB;

#### 5.7.5.3 HT40:

Ant. group 1

| PK-measurement                    |               |       |                  |       |                  |       |        |
|-----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Lowest frequency: CH100up         |               |       |                  |       |                  |       |        |
| Test conditions: 3 TX, P14, MCS16 |               |       |                  |       |                  |       |        |
| Chain1                            |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                              | 5470          | 1000  | 5468.3           | -31.3 | 6.0              | -27.0 | 1.7    |
| 5725                              | 12000         | 1000  | 5736.4           | -48.9 | 6.0              | -27.0 | -15.9  |
| 12000                             | 20000         | 1000  | 19683.8          | -48.2 | 6.0              | -27.0 | -15.2  |
| 20000                             | 40000         | 1000  | 39997.0          | -35.5 | 6.0              | -27.0 | -2.5   |
| Measurement uncertainty           |               |       |                  | ±3 dB |                  |       |        |

### FCC-ID: LYHMPCIE1V1

Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

|  |       |             |                     |             |                  |       |        |
|--|-------|-------------|---------------------|-------------|------------------|-------|--------|
| PK-measurement - Marker-Delta-Methode, Bandedge 5470 MHz |       |             |                     |             |                  |       |        |
| Lowest frequency: CH100up                                |       |             |                     |             |                  |       |        |
| Test conditions: 3 TX, P14, MCS16                        |       |             |                     |             |                  |       |        |
| <b>Chain1</b>  |       |             | <b>Test results</b> |             |                  |       |        |
| Ref. Level   | RBW   | Delta level | RBW                 | Emis. level | G <sub>out</sub> | Limit | Margin |
| (dBm)  | (kHz) | (dB)        | (kHz)               | (dBm)       | (dBi)            | (dBm) | (dB)   |
| 3.8  | 1000  | 42.0        | 100                 | -33.4       | 6.0              | -27.0 | -0.4   |

Note: Emission level takes 3 transmit chains into account with  $10\log(3) = 4.8$  dB;

|                                   |               |       |                     |       |                  |       |        |
|-----------------------------------|---------------|-------|---------------------|-------|------------------|-------|--------|
| PK-measurement                    |               |       |                     |       |                  |       |        |
| Middle frequency: CH108up         |               |       |                     |       |                  |       |        |
| Test conditions: 3 TX, P20, MCS16 |               |       |                     |       |                  |       |        |
| <b>Chain1</b>                     |               |       | <b>Test results</b> |       |                  |       |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission    |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)               | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                              | 5470          | 1000  | 5287.8              | -37.1 | 6.0              | -27.0 | -4.1   |
| 5725                              | 12000         | 1000  | 5727.8              | -47.7 | 6.0              | -27.0 | -14.7  |
| 12000                             | 20000         | 1000  | 19697.8             | -48.9 | 6.0              | -27.0 | -15.9  |
| 20000                             | 40000         | 1000  | 39998.4             | -36.1 | 6.0              | -27.0 | -3.1   |
| Measurement uncertainty           |               |       |                     | ±3 dB |                  |       |        |

|                                   |               |       |                     |       |                  |       |        |
|-----------------------------------|---------------|-------|---------------------|-------|------------------|-------|--------|
| PK-measurement                    |               |       |                     |       |                  |       |        |
| Highest frequency: CH132up        |               |       |                     |       |                  |       |        |
| Test conditions: 3 TX, P20, MCS16 |               |       |                     |       |                  |       |        |
| <b>Chain1</b>                     |               |       | <b>Test results</b> |       |                  |       |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission    |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)               | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                              | 5470          | 1000  | 5365.1              | -37.8 | 6.0              | -27.0 | -4.8   |
| 5725                              | 12000         | 1000  | 5725.6              | -33.1 | 6.0              | -27.0 | -0.1   |
| 12000                             | 20000         | 1000  | 18689.0             | -49.3 | 6.0              | -27.0 | -16.3  |
| 20000                             | 40000         | 1000  | 39992.4             | -35.1 | 6.0              | -27.0 | -2.1   |
| Measurement uncertainty           |               |       |                     | ±3 dB |                  |       |        |

Ant. group 2

|                                   |               |       |                     |       |                  |       |        |
|-----------------------------------|---------------|-------|---------------------|-------|------------------|-------|--------|
| PK-measurement                    |               |       |                     |       |                  |       |        |
| Lowest frequency: CH100up         |               |       |                     |       |                  |       |        |
| Test conditions: 3 TX, P11, MCS16 |               |       |                     |       |                  |       |        |
| <b>Chain1</b>                     |               |       | <b>Test results</b> |       |                  |       |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission    |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)               | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                              | 5470          | 1000  | 5466.9              | -37.0 | 9.0              | -27.0 | -1.0   |
| 5725                              | 12000         | 1000  | 5727.8              | -53.5 | 9.0              | -27.0 | -17.5  |
| 12000                             | 20000         | 1000  | 18775.6             | -48.7 | 9.0              | -27.0 | -12.7  |
| 20000                             | 40000         | 1000  | 39978.6             | -35.7 | 9.0              | -27.0 | 0.3    |
| Measurement uncertainty           |               |       |                     | ±3 dB |                  |       |        |

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| PK-measurement                    |        |       |                  |       |                  |       |        |
|-----------------------------------|--------|-------|------------------|-------|------------------|-------|--------|
| Middle frequency: CH108up         |        |       |                  |       |                  |       |        |
| Test conditions: 3 TX, P17, MCS16 |        |       |                  |       |                  |       |        |
| Chain1                            |        |       | Test results     |       |                  |       |        |
| Start f                           | Stop f | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                             | (MHz)  | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                              | 5470   | 1000  | 5449.6           | -40.0 | 9.0              | -27.0 | -4.0   |
| 5725                              | 12000  | 1000  | 5730.4           | -48.9 | 9.0              | -27.0 | -12.9  |
| 12000                             | 20000  | 1000  | 18677.0          | -49.1 | 9.0              | -27.0 | -13.1  |
| 20000                             | 40000  | 1000  | 39998.6          | -35.9 | 9.0              | -27.0 | 0.1    |
| Measurement uncertainty           |        |       |                  | ±3 dB |                  |       |        |

| PK-measurement                    |        |       |                  |       |                  |       |        |
|-----------------------------------|--------|-------|------------------|-------|------------------|-------|--------|
| Highest frequency: CH132up        |        |       |                  |       |                  |       |        |
| Test conditions: 3 TX, P17, MCS16 |        |       |                  |       |                  |       |        |
| Chain1                            |        |       | Test results     |       |                  |       |        |
| Start f                           | Stop f | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                             | (MHz)  | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                              | 5470   | 1000  | 5336.3           | -39.6 | 9.0              | -27.0 | -3.6   |
| 5725                              | 12000  | 1000  | 5726.6           | -37.7 | 9.0              | -27.0 | -1.7   |
| 12000                             | 20000  | 1000  | 18170.3          | -48.7 | 9.0              | -27.0 | -12.7  |
| 20000                             | 40000  | 1000  | 39998.8          | -35.5 | 9.0              | -27.0 | 0.5    |
| Measurement uncertainty           |        |       |                  | ±3 dB |                  |       |        |

Ant. group 3

| PK-measurement                   |        |       |                  |       |                  |       |        |
|----------------------------------|--------|-------|------------------|-------|------------------|-------|--------|
| Lowest frequency: CH100up        |        |       |                  |       |                  |       |        |
| Test conditions: 3 TX, P8, MCS16 |        |       |                  |       |                  |       |        |
| Chain1                           |        |       | Test results     |       |                  |       |        |
| Start f                          | Stop f | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                            | (MHz)  | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                             | 5470   | 1000  | 5466.9           | -40.2 | 14.2             | -27.0 | 1.0    |
| 5725                             | 12000  | 1000  | 5727.8           | -53.5 | 14.2             | -27.0 | -12.3  |
| 12000                            | 20000  | 1000  | 18775.6          | -48.7 | 14.2             | -27.0 | -7.5   |
| 20000                            | 40000  | 1000  | 39978.6          | -34.7 | 14.2             | -27.0 | 6.5    |
| Measurement uncertainty          |        |       |                  | ±3 dB |                  |       |        |

Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

| PK-measurement - Marker-Delta-Method, Bandedge 5470 MHz |       |             |              |             |                  |       |        |
|---|-------|-------------|--------------|-------------|------------------|-------|--------|
| Lowest frequency: CH100up                               |       |             |              |             |                  |       |        |
| Test conditions: 3 TX, P8, MCS16                        |       |             |              |             |                  |       |        |
| Chain1  |       |             | Test results |             |                  |       |        |
| Ref. Level  | RBW   | Delta level | RBW          | Emis. level | G <sub>out</sub> | Limit | Margin |
| (dBm)   | (kHz) | (dB)        | (kHz)        | (dBm)       | (dBi)            | (dBm) | (dB)   |
| -2.6  | 1000  | 45.3        | 100          | -43.1       | 14.2             | -27.0 | -1.9   |

Note: Emission level takes 3 transmit chains into account with  $10\log(3) = 4.8$  dB;

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| PK-measurement                    |               |       |                  |       |                  |       |        |
|-----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Middle frequency: CH108up         |               |       |                  |       |                  |       |        |
| Test conditions: 3 TX, P11, MCS16 |               |       |                  |       |                  |       |        |
| Chain1                            |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                              | 5470          | 1000  | 5452.5           | -44.0 | 14.2             | -27.0 | -2.8   |
| 5725                              | 12000         | 1000  | 5730.0           | -52.4 | 14.2             | -27.0 | -11.2  |
| 12000                             | 20000         | 1000  | 18143.1          | -49.2 | 14.2             | -27.0 | -8.0   |
| 20000                             | 40000         | 1000  | 39934.3          | -35.9 | 14.2             | -27.0 | 5.3    |
| Measurement uncertainty           |               |       |                  |       | ±3 dB            |       |        |

| PK-measurement                    |               |       |                  |       |                  |       |        |
|-----------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Highest frequency: CH132up        |               |       |                  |       |                  |       |        |
| Test conditions: 3 TX, P11, MCS16 |               |       |                  |       |                  |       |        |
| Chain1                            |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                              | 5470          | 1000  | 5352.1           | -44.2 | 14.2             | -27.0 | -3.0   |
| 5725                              | 12000         | 1000  | 5726.8           | -49.3 | 14.2             | -27.0 | -8.1   |
| 12000                             | 20000         | 1000  | 18697.6          | -49.0 | 14.2             | -27.0 | -7.8   |
| 20000                             | 40000         | 1000  | 39996.0          | -35.3 | 14.2             | -27.0 | 5.9    |
| Measurement uncertainty           |               |       |                  |       | ±3 dB            |       |        |

**Note:** At 39 GHz the noise of the measurement system causes the exceeding the limit line with RBW=1 MHz. It does not result from emissions of the EUT. This is verified by a measurement, RBW=100 KHz, with 10 dB more dynamic.

#### 5.7.5.4 WLAN Standard 802.11h:

Ant. group 1

| PK-measurement                     |               |       |                  |       |                  |       |        |
|------------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Lowest frequency: CH100            |               |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P17, 6 Mbps |               |       |                  |       |                  |       |        |
| Chain1                             |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5470          | 1000  | 5468.5           | -27.3 | 6.0              | -27.0 | 5.7    |
| 5725                               | 12000         | 1000  | 5795.3           | -51.7 | 6.0              | -27.0 | -18.7  |
| 12000                              | 20000         | 1000  | 18106.8          | -53.2 | 6.0              | -27.0 | -20.2  |
| 20000                              | 40000         | 1000  | 39984.0          | -40.0 | 6.0              | -27.0 | -7.0   |
| Measurement uncertainty            |               |       |                  |       | ±3 dB            |       |        |

Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

| PK-measurement - Marker-Delta-Method, Bandedge 5470 MHz |       |             |              |             |                  |       |        |
|---|-------|-------------|--------------|-------------|------------------|-------|--------|
| Lowest frequency: CH100                                 |       |             |              |             |                  |       |        |
| Test conditions: 1 TX, P17, 6 Mbps                      |       |             |              |             |                  |       |        |
| Chain1  |       |             | Test results |             |                  |       |        |
| Ref. Level  | RBW   | Delta level | RBW          | Emis. level | G <sub>out</sub> | Limit | Margin |
| (dBm)   | (kHz) | (dB)        | (kHz)        | (dBm)       | (dBi)            | (dBm) | (dB)   |
| 3.8   | 1000  | 42.0        | 100          | -38.2       | 6.0              | -27.0 | -5.2   |



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| PK-measurement                     |               |       |                  |       |                  |       |        |
|------------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Middle frequency: CH116            |               |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P20, 6 Mbps |               |       |                  |       |                  |       |        |
| Chain1                             |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5250          | 1000  | 5249.3           | -44.2 | 6.0              | -27.0 | -11.2  |
| 5350                               | 12000         | 1000  | 5439.4           | -42.8 | 6.0              | -27.0 | -9.8   |
| 12000                              | 20000         | 1000  | 18605.0          | -53.2 | 6.0              | -27.0 | -20.2  |
| 20000                              | 40000         | 1000  | 39970.5          | -40.3 | 6.0              | -27.0 | -7.3   |
| Measurement uncertainty            |               |       |                  | ±3 dB |                  |       |        |

| PK-measurement                     |               |       |                  |       |                  |       |        |
|------------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Highest frequency: CH140           |               |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P17, 6 Mbps |               |       |                  |       |                  |       |        |
| Chain1                             |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5470          | 1000  | 5376.8           | -40.1 | 6.0              | -27.0 | -7.1   |
| 5725                               | 12000         | 1000  | 5726.2           | -27.6 | 6.0              | -27.0 | 5.4    |
| 12000                              | 20000         | 1000  | 19732.1          | -53.4 | 6.0              | -27.0 | -20.4  |
| 20000                              | 40000         | 1000  | 39995.6          | -39.6 | 6.0              | -27.0 | -6.6   |
| Measurement uncertainty            |               |       |                  | ±3 dB |                  |       |        |

Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

| PK-measurement - Marker-Delta-Method, Bandedge 5725 MHz |       |             |              |             |                  |       |        |
|---|-------|-------------|--------------|-------------|------------------|-------|--------|
| Highest frequency: CH140                                |       |             |              |             |                  |       |        |
| Test conditions: 1 TX, P17, 6 Mbps                      |       |             |              |             |                  |       |        |
| Chain1  |       |             | Test results |             |                  |       |        |
| Ref. Level  | RBW   | Delta level | RBW          | Emis. level | G <sub>out</sub> | Limit | Margin |
| (dBm)   | (kHz) | (dB)        | (kHz)        | (dBm)       | (dBi)            | (dBm) | (dB)   |
| 11.4  | 1000  | 44.5        | 100          | -33.1       | 6.0              | -27.0 | -0.1   |

Ant. group 2

| PK-measurement                     |               |       |                  |       |                  |       |        |
|------------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Lowest frequency: CH100            |               |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P17, 6 Mbps |               |       |                  |       |                  |       |        |
| Chain1                             |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5470          | 1000  | 5468.5           | -27.3 | 9.0              | -27.0 | 8.7    |
| 5725                               | 12000         | 1000  | 5795.3           | -51.7 | 9.0              | -27.0 | -15.7  |
| 12000                              | 20000         | 1000  | 18106.8          | -53.2 | 9.0              | -27.0 | -17.2  |
| 20000                              | 40000         | 1000  | 39984.0          | -40.0 | 9.0              | -27.0 | -4.0   |
| Measurement uncertainty            |               |       |                  | ±3 dB |                  |       |        |

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Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

|  |       |             |                     |             |                  |       |        |
|--|-------|-------------|---------------------|-------------|------------------|-------|--------|
| PK-measurement - Marker-Delta-Methode, Bandedge 5470 MHz |       |             |                     |             |                  |       |        |
| Lowest frequency: CH100                                  |       |             |                     |             |                  |       |        |
| Test conditions: 1 TX, P17, 6 Mbps                       |       |             |                     |             |                  |       |        |
| <b>Chain1</b>  |       |             | <b>Test results</b> |             |                  |       |        |
| Ref. Level   | RBW   | Delta level | RBW                 | Emis. level | G <sub>out</sub> | Limit | Margin |
| (dBm)  | (kHz) | (dB)        | (kHz)               | (dBm)       | (dBi)            | (dBm) | (dB)   |
| 3.8  | 1000  | 42.0        | 100                 | -38.2       | 9.0              | -27.0 | -2.2   |

|                                    |               |       |                     |       |                  |       |        |
|------------------------------------|---------------|-------|---------------------|-------|------------------|-------|--------|
| PK-measurement                     |               |       |                     |       |                  |       |        |
| Middle frequency: CH116            |               |       |                     |       |                  |       |        |
| Test conditions: 1 TX, P17, 6 Mbps |               |       |                     |       |                  |       |        |
| <b>Chain1</b>                      |               |       | <b>Test results</b> |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission    |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)               | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5250          | 1000  | 5247.3              | -43.2 | 9.0              | -27.0 | -7.2   |
| 5350                               | 12000         | 1000  | 5428.2              | -42.9 | 9.0              | -27.0 | -6.9   |
| 12000                              | 20000         | 1000  | 18171.9             | -52.6 | 9.0              | -27.0 | -16.6  |
| 20000                              | 40000         | 1000  | 39991.0             | -39.8 | 9.0              | -27.0 | -3.8   |
| Measurement uncertainty            |               |       |                     | ±3 dB |                  |       |        |

|                                    |               |       |                     |       |                  |       |        |
|------------------------------------|---------------|-------|---------------------|-------|------------------|-------|--------|
| PK-measurement                     |               |       |                     |       |                  |       |        |
| Highest frequency: CH140           |               |       |                     |       |                  |       |        |
| Test conditions: 1 TX, P14, 6 Mbps |               |       |                     |       |                  |       |        |
| <b>Chain1</b>                      |               |       | <b>Test results</b> |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission    |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)               | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5470          | 1000  | 5376.8              | -40.1 | 9.0              | -27.0 | -4.1   |
| 5725                               | 12000         | 1000  | 5726.2              | -33.5 | 9.0              | -27.0 | 2.5    |
| 12000                              | 20000         | 1000  | 19732.1             | -53.4 | 9.0              | -27.0 | -17.4  |
| 20000                              | 40000         | 1000  | 39995.6             | -39.6 | 9.0              | -27.0 | -3.6   |
| Measurement uncertainty            |               |       |                     | ±3 dB |                  |       |        |

Determining bandedge compliance using Marker-delta-method according ANSI C63.10, item 6.9.3.:

|  |       |             |                     |             |                  |       |        |
|--|-------|-------------|---------------------|-------------|------------------|-------|--------|
| PK-measurement - Marker-Delta-Methode, Bandedge 5725 MHz |       |             |                     |             |                  |       |        |
| Highest frequency: CH140                                 |       |             |                     |             |                  |       |        |
| Test conditions: 1 TX, P14, 6 Mbps                       |       |             |                     |             |                  |       |        |
| <b>Chain1</b>  |       |             | <b>Test results</b> |             |                  |       |        |
| Ref. Level   | RBW   | Delta level | RBW                 | Emis. level | G <sub>out</sub> | Limit | Margin |
| (dBm)  | (kHz) | (dB)        | (kHz)               | (dBm)       | (dBi)            | (dBm) | (dB)   |
| 10.0   | 1000  | 46.1        | 100                 | -36.1       | 9.0              | -27.0 | -0.1   |

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Ant. group 3

| PK-measurement                     |               |       |                  |       |                  |       |        |
|------------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Lowest frequency: CH100            |               |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P11, 6 Mbps |               |       |                  |       |                  |       |        |
| Chain1                             |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5250          | 1000  | 5234.7           | -49.5 | 14.2             | -27.0 | -8.3   |
| 5350                               | 12000         | 1000  | 5465.4           | -41.6 | 14.2             | -27.0 | -0.4   |
| 12000                              | 20000         | 1000  | 18724.2          | -53.2 | 14.2             | -27.0 | -12.0  |
| 20000                              | 40000         | 1000  | 39987.0          | -39.9 | 14.2             | -27.0 | 1.3    |
| Measurement uncertainty            |               |       |                  | ±3 dB |                  |       |        |

| PK-measurement                     |               |       |                  |       |                  |       |        |
|------------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Middle frequency: CH116            |               |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P11, 6 Mbps |               |       |                  |       |                  |       |        |
| Chain1                             |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5250          | 1000  | 5242.1           | -46.0 | 14.2             | -27.0 | -4.8   |
| 5350                               | 12000         | 1000  | 5433.4           | -43.9 | 14.2             | -27.0 | -2.7   |
| 12000                              | 20000         | 1000  | 18682.8          | -53.3 | 14.2             | -27.0 | -12.1  |
| 20000                              | 40000         | 1000  | 39999.8          | -39.2 | 14.2             | -27.0 | 2.0    |
| Measurement uncertainty            |               |       |                  | ±3 dB |                  |       |        |

| PK-measurement                     |               |       |                  |       |                  |       |        |
|------------------------------------|---------------|-------|------------------|-------|------------------|-------|--------|
| Highest frequency: CH140           |               |       |                  |       |                  |       |        |
| Test conditions: 1 TX, P11, 6 Mbps |               |       |                  |       |                  |       |        |
| Chain1                             |               |       | Test results     |       |                  |       |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |       | G <sub>out</sub> | Limit | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBm) | (dBi)            | (dBm) | (dB)   |
| 1000                               | 5250          | 1000  | 5231.9           | -46.9 | 14.2             | -27.0 | -5.7   |
| 5350                               | 12000         | 1000  | 5725.4           | -41.9 | 14.2             | -27.0 | -0.7   |
| 12000                              | 20000         | 1000  | 18103.2          | -53.3 | 14.2             | -27.0 | -12.1  |
| 20000                              | 40000         | 1000  | 39970.7          | -38.9 | 14.2             | -27.0 | 2.3    |
| Measurement uncertainty            |               |       |                  | ±3 dB |                  |       |        |

**Note:** At 39 GHz the noise of the measurement system causes the exceeding the limit line with RBW=1 MHz. It does not result from emissions of the EUT. This is verified by a measurement, RBW=100 KHz, with 10 dB more dynamic.

Limit according to FCC Part 15E, Section 15.407(b) for undesirable emissions outside of the operating range:

| Operating Frequency range<br>(MHz) | Undesirable emission limit, EIRP<br>(dBm/MHz) |
|------------------------------------|---|
| 5250 - 5350                        | -27.0   |
| 5470 - 5725                        | -27.0   |

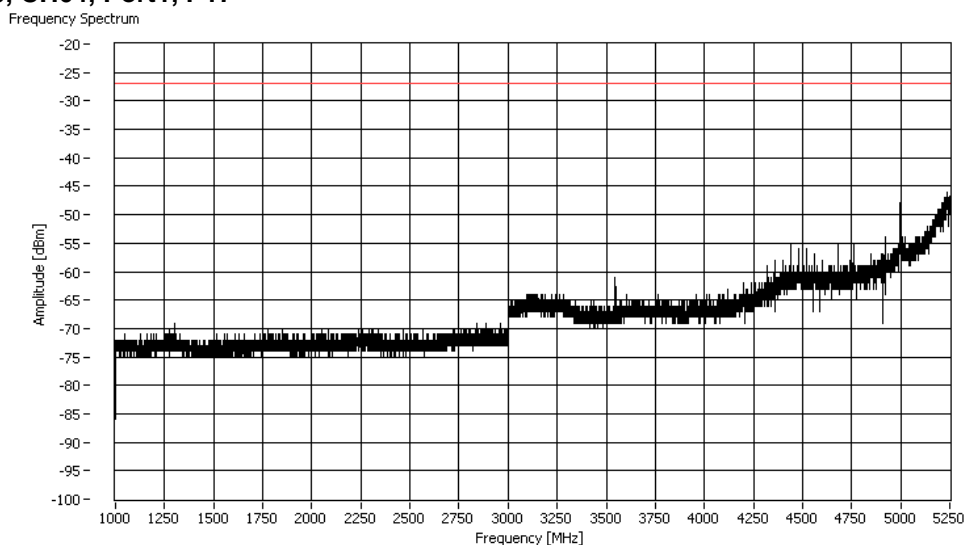
The requirements are **FULFILLED**.

**Remarks:** For detailed test results please see the following test protocols. Only the worst cases of the plots are listed.

**FCC-ID: LYHMPCIE1V1**

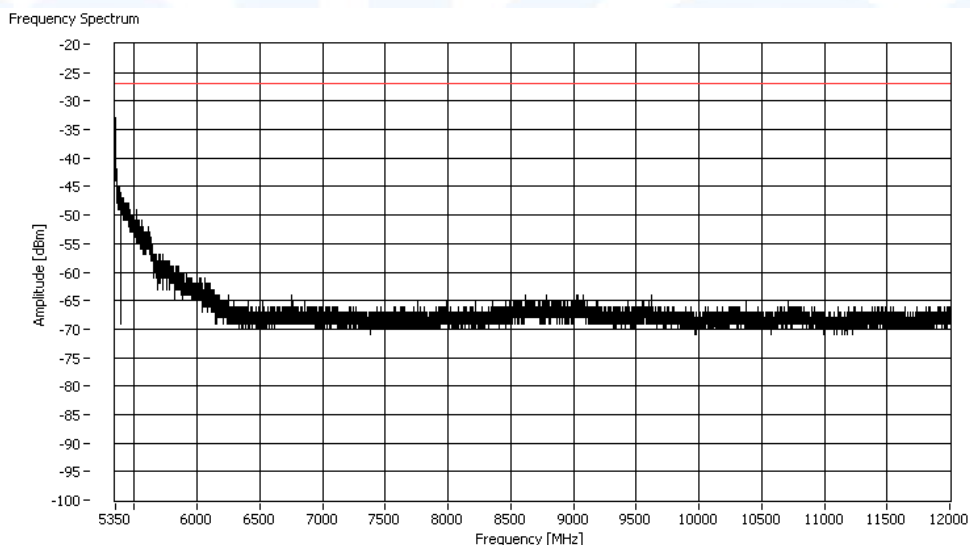
**5.7.6 Test protocols SEC**

**5.7.6.1 HT20, CH64, Port1, P17**



Decision for re-measurement in restricted bands for operating band 5250-5350 MHz:

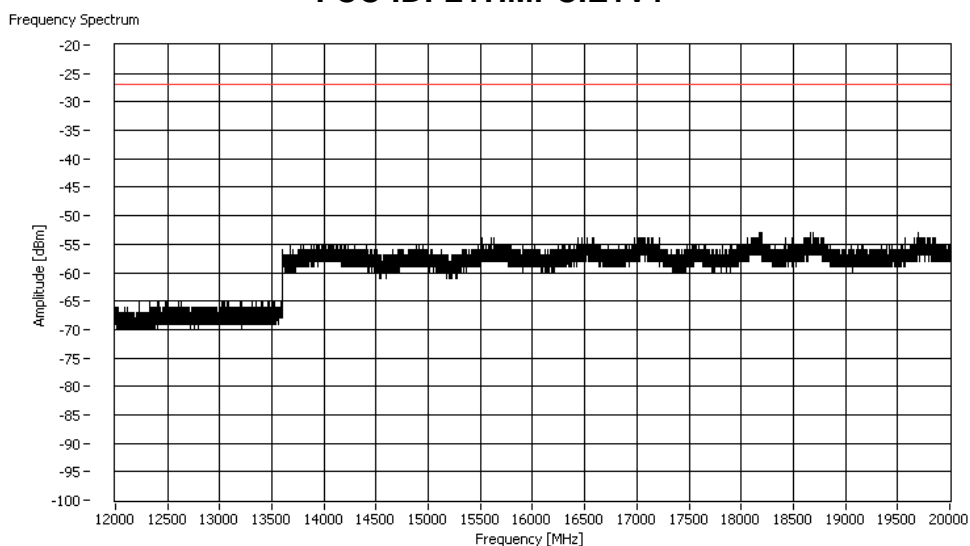
- No suspect found up to 3500 MHz, first suspect at 3546 MHz, but out of restricted band.
- Suspect at 4359 MHz, band 3600 MHz to 4400 MHz needs to be remeasured.
- Suspect at 5000 MHz, band 4500 MHz to 5150 MHz needs to be remeasured.



Decision for re-measurement in restricted bands:

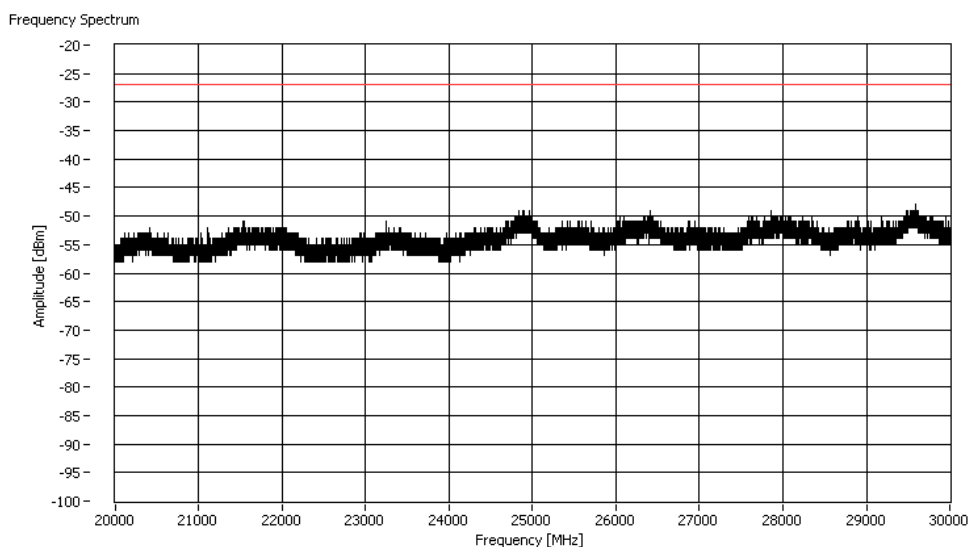
- Suspect at 5350 MHz, band 5350 MHz to 5460 MHz needs to be re-measured.
- No suspect found from 5460 to 12000 MHz, no re-measurement.

**FCC-ID: LYHMPCIE1V1**



Decision for re-measurement in restricted bands:

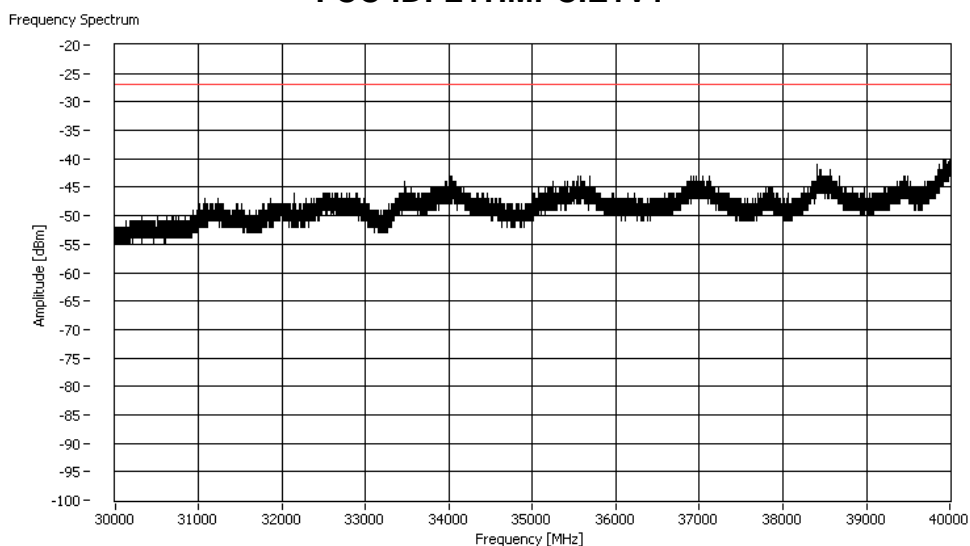
- No suspect found from 12000 to 20000 MHz, no re-measurement.



Decision for re-measurement in restricted bands:

- No suspect found from 20000 to 30000 MHz, no re-measurement.

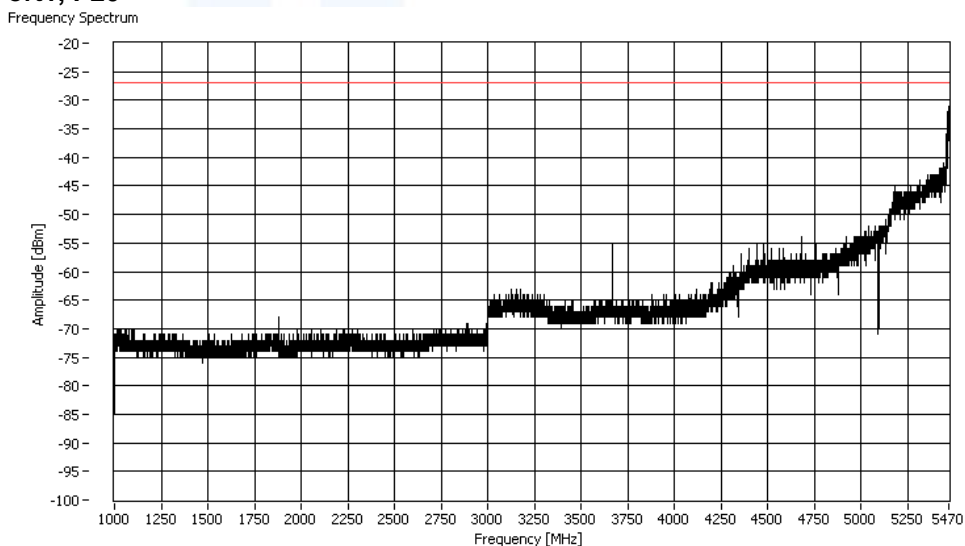
**FCC-ID: LYHMPCIE1V1**



Decision for re-measurement in restricted bands:

- No suspect found from 30000 to 40000 MHz, no re-measurement.

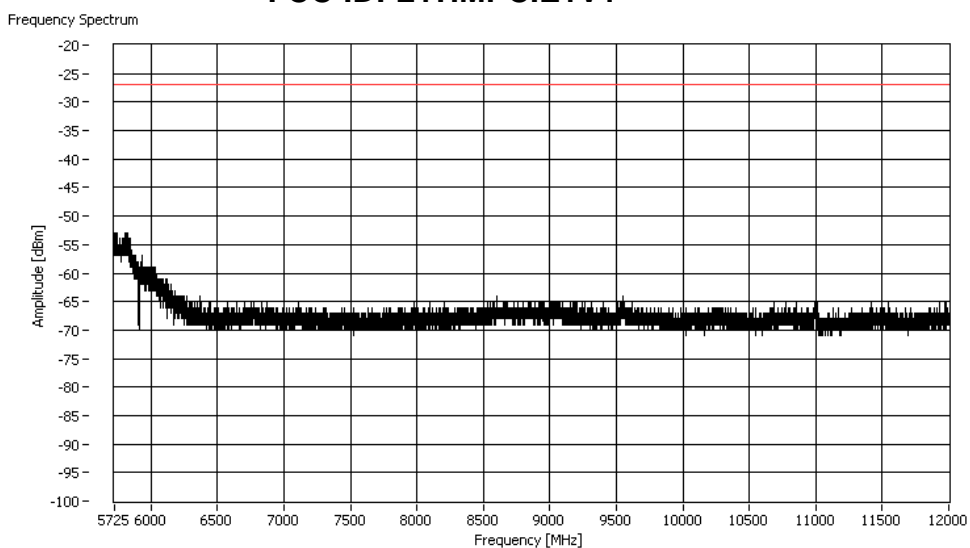
**5.7.6.2 CH100, Port1, P20**



Decision for re-measurement in restricted bands bands for operating band 5470-5725 MHz::

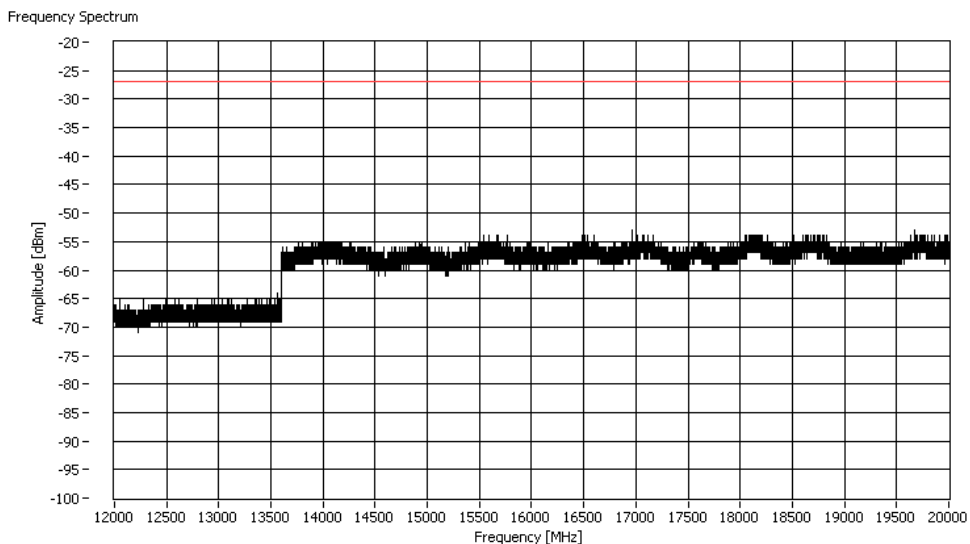
- No suspect found up to 3600 MHz.
- Suspect at 3666 MHz, band 3600 MHz to 4400 MHz needs to be remeasured.
- Suspect at 5000 MHz, band 4500 MHz to 5150 MHz needs to be remeasured.
- Suspect at 5460 MHz, band 5350 MHz to 5460 MHz needs to be remeasured.

**FCC-ID: LYHMPCIE1V1**



Decision for re-measurement in restricted bands:

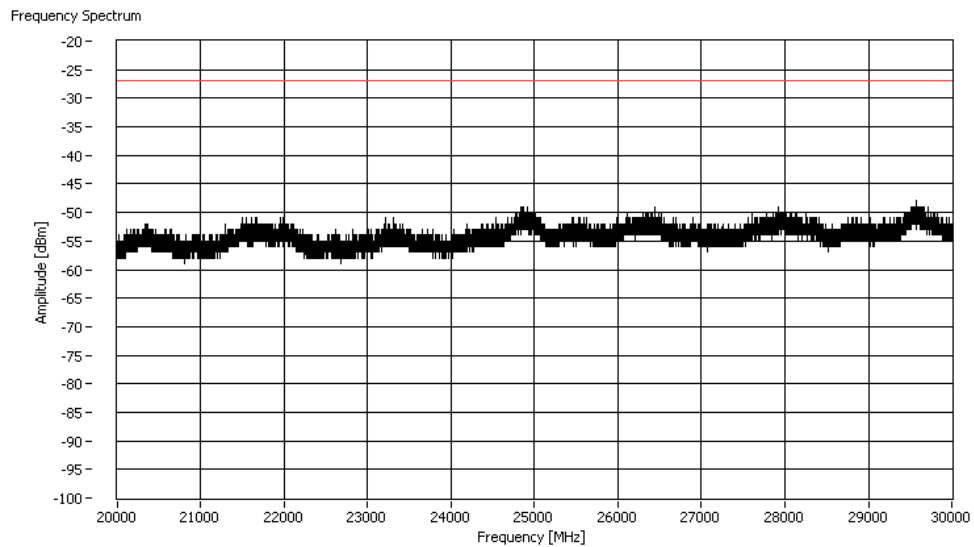
- No suspect and no harmonic found from 5725 to 12000 MHz, no re-measurement.



Decision for re-measurement in restricted bands:

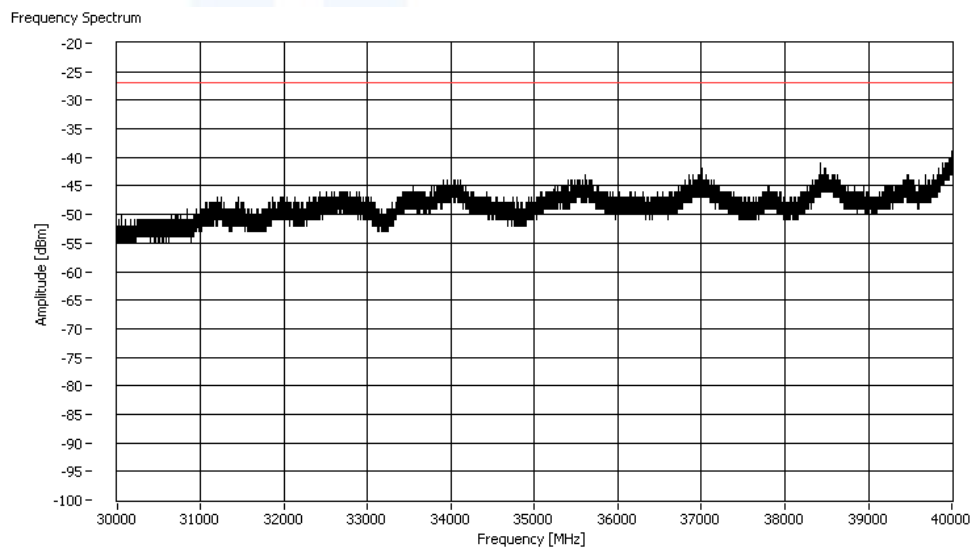
- No suspect found from 12000 to 20000 MHz, no re-measurement.

**FCC-ID: LYHMPCIE1V1**



Decision for re-measurement in restricted bands:

- No suspect found from 20000 to 30000 MHz, no re-measurement.



Decision for re-measurement in restricted bands:

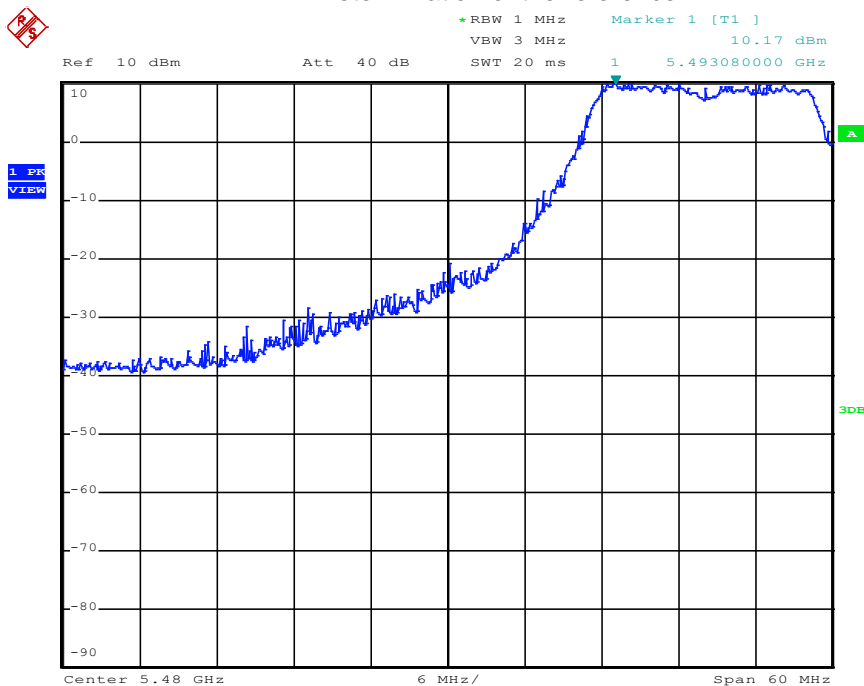
- No suspect found from 30000 to 40000 MHz, no re-measurement.



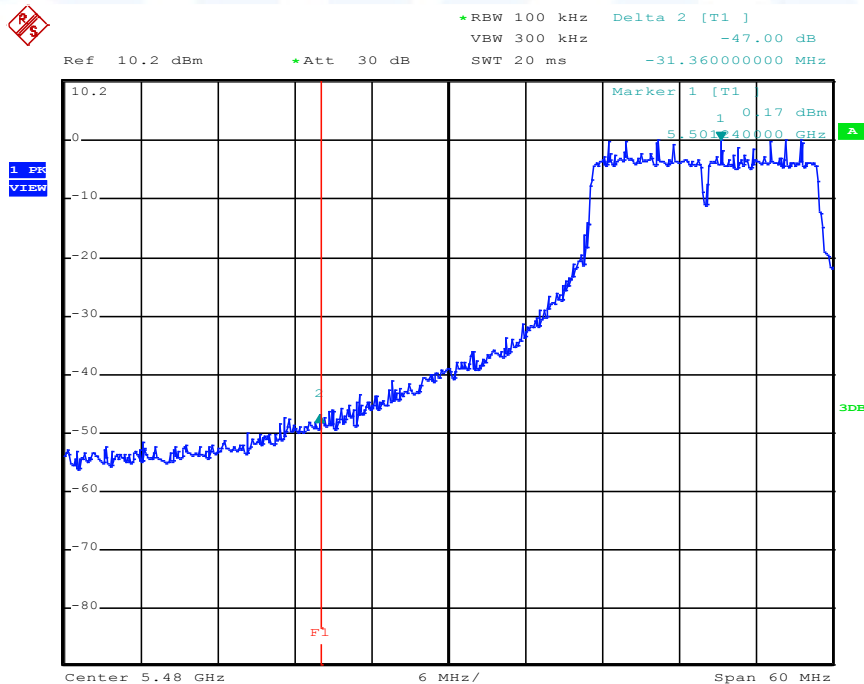
**FCC-ID: LYHMPCIE1V1**

**5.7.6.3 HT20, CH100, Port1, P17, bandedge, Marker-Delta-method**

Determination of the reference



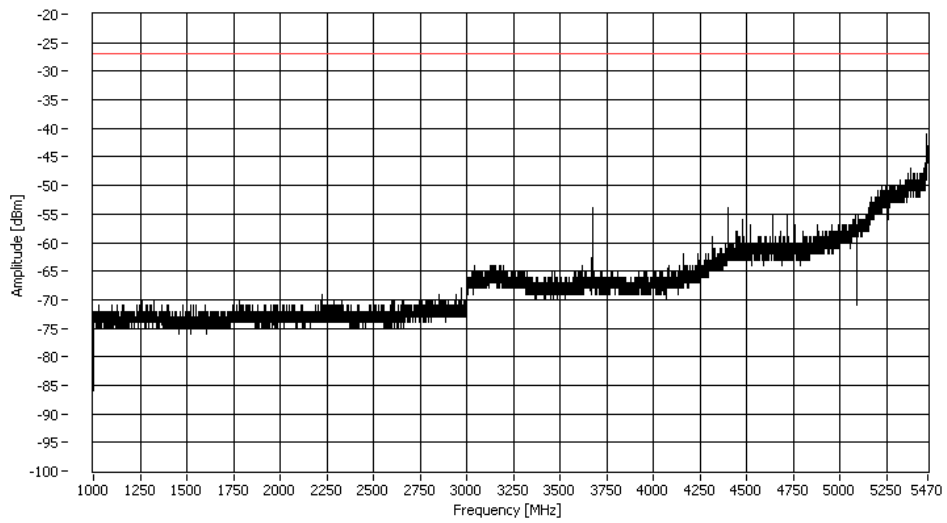
Determination of the delta value



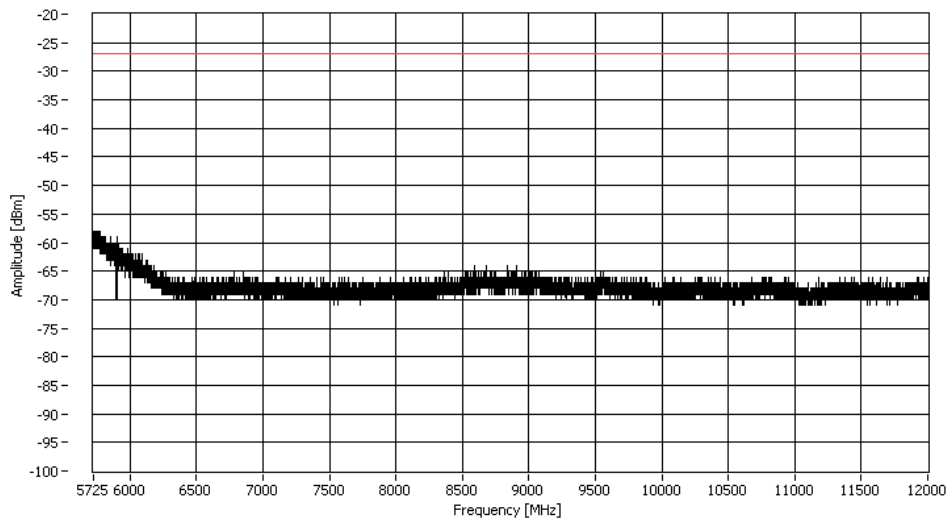
**FCC-ID: LYHMPCIE1V1**

**5.7.6.4 HT40, CH100, Port1, P11**

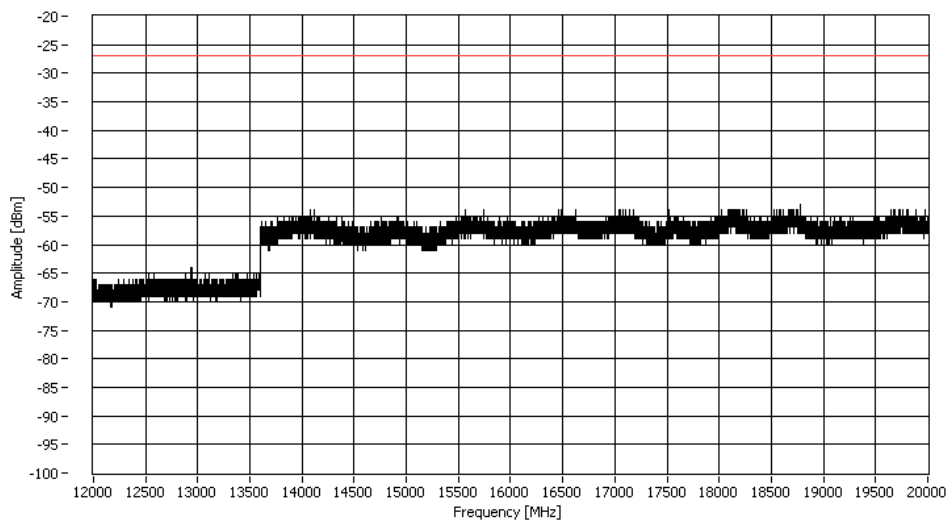
Frequency Spectrum



Frequency Spectrum

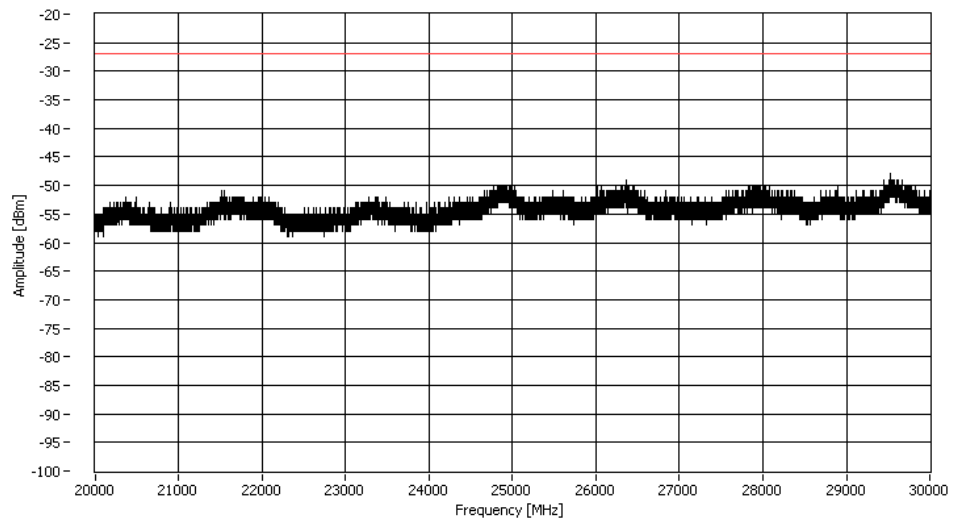


Frequency Spectrum

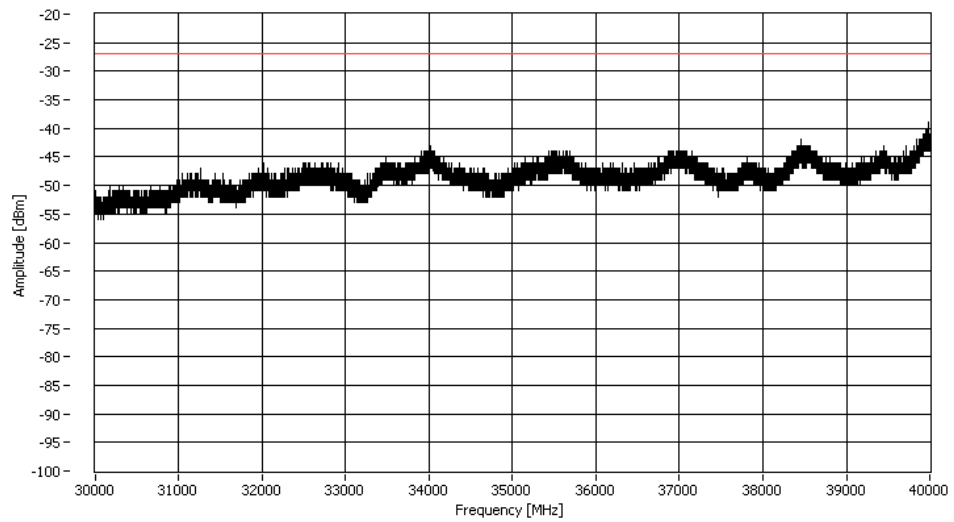


### FCC-ID: LYHMPCIE1V1

Frequency Spectrum



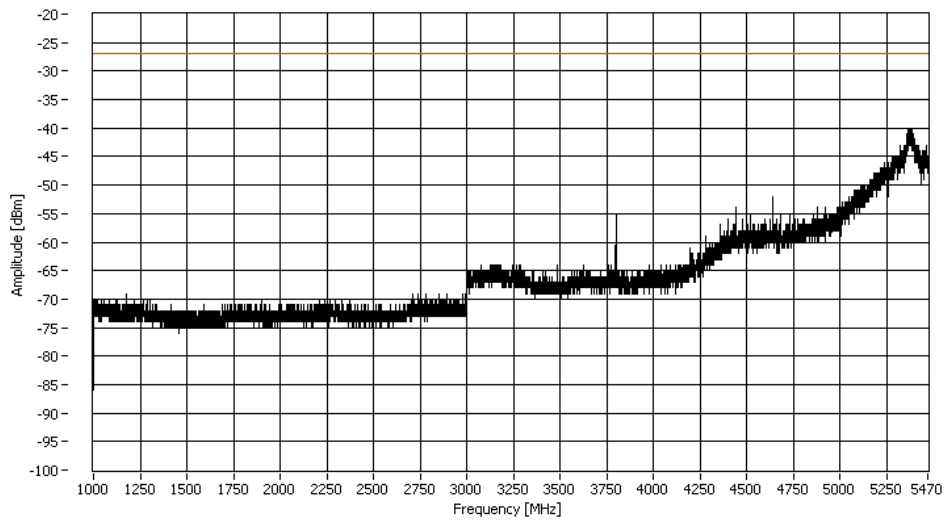
Frequency Spectrum



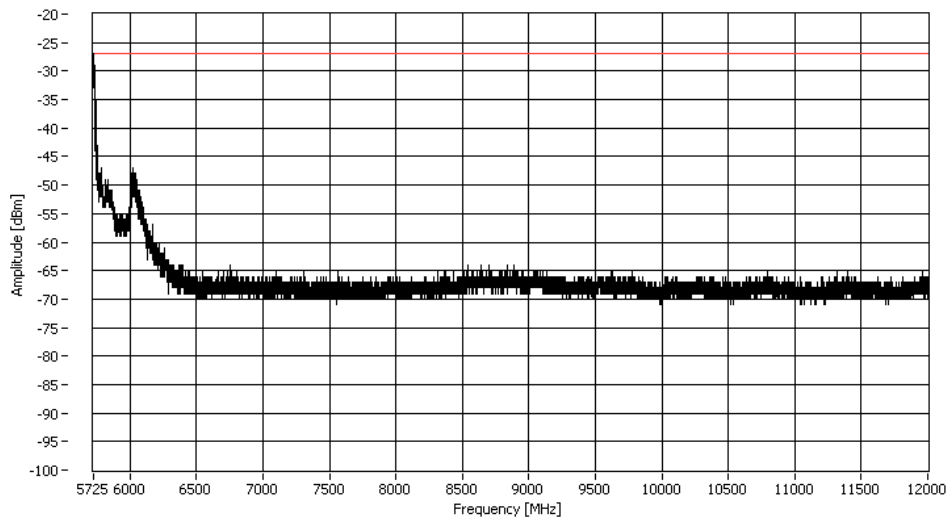
**FCC-ID: LYHMPCIE1V1**

**5.7.6.5 WLAN Standard 802.11h, CH140, Port1, P17**

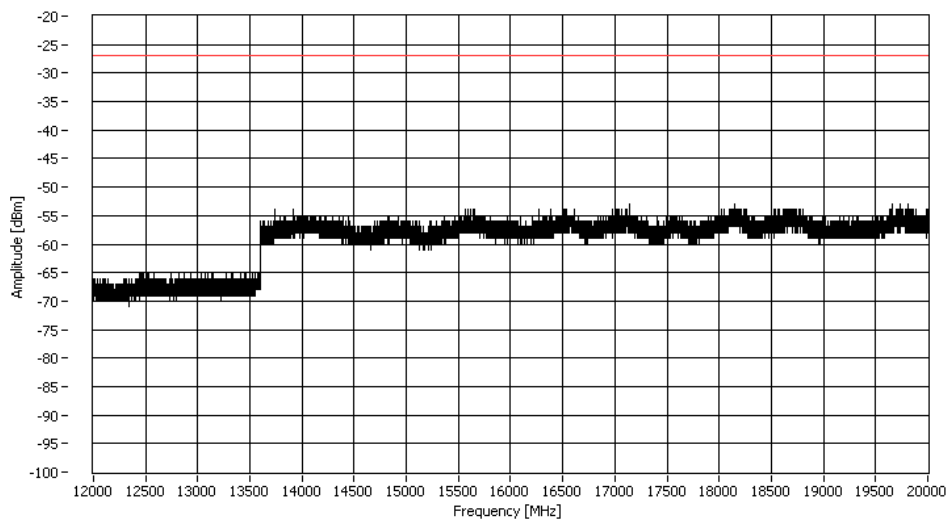
Frequency Spectrum



Frequency Spectrum

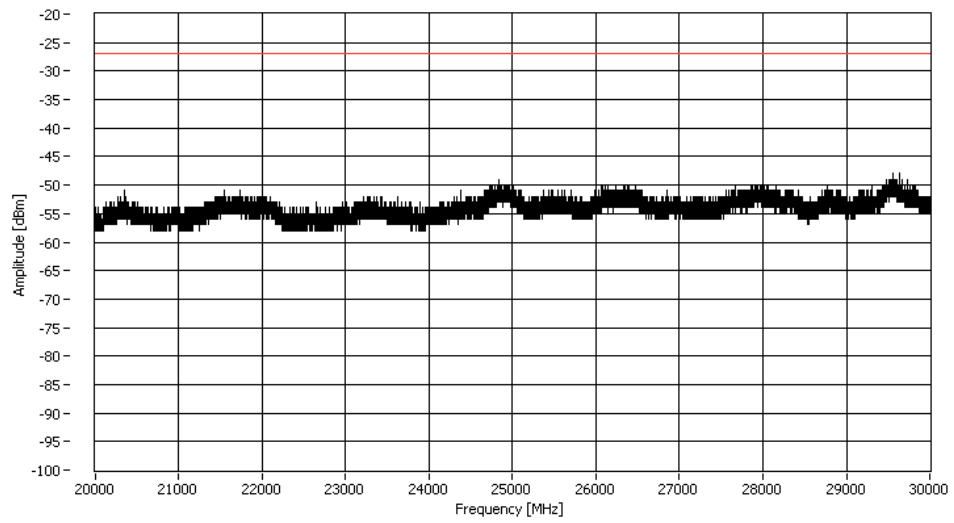


Frequency Spectrum

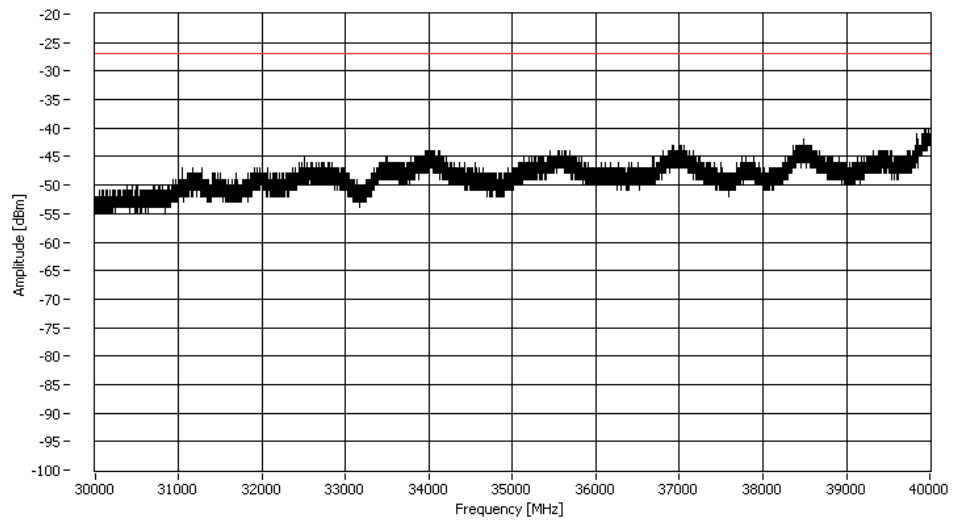


### FCC-ID: LYHMPCIE1V1

Frequency Spectrum

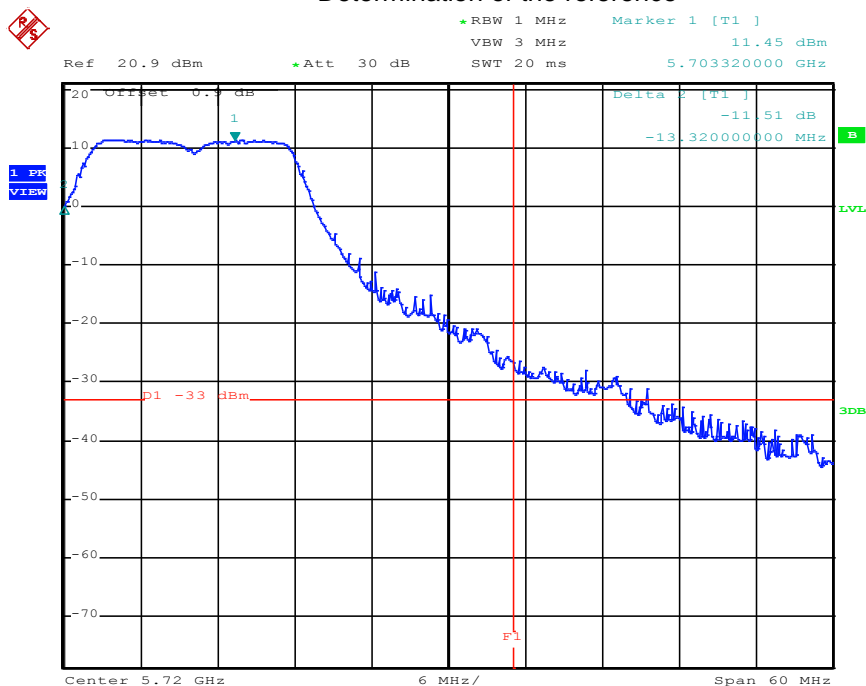


Frequency Spectrum

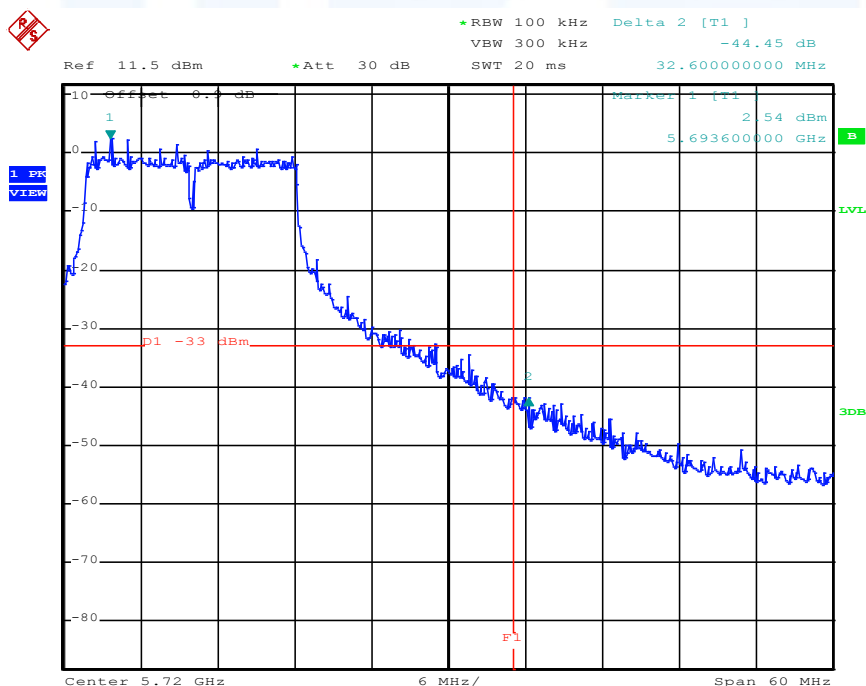


**FCC-ID: LYHMPCIE1V1**

**5.7.6.6 WLAN Standard 802.11h, CH140, Port1, P17, bandedge, Marker-Delta-method**  
Determination of the reference



Determination of the delta value



**FCC-ID: LYHMPCIE1V1**

**5.8 Spurious emissions conducted, in restricted bands**

For test instruments and accessories used see section 6 Part **SEC 1**, **SEC 2** and **SEC 3**.

**5.8.1 Description of the test location**

Test location: AREA4

**5.8.2 Photo documentation of the test set-up**



**5.8.3 Applicable standard**

According to FCC Part 15, Section 15.407(b)(6):

Undesirable Emission Limits: Except as shown in Paragraph (b)(6) of this section, the peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209.

**5.8.4 Description of Measurement**

The spurious emissions below 1 GHz and emissions falling in the restricted bands greater 1 GHz are measured conducted using a spectrum analyser in a test setup following the procedures set out in OET 789033 D01 for UNII-Devices. The conducted limit in EIRP is converted according OET 789033 D01, Item G) 1) d) ii) to the absolute radiated limit. The cable loss is taken into account. For this MIMO transmitter the antenna output chain 1 is measured and the chain 2 and chain 3 is taken into account with the formula according OET 662911,  $10 \log(N)$ , where N is the number of outputs. The measurement is performed at normal test conditions in modulated TX continuous mode. The observed spurious emissions falling into restricted bands are measured again under the provisions of Section 15.209(a).

Spectrum analyser settings:

|                        |               |               |                     |                      |
|------------------------|---------------|---------------|---------------------|----------------------|
| 9 kHz < f < 150 kHz:   | RBW: 300 Hz,  | VBW: 1 kHz,   | Detector: Max peak, | Trace Mode: Max hold |
| 150 kHz < f < 30 MHz:  | RBW: 10 kHz,  | VBW: 30 kHz,  | Detector: Max peak, | Trace Mode: Max hold |
| 30 MHz < f < 1000 MHz: | RBW: 100 kHz, | VBW: 300 kHz, | Detector: Max peak, | Trace Mode: Max hold |
| f > 1000 MHz:          | RBW: 1 MHz,   | VBW: 3 MHz,   | Detector: Max peak, | Trace Mode: Max hold |

## FCC-ID: LYHMPCIE1V1

### 5.8.5 Test result

$G_{out}$  is the assumed antenna gain out of operating band

#### 5.8.5.1 Frequency range 5250 – 5350 MHz:

HT20:

Ant. group 1

| PK-measurement                   |          |       |                  |                |           |                |        |
|----------------------------------|----------|-------|------------------|----------------|-----------|----------------|--------|
| Lowest frequency: CH52           |          |       |                  |                |           |                |        |
| Test conditions: 2 TX, P20, MCS8 |          |       |                  |                |           |                |        |
| Chain1                           |          |       | Test results     |                |           |                |        |
| Start $f$                        | Stop $f$ | RBW   | Maximum emission |                | $G_{out}$ | Limit          | Margin |
| (MHz)                            | (MHz)    | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)     | (dB $\mu$ V/m) | (dB)   |
| 3600                             | 4400     | 1000  | 4400             | 42.5           | 6.0       | 74.0           | -25.5  |
| 4500                             | 5150     | 1000  | 5000             | 51.4           | 6.0       | 74.0           | -16.6  |
| 5350                             | 5460     | 1000  | 5377             | 53.8           | 6.0       | 74.0           | -14.2  |
| Measurement uncertainty          |          |       |                  | $\pm 3$ dB     |           |                |        |

| AV-measurement             |                |       |          |            |                |                |        |
|----------------------------|----------------|-------|----------|------------|----------------|----------------|--------|
| Lowest frequency: CH52     |                |       |          |            |                |                |        |
| Test conditions: 2 TX, P20 |                |       |          |            |                |                |        |
| $f$                        | E              | RBW   | $G_{in}$ | $G_{out}$  | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)    | (dBi)      | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.6                     | 47.8           | 1000  | 6.0      | 6.0        | 53.8           | 54.0           | -0.2   |
| 5353.3                     | 44.7           | 1000  | 6.0      | 6.0        | 50.7           | 54.0           | -3.3   |
| Measurement uncertainty    |                |       |          | $\pm 3$ dB |                |                |        |

| PK-measurement                   |          |       |                  |                |           |                |        |
|----------------------------------|----------|-------|------------------|----------------|-----------|----------------|--------|
| Middle frequency: CH56           |          |       |                  |                |           |                |        |
| Test conditions: 2 TX, P20, MCS8 |          |       |                  |                |           |                |        |
| Chain1                           |          |       | Test results     |                |           |                |        |
| Start $f$                        | Stop $f$ | RBW   | Maximum emission |                | $G_{out}$ | Limit          | Margin |
| (MHz)                            | (MHz)    | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)     | (dB $\mu$ V/m) | (dB)   |
| 3600                             | 4400     | 1000  | 4360             | 40.8           | 6.0       | 74.0           | -27.2  |
| 4500                             | 5150     | 1000  | 4999             | 51.0           | 6.0       | 74.0           | -17.0  |
| 5350                             | 5460     | 1000  | 5374             | 54.5           | 6.0       | 74.0           | -13.5  |
| Measurement uncertainty          |          |       |                  | $\pm 3$ dB     |           |                |        |

| AV-measurement             |                |       |          |            |                |                |        |
|----------------------------|----------------|-------|----------|------------|----------------|----------------|--------|
| Middle frequency: CH56     |                |       |          |            |                |                |        |
| Test conditions: 2 TX, P20 |                |       |          |            |                |                |        |
| $f$                        | A              | RBW   | $G_{in}$ | $G_{out}$  | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)    | (dBi)      | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.6                     | 46.9           | 1000  | 6.0      | 6.0        | 52.9           | 54.0           | -1.1   |
| 5374.6                     | 43.4           | 1000  | 6.0      | 6.0        | 49.4           | 54.0           | -4.6   |
| Measurement uncertainty    |                |       |          | $\pm 3$ dB |                |                |        |



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| PK-measurement                   |               |       |                  |                |                         |                |        |
|----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Highest frequency: CH64          |               |       |                  |                |                         |                |        |
| Test conditions: 2 TX, P20, MCS8 |               |       |                  |                |                         |                |        |
| Chain1                           |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                             | 4400          | 1000  | 4400             | 42.8           | 6.0                     | 74.0           | -25.2  |
| 4500                             | 5150          | 1000  | 4999             | 51.7           | 6.0                     | 74.0           | -16.3  |
| 5350                             | 5460          | 1000  | 5353             | 61.2           | 6.0                     | 74.0           | -6.8   |
| Measurement uncertainty          |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Highest frequency: CH64    |                |       |                        |                         |                |                |        |
| Test conditions: 2 TX, P20 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.6                     | 47.5           | 1000  | 6.0                    | 6.0                     | 53.5           | 54.0           | -0.5   |
| 5350.0                     | 45.8           | 1000  | 6.0                    | 6.0                     | 51.8           | 54.0           | -2.2   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

#### Ant. group 2

| PK-measurement                   |               |       |                  |                |                         |                |        |
|----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Lowest frequency: CH52           |               |       |                  |                |                         |                |        |
| Test conditions: 2 TX, P17, MCS8 |               |       |                  |                |                         |                |        |
| Chain1                           |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                             | 4400          | 1000  | 4400             | 40.7           | 9.0                     | 74.0           | -24.3  |
| 4500                             | 5150          | 1000  | 5000             | 51.0           | 9.0                     | 74.0           | -14.0  |
| 5350                             | 5460          | 1000  | 5396             | 53.6           | 9.0                     | 74.0           | -11.4  |
| Measurement uncertainty          |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Lowest frequency: CH52     |                |       |                        |                         |                |                |        |
| Test conditions: 2 TX, P17 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.6                     | 44.2           | 1000  | 9.0                    | 9.0                     | 53.2           | 54.0           | -0.8   |
| 5355.7                     | 42.8           | 1000  | 9.0                    | 9.0                     | 51.8           | 54.0           | -2.2   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

| PK-measurement                   |               |       |                  |                |                         |                |        |
|----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Middle frequency: CH56           |               |       |                  |                |                         |                |        |
| Test conditions: 2 TX, P17, MCS8 |               |       |                  |                |                         |                |        |
| Chain1                           |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                             | 4400          | 1000  | 4400             | 41.8           | 9.0                     | 74.0           | -23.2  |
| 4500                             | 5150          | 1000  | 5000             | 50.7           | 9.0                     | 74.0           | -14.3  |
| 5350                             | 5460          | 1000  | 5410             | 53.0           | 9.0                     | 74.0           | -12.0  |
| Measurement uncertainty          |               |       |                  | ±3 dB          |                         |                |        |

### FCC-ID: LYHMPCIE1V1

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Middle frequency: CH56     |          |       |                 |                  |          |          |        |
| Test conditions: 2 TX, P17 |          |       |                 | Test results     |          |          |        |
| f                          | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.6                     | 44.9     | 1000  | 9.0             | 9.0              | 53.9     | 54.0     | -0.1   |
| 5374.6                     | 43.3     | 1000  | 9.0             | 9.0              | 52.3     | 54.0     | -1.7   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

| PK-measurement                   |        |       |                  |          |                  |          |        |
|----------------------------------|--------|-------|------------------|----------|------------------|----------|--------|
| Highest frequency: CH64          |        |       |                  |          |                  |          |        |
| Test conditions: 2 TX, P17, MCS8 |        |       |                  |          |                  |          |        |
| Chain1                           |        |       | Test results     |          |                  |          |        |
| Start f                          | Stop f | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                            | (MHz)  | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3600                             | 4400   | 1000  | 4400             | 40.0     | 9.0              | 74.0     | -25.0  |
| 4500                             | 5150   | 1000  | 4999             | 49.3     | 9.0              | 74.0     | -15.7  |
| 5350                             | 5460   | 1000  | 5351             | 64.3     | 9.0              | 74.0     | -0.7   |
| Measurement uncertainty          |        |       |                  | ±3 dB    |                  |          |        |

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Highest frequency: CH64    |          |       |                 |                  |          |          |        |
| Test conditions: 2 TX, P17 |          |       |                 | Test results     |          |          |        |
| f                          | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.6                     | 42.9     | 1000  | 9.0             | 9.0              | 51.9     | 54.0     | -2.1   |
| 5350.0                     | 42.6     | 1000  | 9.0             | 9.0              | 51.6     | 54.0     | -2.4   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

#### Ant. group 3

| PK-measurement                   |        |       |                  |          |                  |          |        |
|----------------------------------|--------|-------|------------------|----------|------------------|----------|--------|
| Lowest frequency: CH52           |        |       |                  |          |                  |          |        |
| Test conditions: 2 TX, P11, MCS8 |        |       |                  |          |                  |          |        |
| Chain1                           |        |       | Test results     |          |                  |          |        |
| Start f                          | Stop f | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                            | (MHz)  | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3600                             | 4400   | 1000  | 4400             | 42.3     | 14.2             | 74.0     | -17.5  |
| 4500                             | 5150   | 1000  | 5000             | 47.0     | 14.2             | 74.0     | -12.8  |
| 5350                             | 5460   | 1000  | 5377             | 48.6     | 14.2             | 74.0     | -11.2  |
| Measurement uncertainty          |        |       |                  | ±3 dB    |                  |          |        |

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Lowest frequency: CH52     |          |       |                 |                  |          |          |        |
| Test conditions: 2 TX, P11 |          |       |                 | Test results     |          |          |        |
| f                          | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.6                     | 39.8     | 1000  | 14.2            | 14.2             | 54.0     | 54.0     | 0.0    |
| 5353.3                     | 39.6     | 1000  | 14.2            | 14.2             | 53.8     | 54.0     | -0.2   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

### FCC-ID: LYHMPCIE1V1

| PK-measurement                   |               |       |                  |                |                         |                |        |
|----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Middle frequency: CH56           |               |       |                  |                |                         |                |        |
| Test conditions: 2 TX, P11, MCS8 |               |       |                  |                |                         |                |        |
| Chain1                           |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                             | 4400          | 1000  | 4400             | 39.9           | 14.2                    | 74.0           | -19.9  |
| 4500                             | 5150          | 1000  | 4999             | 47.9           | 14.2                    | 74.0           | -11.9  |
| 5350                             | 5460          | 1000  | 5392             | 49.9           | 14.2                    | 74.0           | -9.9   |
| Measurement uncertainty          |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Middle frequency: CH56     |                |       |                        |                         |                |                |        |
| Test conditions: 2 TX, P11 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.6                     | 39.5           | 1000  | 14.2                   | 14.2                    | 53.7           | 54.0           | -0.3   |
| 5374.6                     | 39.3           | 1000  | 14.2                   | 14.2                    | 53.5           | 54.0           | -0.5   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

| PK-measurement                   |               |       |                  |                |                         |                |        |
|----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Highest frequency: CH64          |               |       |                  |                |                         |                |        |
| Test conditions: 2 TX, P11, MCS8 |               |       |                  |                |                         |                |        |
| Chain1                           |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                             | 4400          | 1000  | 4400             | 40.6           | 14.2                    | 74.0           | -19.2  |
| 4500                             | 5150          | 1000  | 4999             | 48.0           | 14.2                    | 74.0           | -11.8  |
| 5350                             | 5460          | 1000  | 5351             | 52.6           | 14.2                    | 74.0           | -7.2   |
| Measurement uncertainty          |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Highest frequency: CH64    |                |       |                        |                         |                |                |        |
| Test conditions: 2 TX, P11 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.6                     | 39.8           | 1000  | 14.2                   | 14.2                    | 54.0           | 54.0           | 0.0    |
| 5350.0                     | 36.2           | 1000  | 14.2                   | 14.2                    | 50.4           | 54.0           | -3.6   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

### FCC-ID: LYHMPCIE1V1

**HT40:**

Ant. group 1

| PK-measurement                    |               |       |                  |                |           |                |        |
|-----------------------------------|---------------|-------|------------------|----------------|-----------|----------------|--------|
| Lowest frequency: CH52up          |               |       |                  |                |           |                |        |
| Test conditions: 3 TX, P20, MCS16 |               |       |                  |                |           |                |        |
| Chain1                            |               |       | Test results     |                |           |                |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |                | $G_{out}$ | Limit          | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)     | (dB $\mu$ V/m) | (dB)   |
| 3600                              | 4400          | 1000  | 4400             | 45.4           | 6.0       | 74.0           | -22.6  |
| 4500                              | 5150          | 1000  | 5149             | 53.8           | 6.0       | 74.0           | -14.2  |
| 5350                              | 5460          | 1000  | 5354             | 56.7           | 6.0       | 74.0           | -11.3  |
| Measurement uncertainty           |               |       |                  | ±3 dB          |           |                |        |

| AV-measurement             |                |       |          |           |                |                |        |
|----------------------------|----------------|-------|----------|-----------|----------------|----------------|--------|
| Lowest frequency: CH52up   |                |       |          |           |                |                |        |
| Test conditions: 3 TX, P20 |                |       |          |           |                |                |        |
| <i>f</i>                   | E              | RBW   | $G_{in}$ | $G_{out}$ | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)    | (dBi)     | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.6                     | 47.5           | 1000  | 6.0      | 6.0       | 53.5           | 54.0           | -0.5   |
| 5350.4                     | 44.8           | 1000  | 6.0      | 6.0       | 50.8           | 54.0           | -3.2   |
| Measurement uncertainty    |                |       |          | ±3 dB     |                |                |        |

| PK-measurement                    |               |       |                  |                |           |                |        |
|-----------------------------------|---------------|-------|------------------|----------------|-----------|----------------|--------|
| Highest frequency: CH60up         |               |       |                  |                |           |                |        |
| Test conditions: 3 TX, P15, MCS16 |               |       |                  |                |           |                |        |
| Chain1                            |               |       | Test results     |                |           |                |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |                | $G_{out}$ | Limit          | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)     | (dB $\mu$ V/m) | (dB)   |
| 3600                              | 4400          | 1000  | 4400             | 50.0           | 6.0       | 74.0           | -18.0  |
| 4500                              | 5150          | 1000  | 4999             | 52.9           | 6.0       | 74.0           | -15.1  |
| 5350                              | 5460          | 1000  | 5356             | 67.7           | 6.0       | 74.0           | -0.3   |
| Measurement uncertainty           |               |       |                  | ±3 dB          |           |                |        |

| AV-measurement             |                |       |          |           |                |                |        |
|----------------------------|----------------|-------|----------|-----------|----------------|----------------|--------|
| Highest frequency: CH60up  |                |       |          |           |                |                |        |
| Test conditions: 3 TX, P15 |                |       |          |           |                |                |        |
| <i>f</i>                   | A              | RBW   | $G_{in}$ | $G_{out}$ | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)    | (dBi)     | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4359.9                     | 39.3           | 1000  | 6.0      | 6.0       | 45.3           | 54.0           | -8.7   |
| 4999.6                     | 40.4           | 1000  | 6.0      | 6.0       | 46.4           | 54.0           | -7.6   |
| 5350.0                     | 41.8           | 1000  | 6.0      | 6.0       | 47.8           | 54.0           | -6.2   |
| Measurement uncertainty    |                |       |          | ±3 dB     |                |                |        |

### FCC-ID: LYHMPCIE1V1

Ant. group 2

| PK-measurement                    |               |       |                  |                |                         |                |        |
|-----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Lowest frequency: CH52up          |               |       |                  |                |                         |                |        |
| Test conditions: 3 TX, P17, MCS16 |               |       |                  |                |                         |                |        |
| Chain1                            |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                              | 4400          | 1000  | 4400             | 45.2           | 9.0                     | 74.0           | -19.8  |
| 4500                              | 5150          | 1000  | 4999             | 51.7           | 9.0                     | 74.0           | -13.3  |
| 5350                              | 5460          | 1000  | 5388             | 54.8           | 9.0                     | 74.0           | -10.2  |
| Measurement uncertainty           |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Lowest frequency: CH52up   |                |       |                        |                         |                |                |        |
| Test conditions: 3 TX, P17 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4359.9                     | 39.3           | 1000  | 9.0                    | 9.0                     | 48.3           | 54.0           | -5.7   |
| 4999.6                     | 39.3           | 1000  | 9.0                    | 9.0                     | 48.3           | 54.0           | -5.7   |
| 5388.6                     | 43.6           | 1000  | 9.0                    | 9.0                     | 52.6           | 54.0           | -1.4   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

| PK-measurement                    |               |       |                  |                |                         |                |        |
|-----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Highest frequency: CH60up         |               |       |                  |                |                         |                |        |
| Test conditions: 3 TX, P11, MCS16 |               |       |                  |                |                         |                |        |
| Chain1                            |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                              | 4400          | 1000  | 4400             | 49.4           | 9.0                     | 74.0           | -15.6  |
| 4500                              | 5150          | 1000  | 4999             | 54.8           | 9.0                     | 74.0           | -10.2  |
| 5350                              | 5460          | 1000  | 5353             | 59.3           | 9.0                     | 74.0           | -5.7   |
| Measurement uncertainty           |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Highest frequency: CH60up  |                |       |                        |                         |                |                |        |
| Test conditions: 3 TX, P11 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4359.9                     | 39.3           | 1000  | 9.0                    | 9.0                     | 48.3           | 54.0           | -5.7   |
| 4999.6                     | 39.6           | 1000  | 9.0                    | 9.0                     | 48.6           | 54.0           | -5.4   |
| 5350.0                     | 38.0           | 1000  | 9.0                    | 9.0                     | 47.0           | 54.0           | -7.0   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

### FCC-ID: LYHMPCIE1V1

Ant. group 3

| PK-measurement                    |               |       |                  |                |                         |                |        |
|-----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Lowest frequency: CH52up          |               |       |                  |                |                         |                |        |
| Test conditions: 3 TX, P11, MCS16 |               |       |                  |                |                         |                |        |
| Chain1                            |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                              | 4400          | 1000  | 4400             | 44.8           | 14.2                    | 74.0           | -15.0  |
| 4500                              | 5150          | 1000  | 4999             | 49.1           | 14.2                    | 74.0           | -10.7  |
| 5350                              | 5460          | 1000  | 5360             | 51.7           | 14.2                    | 74.0           | -8.1   |
| Measurement uncertainty           |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Lowest frequency: CH52up   |                |       |                        |                         |                |                |        |
| Test conditions: 3 TX, P11 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4359.9                     | 39.6           | 1000  | 14.2                   | 14.2                    | 53.8           | 54.0           | -0.2   |
| 4999.6                     | 39.8           | 1000  | 14.2                   | 14.2                    | 54.0           | 54.0           | 0.0    |
| 5364.7                     | 39.8           | 1000  | 14.2                   | 14.2                    | 54.0           | 54.0           | 0.0    |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

| PK-measurement                    |               |       |                  |                |                         |                |        |
|-----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Highest frequency: CH60up         |               |       |                  |                |                         |                |        |
| Test conditions: 3 TX, P11, MCS16 |               |       |                  |                |                         |                |        |
| Chain1                            |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                              | 4400          | 1000  | 4400             | 49.4           | 14.2                    | 74.0           | -10.4  |
| 4500                              | 5150          | 1000  | 4999             | 54.8           | 14.2                    | 74.0           | -5.0   |
| 5350                              | 5460          | 1000  | 5353             | 59.3           | 14.2                    | 74.0           | -0.5   |
| Measurement uncertainty           |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Highest frequency: CH60up  |                |       |                        |                         |                |                |        |
| Test conditions: 3 TX, P11 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4359.9                     | 39.3           | 1000  | 14.2                   | 14.2                    | 53.5           | 54.0           | -0.5   |
| 4999.6                     | 39.6           | 1000  | 14.2                   | 14.2                    | 53.8           | 54.0           | -0.2   |
| 5350.0                     | 38.0           | 1000  | 14.2                   | 14.2                    | 52.2           | 54.0           | -1.8   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

### FCC-ID: LYHMPCIE1V1

**802.11h:**

Ant. group 1

| PK-measurement                     |               |       |                  |          |                         |          |        |
|------------------------------------|---------------|-------|------------------|----------|-------------------------|----------|--------|
| Lowest frequency: CH52             |               |       |                  |          |                         |          |        |
| Test conditions: 1 TX, P20, 6 Mbps |               |       |                  |          |                         |          |        |
| Chain1                             |               |       | Test results     |          |                         |          |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |          | <i>G</i> <sub>out</sub> | Limit    | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBμV/m) | (dBi)                   | (dBμV/m) | (dB)   |
| 3600                               | 4400          | 1000  | 4360             | 37.9     | 6.0                     | 74.0     | -30.1  |
| 4500                               | 5150          | 1000  | 5000             | 48.3     | 6.0                     | 74.0     | -19.7  |
| 5350                               | 5460          | 1000  | 5367             | 51.0     | 6.0                     | 74.0     | -17.0  |
| Measurement uncertainty            |               |       |                  | ±3 dB    |                         |          |        |

| AV-measurement             |          |       |                        |                         |          |          |        |
|----------------------------|----------|-------|------------------------|-------------------------|----------|----------|--------|
| Lowest frequency: CH52     |          |       |                        |                         |          |          |        |
| Test conditions: 1 TX, P20 |          |       |                        |                         |          |          |        |
| <i>f</i>                   | <i>E</i> | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | <i>E</i> | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)                  | (dBi)                   | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.6                     | 43.0     | 1000  | 6.0                    | 6.0                     | 49.0     | 54.0     | -5.0   |
| 5355.1                     | 40.0     | 1000  | 6.0                    | 6.0                     | 46.0     | 54.0     | -8.0   |
| Measurement uncertainty    |          |       |                        | ±3 dB                   |          |          |        |

| PK-measurement                     |               |       |                  |          |                         |          |        |
|------------------------------------|---------------|-------|------------------|----------|-------------------------|----------|--------|
| Middle frequency: CH56             |               |       |                  |          |                         |          |        |
| Test conditions: 1 TX, P20, 6 Mbps |               |       |                  |          |                         |          |        |
| Chain1                             |               |       | Test results     |          |                         |          |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |          | <i>G</i> <sub>out</sub> | Limit    | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBμV/m) | (dBi)                   | (dBμV/m) | (dB)   |
| 3600                               | 4400          | 1000  | 4360             | 38.8     | 6.0                     | 74.0     | -29.2  |
| 4500                               | 5150          | 1000  | 5000             | 48.0     | 6.0                     | 74.0     | -20.0  |
| 5350                               | 5460          | 1000  | 5371             | 51.5     | 6.0                     | 74.0     | -16.5  |
| Measurement uncertainty            |               |       |                  | ±3 dB    |                         |          |        |

| AV-measurement             |          |       |                        |                         |          |          |        |
|----------------------------|----------|-------|------------------------|-------------------------|----------|----------|--------|
| Middle frequency: CH56     |          |       |                        |                         |          |          |        |
| Test conditions: 1 TX, P20 |          |       |                        |                         |          |          |        |
| <i>f</i>                   | <i>A</i> | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | <i>E</i> | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)                  | (dBi)                   | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.6                     | 43.2     | 1000  | 6.0                    | 6.0                     | 49.2     | 54.0     | -4.8   |
| 5374.6                     | 40.3     | 1000  | 6.0                    | 6.0                     | 46.3     | 54.0     | -7.7   |
| Measurement uncertainty    |          |       |                        | ±3 dB                   |          |          |        |

| PK-measurement                     |               |       |                  |          |                         |          |        |
|------------------------------------|---------------|-------|------------------|----------|-------------------------|----------|--------|
| Highest frequency: CH64            |               |       |                  |          |                         |          |        |
| Test conditions: 1 TX, P20, 6 Mbps |               |       |                  |          |                         |          |        |
| Chain1                             |               |       | Test results     |          |                         |          |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |          | <i>G</i> <sub>out</sub> | Limit    | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBμV/m) | (dBi)                   | (dBμV/m) | (dB)   |
| 3600                               | 4400          | 1000  | 4400             | 39.4     | 6.0                     | 74.0     | -28.6  |
| 4500                               | 5150          | 1000  | 4999             | 47.0     | 6.0                     | 74.0     | -21.0  |
| 5350                               | 5460          | 1000  | 5351             | 62.7     | 6.0                     | 74.0     | -5.3   |
| Measurement uncertainty            |               |       |                  | ±3 dB    |                         |          |        |

### FCC-ID: LYHMPCIE1V1

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Highest frequency: CH64    |          |       |                 |                  |          |          |        |
| Test conditions: 1 TX, P20 |          |       |                 | Test results     |          |          |        |
| <i>f</i>                   | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.6                     | 43.7     | 1000  | 6.0             | 6.0              | 49.7     | 54.0     | -4.3   |
| 5350.0                     | 45.8     | 1000  | 6.0             | 6.0              | 51.8     | 54.0     | -2.2   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

Ant. group 2

| PK-measurement                     |               |       |                  |          |                  |          |        |
|------------------------------------|---------------|-------|------------------|----------|------------------|----------|--------|
| Lowest frequency: CH52             |               |       |                  |          |                  |          |        |
| Test conditions: 1 TX, P17, 6 Mbps |               |       |                  |          |                  |          |        |
| Chain1                             |               |       | Test results     |          |                  |          |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3600                               | 4400          | 1000  | 4360             | 37.7     | 9.0              | 74.0     | -27.3  |
| 4500                               | 5150          | 1000  | 4999             | 47.5     | 9.0              | 74.0     | -17.5  |
| 5350                               | 5460          | 1000  | 5402             | 50.8     | 9.0              | 74.0     | -14.2  |
| Measurement uncertainty            |               |       |                  | ±3 dB    |                  |          |        |

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Lowest frequency: CH52     |          |       |                 |                  |          |          |        |
| Test conditions: 1 TX, P17 |          |       |                 | Test results     |          |          |        |
| <i>f</i>                   | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.6                     | 43.0     | 1000  | 9.0             | 9.0              | 52.0     | 54.0     | -2.0   |
| 5354.4                     | 39.9     | 1000  | 9.0             | 9.0              | 48.9     | 54.0     | -5.1   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

| PK-measurement                     |               |       |                  |          |                  |          |        |
|------------------------------------|---------------|-------|------------------|----------|------------------|----------|--------|
| Middle frequency: CH56             |               |       |                  |          |                  |          |        |
| Test conditions: 1 TX, P17, 6 Mbps |               |       |                  |          |                  |          |        |
| Chain1                             |               |       | Test results     |          |                  |          |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3600                               | 4400          | 1000  | 4360             | 38.2     | 9.0              | 74.0     | -26.8  |
| 4500                               | 5150          | 1000  | 5000             | 48.0     | 9.0              | 74.0     | -17.0  |
| 5350                               | 5460          | 1000  | 5371             | 51.9     | 9.0              | 74.0     | -13.1  |
| Measurement uncertainty            |               |       |                  | ±3 dB    |                  |          |        |

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Middle frequency: CH56     |          |       |                 |                  |          |          |        |
| Test conditions: 1 TX, P17 |          |       |                 | Test results     |          |          |        |
| <i>f</i>                   | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.6                     | 43.2     | 1000  | 9.0             | 9.0              | 52.2     | 54.0     | -1.8   |
| 5374.6                     | 40.5     | 1000  | 9.0             | 9.0              | 49.5     | 54.0     | -4.5   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |



### FCC-ID: LYHMPCIE1V1

| PK-measurement                     |               |       |                  |                |                         |                |        |
|------------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Highest frequency: CH64            |               |       |                  |                |                         |                |        |
| Test conditions: 1 TX, P17, 6 Mbps |               |       |                  |                |                         |                |        |
| Chain1                             |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                               | 4400          | 1000  | 4360             | 38.2           | 9.0                     | 74.0           | -26.8  |
| 4500                               | 5150          | 1000  | 4999             | 49.0           | 9.0                     | 74.0           | -16.0  |
| 5350                               | 5460          | 1000  | 5352             | 62.5           | 9.0                     | 74.0           | -2.5   |
| Measurement uncertainty            |               |       |                  | ±3 dB          |                         |                |        |

| PK-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Highest frequency: CH64    |                |       |                        |                         |                |                |        |
| Test conditions: 1 TX, P17 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.6                     | 43.9           | 1000  | 9.0                    | 9.0                     | 52.9           | 54.0           | -1.1   |
| 5350.0                     | 44.8           | 1000  | 9.0                    | 9.0                     | 53.8           | 54.0           | -0.2   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

Ant. group 3

| PK-measurement                     |               |       |                  |                |                         |                |        |
|------------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Lowest frequency: CH52             |               |       |                  |                |                         |                |        |
| Test conditions: 1 TX, P11, 6 Mbps |               |       |                  |                |                         |                |        |
| Chain1                             |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                               | 4400          | 1000  | 4400             | 37.9           | 14.2                    | 74.0           | -21.9  |
| 4500                               | 5150          | 1000  | 4999             | 44.3           | 14.2                    | 74.0           | -15.5  |
| 5350                               | 5460          | 1000  | 5387             | 47.2           | 14.2                    | 74.0           | -12.6  |
| Measurement uncertainty            |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Lowest frequency: CH52     |                |       |                        |                         |                |                |        |
| Test conditions: 1 TX, P11 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.6                     | 39.5           | 1000  | 14.2                   | 14.2                    | 53.7           | 54.0           | -0.3   |
| 5354.8                     | 36.2           | 1000  | 14.2                   | 14.2                    | 50.4           | 54.0           | -3.6   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

| PK-measurement                     |               |       |                  |                |                         |                |        |
|------------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Middle frequency: CH56             |               |       |                  |                |                         |                |        |
| Test conditions: 1 TX, P11, 6 Mbps |               |       |                  |                |                         |                |        |
| Chain1                             |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                               | 4400          | 1000  | 4360             | 37.2           | 14.2                    | 74.0           | -22.6  |
| 4500                               | 5150          | 1000  | 5000             | 44.6           | 14.2                    | 74.0           | -15.2  |
| 5350                               | 5460          | 1000  | 5430             | 47.7           | 14.2                    | 74.0           | -12.1  |
| Measurement uncertainty            |               |       |                  | ±3 dB          |                         |                |        |

### FCC-ID: LYHMPCIE1V1

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Middle frequency: CH56     |          |       |                 |                  |          |          |        |
| Test conditions: 1 TX, P11 |          |       |                 | Test results     |          |          |        |
| f                          | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.6                     | 39.8     | 1000  | 14.2            | 14.2             | 54.0     | 54.0     | 0.0    |
| 5354.8                     | 36.6     | 1000  | 14.2            | 14.2             | 50.8     | 54.0     | -3.2   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

| PK-measurement                     |        |       |                  |          |                  |          |        |
|------------------------------------|--------|-------|------------------|----------|------------------|----------|--------|
| Highest frequency: CH64            |        |       |                  |          |                  |          |        |
| Test conditions: 1 TX, P11, 6 Mbps |        |       |                  |          |                  |          |        |
| Chain1                             |        |       | Test results     |          |                  |          |        |
| Start f                            | Stop f | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                              | (MHz)  | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3600                               | 4400   | 1000  | 4360             | 37.2     | 14.2             | 74.0     | -22.6  |
| 4500                               | 5150   | 1000  | 4999             | 45.5     | 14.2             | 74.0     | -14.3  |
| 5350                               | 5460   | 1000  | 5358             | 50.5     | 14.2             | 74.0     | -9.3   |
| Measurement uncertainty            |        |       |                  | ±3 dB    |                  |          |        |

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Highest frequency: CH64    |          |       |                 |                  |          |          |        |
| Test conditions: 1 TX, P11 |          |       |                 | Test results     |          |          |        |
| f                          | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.6                     | 39.2     | 1000  | 14.2            | 14.2             | 53.4     | 54.0     | -0.6   |
| 5350.0                     | 39.4     | 1000  | 14.2            | 14.2             | 53.6     | 54.0     | -0.4   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

#### 5.8.5.2 Frequency range 5470 – 5725 MHz:

HT20:

Ant. group 1

| PK-measurement                   |        |       |                  |          |                  |          |        |
|----------------------------------|--------|-------|------------------|----------|------------------|----------|--------|
| Lowest frequency: CH100          |        |       |                  |          |                  |          |        |
| Test conditions: 2 TX, P20, MCS8 |        |       |                  |          |                  |          |        |
| Chain1                           |        |       | Test results     |          |                  |          |        |
| Start f                          | Stop f | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                            | (MHz)  | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3600                             | 4400   | 1000  | 3667             | 43.1     | 6.0              | 74.0     | -24.9  |
| 4500                             | 5150   | 1000  | 5000             | 49.6     | 6.0              | 74.0     | -18.4  |
| 5350                             | 5460   | 1000  | 5460             | 61.5     | 6.0              | 74.0     | -6.5   |
| Measurement uncertainty          |        |       |                  | ±3 dB    |                  |          |        |

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Lowest frequency: CH100    |          |       |                 |                  |          |          |        |
| Test conditions: 2 TX, P20 |          |       |                 | Test results     |          |          |        |
| f                          | E        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.4                     | 42.8     | 1000  | 6.0             | 6.0              | 48.8     | 54.0     | -5.2   |
| 5460.0                     | 46.4     | 1000  | 6.0             | 6.0              | 52.4     | 54.0     | -1.6   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

### FCC-ID: LYHMPCIE1V1

| PK-measurement                   |               |       |                  |                |                         |                |        |
|----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Middle frequency: CH116          |               |       |                  |                |                         |                |        |
| Test conditions: 2 TX, P20, MCS8 |               |       |                  |                |                         |                |        |
| Chain1                           |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                             | 4400          | 1000  | 3720             | 44.1           | 6.0                     | 74.0           | -23.9  |
| 4500                             | 5150          | 1000  | 4999             | 49.9           | 6.0                     | 74.0           | -18.1  |
| 5350                             | 5460          | 1000  | 5409             | 55.5           | 6.0                     | 74.0           | -12.5  |
| Measurement uncertainty          |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Middle frequency: CH116    |                |       |                        |                         |                |                |        |
| Test conditions: 2 TX, P20 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.4                     | 42.5           | 1000  | 6.0                    | 6.0                     | 48.5           | 54.0           | -5.5   |
| 5452.7                     | 40.9           | 1000  | 6.0                    | 6.0                     | 46.9           | 54.0           | -7.1   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

| PK-measurement                   |               |       |                  |                |                         |                |        |
|----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Highest frequency: CH140         |               |       |                  |                |                         |                |        |
| Test conditions: 2 TX, P20, MCS8 |               |       |                  |                |                         |                |        |
| Chain1                           |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                             | 4400          | 1000  | 4400             | 41.7           | 6.0                     | 74.0           | -26.3  |
| 4500                             | 5150          | 1000  | 4999             | 49.8           | 6.0                     | 74.0           | -18.2  |
| 5350                             | 5460          | 1000  | 5387             | 58.2           | 6.0                     | 74.0           | -9.8   |
| Measurement uncertainty          |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Highest frequency: CH140   |                |       |                        |                         |                |                |        |
| Test conditions: 2 TX, P20 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.4                     | 39.7           | 1000  | 6.0                    | 6.0                     | 45.7           | 54.0           | -8.3   |
| 5375.0                     | 46.5           | 1000  | 6.0                    | 6.0                     | 52.5           | 54.0           | -1.5   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

#### Ant. group 2

| PK-measurement                   |               |       |                  |                |                         |                |        |
|----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Lowest frequency: CH100          |               |       |                  |                |                         |                |        |
| Test conditions: 2 TX, P17, MCS8 |               |       |                  |                |                         |                |        |
| Chain1                           |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                             | 4400          | 1000  | 3667             | 43.5           | 9.0                     | 74.0           | -21.5  |
| 4500                             | 5150          | 1000  | 4999             | 49.5           | 9.0                     | 74.0           | -15.5  |
| 5350                             | 5460          | 1000  | 5437             | 55.8           | 9.0                     | 74.0           | -9.2   |
| Measurement uncertainty          |               |       |                  | ±3 dB          |                         |                |        |

### FCC-ID: LYHMPCIE1V1

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Lowest frequency: CH100    |          |       |                 |                  |          |          |        |
| Test conditions: 2 TX, P17 |          |       |                 | Test results     |          |          |        |
| f                          | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.4                     | 42.6     | 1000  | 9.0             | 9.0              | 51.6     | 54.0     | -2.4   |
| 5460.0                     | 44.5     | 1000  | 9.0             | 9.0              | 53.5     | 54.0     | -0.5   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

| PK-measurement                   |        |       |                  |          |                  |          |        |
|----------------------------------|--------|-------|------------------|----------|------------------|----------|--------|
| Middle frequency: CH116          |        |       |                  |          |                  |          |        |
| Test conditions: 2 TX, P17, MCS8 |        |       |                  |          |                  |          |        |
| Chain1                           |        |       | Test results     |          |                  |          |        |
| Start f                          | Stop f | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                            | (MHz)  | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3600                             | 4400   | 1000  | 3720             | 43.3     | 9.0              | 74.0     | -21.7  |
| 4500                             | 5150   | 1000  | 4999             | 49.4     | 9.0              | 74.0     | -15.6  |
| 5350                             | 5460   | 1000  | 5455             | 53.7     | 9.0              | 74.0     | -11.3  |
| Measurement uncertainty          |        |       |                  | ±3 dB    |                  |          |        |

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Middle frequency: CH116    |          |       |                 |                  |          |          |        |
| Test conditions: 2 TX, P17 |          |       |                 | Test results     |          |          |        |
| f                          | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.4                     | 42.6     | 1000  | 9.0             | 9.0              | 51.6     | 54.0     | -2.4   |
| 5456.0                     | 43.0     | 1000  | 9.0             | 9.0              | 52.0     | 54.0     | -2.0   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

| PK-measurement                   |        |       |                  |          |                  |          |        |
|----------------------------------|--------|-------|------------------|----------|------------------|----------|--------|
| Highest frequency: CH140         |        |       |                  |          |                  |          |        |
| Test conditions: 2 TX, P17, MCS8 |        |       |                  |          |                  |          |        |
| Chain1                           |        |       | Test results     |          |                  |          |        |
| Start f                          | Stop f | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                            | (MHz)  | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3600                             | 4400   | 1000  | 4400             | 42.8     | 9.0              | 74.0     | -22.2  |
| 4500                             | 5150   | 1000  | 5000             | 50.1     | 9.0              | 74.0     | -14.9  |
| 5350                             | 5460   | 1000  | 5373             | 56.1     | 9.0              | 74.0     | -8.9   |
| Measurement uncertainty          |        |       |                  | ±3 dB    |                  |          |        |

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Highest frequency: CH140   |          |       |                 |                  |          |          |        |
| Test conditions: 2 TX, P17 |          |       |                 | Test results     |          |          |        |
| f                          | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.4                     | 42.5     | 1000  | 9.0             | 9.0              | 51.5     | 54.0     | -2.5   |
| 5374.4                     | 44.9     | 1000  | 9.0             | 9.0              | 53.9     | 54.0     | -0.1   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

### FCC-ID: LYHMPCIE1V1

Ant. group 3

| PK-measurement                   |               |       |                  |                |                         |                |        |
|----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Lowest frequency: CH100          |               |       |                  |                |                         |                |        |
| Test conditions: 2 TX, P11, MCS8 |               |       |                  |                |                         |                |        |
| Chain1                           |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                             | 4400          | 1000  | 3666             | 43.7           | 14.2                    | 74.0           | -16.1  |
| 4500                             | 5150          | 1000  | 5000             | 46.9           | 14.2                    | 74.0           | -12.9  |
| 5350                             | 5460          | 1000  | 5440             | 51.5           | 14.2                    | 74.0           | -8.3   |
| Measurement uncertainty          |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Lowest frequency: CH100    |                |       |                        |                         |                |                |        |
| Test conditions: 2 TX, P11 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 3666.7                     | 35.8           | 1000  | 14.2                   | 14.2                    | 50.0           | 54.0           | -4.0   |
| 4999.6                     | 39.4           | 1000  | 14.2                   | 14.2                    | 53.6           | 54.0           | -0.4   |
| 5460.0                     | 39.7           | 1000  | 14.2                   | 14.2                    | 53.9           | 54.0           | -0.1   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

| PK-measurement                   |               |       |                  |                |                         |                |        |
|----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Middle frequency: CH116          |               |       |                  |                |                         |                |        |
| Test conditions: 2 TX, P11, MCS8 |               |       |                  |                |                         |                |        |
| Chain1                           |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                             | 4400          | 1000  | 3720             | 44.7           | 14.2                    | 74.0           | -15.1  |
| 4500                             | 5150          | 1000  | 5000             | 47.3           | 14.2                    | 74.0           | -12.5  |
| 5350                             | 5460          | 1000  | 5451             | 50.4           | 14.2                    | 74.0           | -9.4   |
| Measurement uncertainty          |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Middle frequency: CH116    |                |       |                        |                         |                |                |        |
| Test conditions: 2 TX, P11 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 3799.9                     | 38.0           | 1000  | 14.2                   | 14.2                    | 52.2           | 54.0           | -1.8   |
| 4999.6                     | 39.7           | 1000  | 14.2                   | 14.2                    | 53.9           | 54.0           | -0.1   |
| 5452.0                     | 38.7           | 1000  | 14.2                   | 14.2                    | 52.9           | 54.0           | -1.1   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

### FCC-ID: LYHMPCIE1V1

| PK-measurement                   |               |       |                  |                |                         |                |        |
|----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Highest frequency: CH140         |               |       |                  |                |                         |                |        |
| Test conditions: 2 TX, P11, MCS8 |               |       |                  |                |                         |                |        |
| Chain1                           |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                   | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                            | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                             | 4400          | 1000  | 3800             | 42.8           | 14.2                    | 74.0           | -17.0  |
| 4500                             | 5150          | 1000  | 4999             | 47.4           | 14.2                    | 74.0           | -12.4  |
| 5350                             | 5460          | 1000  | 5379             | 50.8           | 14.2                    | 74.0           | -9.0   |
| Measurement uncertainty          |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Highest frequency: CH140   |                |       |                        |                         |                |                |        |
| Test conditions: 2 TX, P11 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 3800.0                     | 38.0           | 1000  | 14.2                   | 14.2                    | 52.2           | 54.0           | -1.8   |
| 4999.5                     | 38.0           | 1000  | 14.2                   | 14.2                    | 52.2           | 54.0           | -1.8   |
| 5385.2                     | 39.4           | 1000  | 14.2                   | 14.2                    | 53.6           | 54.0           | -0.4   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

#### HT40:

Ant. group 1

| PK-measurement                    |               |       |                  |                |                         |                |        |
|-----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Lowest frequency: CH100up         |               |       |                  |                |                         |                |        |
| Test conditions: 3 TX, P14, MCS16 |               |       |                  |                |                         |                |        |
| Chain1                            |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                              | 4400          | 1000  | 3673             | 45.8           | 6.0                     | 74.0           | -22.2  |
| 4500                              | 5150          | 1000  | 5000             | 50.8           | 6.0                     | 74.0           | -17.2  |
| 5350                              | 5460          | 1000  | 5456             | 63.9           | 6.0                     | 74.0           | -4.1   |
| Measurement uncertainty           |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Lowest frequency: CH100up  |                |       |                        |                         |                |                |        |
| Test conditions: 3 TX, P14 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | E              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.6                     | 45.8           | 1000  | 6.0                    | 6.0                     | 51.8           | 54.0           | -2.2   |
| 5460.0                     | 45.6           | 1000  | 6.0                    | 6.0                     | 51.6           | 54.0           | -2.4   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

### FCC-ID: LYHMPCIE1V1

| PK-measurement                    |               |       |                  |                |                         |                |        |
|-----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Middle frequency: CH108up         |               |       |                  |                |                         |                |        |
| Test conditions: 3 TX, P20, MCS16 |               |       |                  |                |                         |                |        |
| Chain1                            |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                              | 4400          | 1000  | 3727             | 45.4           | 6.0                     | 74.0           | -22.6  |
| 4500                              | 5150          | 1000  | 4999             | 51.5           | 6.0                     | 74.0           | -16.5  |
| 5350                              | 5460          | 1000  | 5454             | 57.0           | 6.0                     | 74.0           | -11.0  |
| Measurement uncertainty           |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Middle frequency: CH108up  |                |       |                        |                         |                |                |        |
| Test conditions: 3 TX, P20 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.6                     | 42.1           | 1000  | 6.0                    | 6.0                     | 48.1           | 54.0           | -5.9   |
| 5426.1                     | 41.0           | 1000  | 6.0                    | 6.0                     | 47.0           | 54.0           | -7.0   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

| PK-measurement                    |               |       |                  |                |                         |                |        |
|-----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Highest frequency: CH132up        |               |       |                  |                |                         |                |        |
| Test conditions: 3 TX, P20, MCS16 |               |       |                  |                |                         |                |        |
| Chain1                            |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                              | 4400          | 1000  | 4400             | 45             | 6.0                     | 74.0           | -22.8  |
| 4500                              | 5150          | 1000  | 4999             | 51             | 6.0                     | 74.0           | -16.7  |
| 5350                              | 5460          | 1000  | 5365             | 57             | 6.0                     | 74.0           | -10.6  |
| Measurement uncertainty           |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Highest frequency: CH132up |                |       |                        |                         |                |                |        |
| Test conditions: 3 TX, P20 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.6                     | 41.8           | 1000  | 6.0                    | 6.0                     | 47.8           | 54.0           | -6.2   |
| 5354.1                     | 39.3           | 1000  | 6.0                    | 6.0                     | 45.3           | 54.0           | -8.7   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

#### Ant. group 2

| PK-measurement                    |               |       |                  |                |                         |                |        |
|-----------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Lowest frequency: CH100up         |               |       |                  |                |                         |                |        |
| Test conditions: 3 TX, P11, MCS16 |               |       |                  |                |                         |                |        |
| Chain1                            |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                              | 4400          | 1000  | 3673             | 45.4           | 9.0                     | 74.0           | -19.6  |
| 4500                              | 5150          | 1000  | 4999             | 49.1           | 9.0                     | 74.0           | -15.9  |
| 5350                              | 5460          | 1000  | 5459             | 53.3           | 9.0                     | 74.0           | -11.7  |
| Measurement uncertainty           |               |       |                  | ±3 dB          |                         |                |        |

### FCC-ID: LYHMPCIE1V1

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Lowest frequency: CH100up  |          |       |                 |                  |          |          |        |
| Test conditions: 3 TX, P11 |          |       |                 | Test results     |          |          |        |
| f                          | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 3673.2                     | 31.4     | 1000  | 9.0             | 9.0              | 40.4     | 54.0     | -13.6  |
| 4999.6                     | 38.3     | 1000  | 9.0             | 9.0              | 47.3     | 54.0     | -6.7   |
| 5460.0                     | 35.3     | 1000  | 9.0             | 9.0              | 44.3     | 54.0     | -9.7   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

| PK-measurement                    |        |       |                  |          |                  |          |        |
|-----------------------------------|--------|-------|------------------|----------|------------------|----------|--------|
| Middle frequency: CH108up         |        |       |                  |          |                  |          |        |
| Test conditions: 3 TX, P17, MCS16 |        |       |                  |          |                  |          |        |
| Chain1                            |        |       | Test results     |          |                  |          |        |
| Start f                           | Stop f | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                             | (MHz)  | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3600                              | 4400   | 1000  | 4400             | 45.2     | 9.0              | 74.0     | -19.8  |
| 4500                              | 5150   | 1000  | 4999             | 51.4     | 9.0              | 74.0     | -13.6  |
| 5350                              | 5460   | 1000  | 5450             | 55.2     | 9.0              | 74.0     | -9.8   |
| Measurement uncertainty           |        |       |                  | ±3 dB    |                  |          |        |

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Middle frequency: CH108up  |          |       |                 |                  |          |          |        |
| Test conditions: 3 TX, P17 |          |       |                 | Test results     |          |          |        |
| f                          | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 3699.9                     | 43.5     | 1000  | 9.0             | 9.0              | 52.5     | 54.0     | -1.5   |
| 4999.6                     | 41.6     | 1000  | 9.0             | 9.0              | 50.6     | 54.0     | -3.4   |
| 5425.6                     | 39.6     | 1000  | 9.0             | 9.0              | 48.6     | 54.0     | -5.4   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

| PK-measurement                    |        |       |                  |          |                  |          |        |
|-----------------------------------|--------|-------|------------------|----------|------------------|----------|--------|
| Highest frequency: CH132up        |        |       |                  |          |                  |          |        |
| Test conditions: 3 TX, P17, MCS16 |        |       |                  |          |                  |          |        |
| Chain1                            |        |       | Test results     |          |                  |          |        |
| Start f                           | Stop f | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                             | (MHz)  | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3699.9                            | 4400   | 1000  | 4400             | 45       | 9.0              | 74.0     | -19.8  |
| 4500                              | 5150   | 1000  | 4999             | 51       | 9.0              | 74.0     | -14.0  |
| 5350                              | 5460   | 1000  | 5355             | 55       | 9.0              | 74.0     | -9.6   |
| Measurement uncertainty           |        |       |                  | ±3 dB    |                  |          |        |

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Highest frequency: CH132up |          |       |                 |                  |          |          |        |
| Test conditions: 3 TX, P17 |          |       |                 | Test results     |          |          |        |
| f                          | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 3779.9                     | 41.6     | 1000  | 9.0             | 9.0              | 50.6     | 54.0     | -3.4   |
| 4999.6                     | 41.6     | 1000  | 9.0             | 9.0              | 50.6     | 54.0     | -3.4   |
| 5366.1                     | 38.3     | 1000  | 9.0             | 9.0              | 47.3     | 54.0     | -6.7   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |



### FCC-ID: LYHMPCIE1V1

Ant. group 3

| PK-measurement                    |               |       |                  |          |                  |          |        |
|-----------------------------------|---------------|-------|------------------|----------|------------------|----------|--------|
| Lowest frequency: CH100up         |               |       |                  |          |                  |          |        |
| Test conditions: 3 TX, P11, MCS16 |               |       |                  |          |                  |          |        |
| Chain1                            |               |       | Test results     |          |                  |          |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3600                              | 4400          | 1000  | 3673             | 45.4     | 14.2             | 74.0     | -14.4  |
| 4500                              | 5150          | 1000  | 4999             | 49.1     | 14.2             | 74.0     | -10.7  |
| 5350                              | 5460          | 1000  | 5459             | 53.3     | 14.2             | 74.0     | -6.5   |
| Measurement uncertainty           |               |       |                  | ±3 dB    |                  |          |        |

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Lowest frequency: CH100up  |          |       |                 |                  |          |          |        |
| Test conditions: 3 TX, P11 |          |       |                 |                  |          |          |        |
| <i>f</i>                   | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 3673.2                     | 31.4     | 1000  | 14.2            | 14.2             | 45.6     | 54.0     | -8.4   |
| 4999.6                     | 38.3     | 1000  | 14.2            | 14.2             | 52.5     | 54.0     | -1.5   |
| 5460.0                     | 35.3     | 1000  | 14.2            | 14.2             | 49.5     | 54.0     | -4.5   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

| PK-measurement                    |               |       |                  |          |                  |          |        |
|-----------------------------------|---------------|-------|------------------|----------|------------------|----------|--------|
| Middle frequency: CH108up         |               |       |                  |          |                  |          |        |
| Test conditions: 3 TX, P11, MCS16 |               |       |                  |          |                  |          |        |
| Chain1                            |               |       | Test results     |          |                  |          |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3600                              | 4400          | 1000  | 3727             | 46.0     | 14.2             | 74.0     | -13.8  |
| 4500                              | 5150          | 1000  | 4999             | 48.6     | 14.2             | 74.0     | -11.2  |
| 5350                              | 5460          | 1000  | 5453             | 51.2     | 14.2             | 74.0     | -8.6   |
| Measurement uncertainty           |               |       |                  | ±3 dB    |                  |          |        |

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Middle frequency: CH108up  |          |       |                 |                  |          |          |        |
| Test conditions: 3 TX, P11 |          |       |                 |                  |          |          |        |
| <i>f</i>                   | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 3699.9                     | 31.1     | 1000  | 14.2            | 14.2             | 45.3     | 54.0     | -8.7   |
| 4999.6                     | 39.8     | 1000  | 14.2            | 14.2             | 54.0     | 54.0     | 0.0    |
| 5420.8                     | 35.9     | 1000  | 14.2            | 14.2             | 50.1     | 54.0     | -3.9   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

### FCC-ID: LYHMPCIE1V1

| PK-measurement                    |               |       |                  |          |                         |          |        |
|-----------------------------------|---------------|-------|------------------|----------|-------------------------|----------|--------|
| Highest frequency: CH132up        |               |       |                  |          |                         |          |        |
| Test conditions: 3 TX, P11, MCS16 |               |       |                  |          |                         |          |        |
| Chain1                            |               |       | Test results     |          |                         |          |        |
| Start <i>f</i>                    | Stop <i>f</i> | RBW   | Maximum emission |          | <i>G</i> <sub>out</sub> | Limit    | Margin |
| (MHz)                             | (MHz)         | (kHz) | (MHz)            | (dBμV/m) | (dBi)                   | (dBμV/m) | (dB)   |
| 3600                              | 4400          | 1000  | 3780             | 45       | 14.2                    | 74.0     | -14.4  |
| 4500                              | 5150          | 1000  | 5000             | 49       | 14.2                    | 74.0     | -11.0  |
| 5350                              | 5460          | 1000  | 5352             | 51       | 14.2                    | 74.0     | -8.8   |
| Measurement uncertainty           |               |       |                  | ±3 dB    |                         |          |        |

| AV-measurement             |          |       |                        |                         |          |          |        |
|----------------------------|----------|-------|------------------------|-------------------------|----------|----------|--------|
| Highest frequency: CH132up |          |       |                        |                         |          |          |        |
| Test conditions: 3 TX, P11 |          |       |                        |                         |          |          |        |
| <i>f</i>                   | A        | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)                  | (dBi)                   | (dBμV/m) | (dBμV/m) | (dB)   |
| 3780.0                     | 39.6     | 1000  | 14.2                   | 14.2                    | 53.8     | 54.0     | -0.2   |
| 4999.6                     | 39.5     | 1000  | 14.2                   | 14.2                    | 53.7     | 54.0     | -0.3   |
| 5364.1                     | 34.3     | 1000  | 14.2                   | 14.2                    | 48.5     | 54.0     | -5.5   |
| Measurement uncertainty    |          |       |                        | ±3 dB                   |          |          |        |

#### 802.11h:

Ant. group 1

| PK-measurement                     |               |       |                  |          |                         |          |        |
|------------------------------------|---------------|-------|------------------|----------|-------------------------|----------|--------|
| Lowest frequency: CH100            |               |       |                  |          |                         |          |        |
| Test conditions: 1 TX, P17, 6 Mbps |               |       |                  |          |                         |          |        |
| Chain1                             |               |       | Test results     |          |                         |          |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |          | <i>G</i> <sub>out</sub> | Limit    | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBμV/m) | (dBi)                   | (dBμV/m) | (dB)   |
| 3600                               | 4400          | 1000  | 3666             | 42.5     | 6.0                     | 74.0     | -25.5  |
| 4500                               | 5150          | 1000  | 5000             | 47.9     | 6.0                     | 74.0     | -20.1  |
| 5350                               | 5460          | 1000  | 5459             | 60.2     | 6.0                     | 74.0     | -7.8   |
| Measurement uncertainty            |               |       |                  | ±3 dB    |                         |          |        |

| AV-measurement             |          |       |                        |                         |          |          |        |
|----------------------------|----------|-------|------------------------|-------------------------|----------|----------|--------|
| Lowest frequency: CH100    |          |       |                        |                         |          |          |        |
| Test conditions: 1 TX, P17 |          |       |                        |                         |          |          |        |
| <i>f</i>                   | E        | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)                  | (dBi)                   | (dBμV/m) | (dBμV/m) | (dB)   |
| 5460.0                     | 42.7     | 1000  | 6.0                    | 6.0                     | 48.7     | 54.0     | -5.3   |
| Measurement uncertainty    |          |       |                        | ±3 dB                   |          |          |        |

| PK-measurement                     |               |       |                  |          |                         |          |        |
|------------------------------------|---------------|-------|------------------|----------|-------------------------|----------|--------|
| Middle frequency: CH116            |               |       |                  |          |                         |          |        |
| Test conditions: 1 TX, P20, 6 Mbps |               |       |                  |          |                         |          |        |
| Chain1                             |               |       | Test results     |          |                         |          |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |          | <i>G</i> <sub>out</sub> | Limit    | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBμV/m) | (dBi)                   | (dBμV/m) | (dB)   |
| 3600                               | 4400          | 1000  | 3720             | 42.2     | 6.0                     | 74.0     | -25.8  |
| 4500                               | 5150          | 1000  | 5000             | 46.6     | 6.0                     | 74.0     | -21.4  |
| 5350                               | 5460          | 1000  | 5439             | 52.4     | 6.0                     | 74.0     | -15.6  |
| Measurement uncertainty            |               |       |                  | ±3 dB    |                         |          |        |

### FCC-ID: LYHMPCIE1V1

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Middle frequency: CH116    |          |       |                 |                  |          |          |        |
| Test conditions: 1 TX, P20 |          |       |                 | Test results     |          |          |        |
| <i>f</i>                   | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 5454.5                     | 40.7     | 1000  | 6.0             | 6.0              | 46.7     | 54.0     | -7.3   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

| PK-measurement                     |               |       |                  |          |                  |          |        |
|------------------------------------|---------------|-------|------------------|----------|------------------|----------|--------|
| Highest frequency: CH140           |               |       |                  |          |                  |          |        |
| Test conditions: 1 TX, P20, 6 Mbps |               |       |                  |          |                  |          |        |
| Chain1                             |               |       | Test results     |          |                  |          |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3600                               | 4400          | 1000  | 3800             | 40.5     | 6.0              | 74.0     | -27.5  |
| 4500                               | 5150          | 1000  | 4999             | 47.3     | 6.0              | 74.0     | -20.7  |
| 5350                               | 5460          | 1000  | 5376             | 55.5     | 6.0              | 74.0     | -12.5  |
| Measurement uncertainty            |               |       |                  | ±3 dB    |                  |          |        |

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Highest frequency: CH140   |          |       |                 |                  |          |          |        |
| Test conditions: 1 TX, P20 |          |       |                 | Test results     |          |          |        |
| <i>f</i>                   | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 5374.4                     | 44.0     | 1000  | 6.0             | 6.0              | 50.0     | 54.0     | -4.0   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

Ant. group 2

| AV-measurement                     |               |       |                  |          |                  |          |        |
|------------------------------------|---------------|-------|------------------|----------|------------------|----------|--------|
| Lowest frequency: CH100            |               |       |                  |          |                  |          |        |
| Test conditions: 1 TX, P17, 6 Mbps |               |       |                  |          |                  |          |        |
| Chain1                             |               |       | Test results     |          |                  |          |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3600                               | 4400          | 1000  | 3666             | 42.5     | 9.0              | 74.0     | -22.5  |
| 4500                               | 5150          | 1000  | 5000             | 47.9     | 9.0              | 74.0     | -17.1  |
| 5350                               | 5460          | 1000  | 5459             | 60.2     | 9.0              | 74.0     | -4.8   |
| Measurement uncertainty            |               |       |                  | ±3 dB    |                  |          |        |

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Lowest frequency: CH100    |          |       |                 |                  |          |          |        |
| Test conditions: 1 TX, P17 |          |       |                 | Test results     |          |          |        |
| <i>f</i>                   | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.6                     | 42.2     | 1000  | 9.0             | 9.0              | 51.2     | 54.0     | -2.8   |
| 5460.0                     | 42.7     | 1000  | 9.0             | 9.0              | 51.7     | 54.0     | -2.3   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

### FCC-ID: LYHMPCIE1V1

| PK-measurement                     |               |       |                  |                |                         |                |        |
|------------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Middle frequency: CH116            |               |       |                  |                |                         |                |        |
| Test conditions: 1 TX, P17, 6 Mbps |               |       |                  |                |                         |                |        |
| Chain1                             |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                               | 4400          | 1000  | 3720             | 42.5           | 9.0                     | 74.0           | -22.5  |
| 4500                               | 5150          | 1000  | 5000             | 46.9           | 9.0                     | 74.0           | -18.1  |
| 5350                               | 5460          | 1000  | 5428             | 52.3           | 9.0                     | 74.0           | -12.7  |
| Measurement uncertainty            |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Middle frequency: CH116    |                |       |                        |                         |                |                |        |
| Test conditions: 1 TX, P17 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.6                     | 41.9           | 1000  | 9.0                    | 9.0                     | 50.9           | 54.0           | -3.1   |
| 5454.5                     | 40.6           | 1000  | 9.0                    | 9.0                     | 49.6           | 54.0           | -4.4   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

| PK-measurement                     |               |       |                  |                |                         |                |        |
|------------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Highest frequency: CH140           |               |       |                  |                |                         |                |        |
| Test conditions: 1 TX, P17, 6 Mbps |               |       |                  |                |                         |                |        |
| Chain1                             |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                               | 4400          | 1000  | 3800             | 39.9           | 9.0                     | 74.0           | -25.1  |
| 4500                               | 5150          | 1000  | 4999             | 47.6           | 9.0                     | 74.0           | -17.4  |
| 5350                               | 5460          | 1000  | 5377             | 55.1           | 9.0                     | 74.0           | -9.9   |
| Measurement uncertainty            |               |       |                  | ±3 dB          |                         |                |        |

| AV-measurement             |                |       |                        |                         |                |                |        |
|----------------------------|----------------|-------|------------------------|-------------------------|----------------|----------------|--------|
| Highest frequency: CH140   |                |       |                        |                         |                |                |        |
| Test conditions: 1 TX, P17 |                |       |                        |                         |                |                |        |
| <i>f</i>                   | A              | RBW   | <i>G</i> <sub>in</sub> | <i>G</i> <sub>out</sub> | E              | AV Limit       | Margin |
| (MHz)                      | (dB $\mu$ V/m) | (kHz) | (dBi)                  | (dBi)                   | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 4999.6                     | 42.0           | 1000  | 9.0                    | 9.0                     | 51.0           | 54.0           | -3.0   |
| 5374.4                     | 44.1           | 1000  | 9.0                    | 9.0                     | 53.1           | 54.0           | -0.9   |
| Measurement uncertainty    |                |       |                        | ±3 dB                   |                |                |        |

Ant. group 3

| PK-measurement                     |               |       |                  |                |                         |                |        |
|------------------------------------|---------------|-------|------------------|----------------|-------------------------|----------------|--------|
| Lowest frequency: CH100            |               |       |                  |                |                         |                |        |
| Test conditions: 1 TX, P11, 6 Mbps |               |       |                  |                |                         |                |        |
| Chain1                             |               |       | Test results     |                |                         |                |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |                | <i>G</i> <sub>out</sub> | Limit          | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dBi)                   | (dB $\mu$ V/m) | (dB)   |
| 3600                               | 4400          | 1000  | 3666             | 43.0           | 14.2                    | 74.0           | -16.8  |
| 4500                               | 5150          | 1000  | 4999             | 45.2           | 14.2                    | 74.0           | -14.6  |
| 5350                               | 5460          | 1000  | 5369             | 51.0           | 14.2                    | 74.0           | -8.8   |
| Measurement uncertainty            |               |       |                  | ±3 dB          |                         |                |        |

### FCC-ID: LYHMPCIE1V1

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Lowest frequency: CH100    |          |       |                 |                  |          |          |        |
| Test conditions: 1 TX, P11 |          |       |                 | Test results     |          |          |        |
| <i>f</i>                   | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 3666.6                     | 40.0     | 1000  | 14.2            | 10.0             | 50.0     | 54.0     | -4.0   |
| 4999.6                     | 37.6     | 1000  | 14.2            | 14.2             | 51.8     | 53.0     | -1.2   |
| 5459.7                     | 38.4     | 1000  | 14.2            | 14.2             | 52.6     | 54.0     | -1.4   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

| PK-measurement                     |               |       |                  |          |                  |          |        |
|------------------------------------|---------------|-------|------------------|----------|------------------|----------|--------|
| Middle frequency: CH116            |               |       |                  |          |                  |          |        |
| Test conditions: 1 TX, P11, 6 Mbps |               |       |                  |          |                  |          |        |
| Chain1                             |               |       | Test results     |          |                  |          |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3600                               | 4400          | 1000  | 3720             | 42.5     | 14.2             | 74.0     | -17.3  |
| 4500                               | 5150          | 1000  | 5000             | 47.6     | 14.2             | 74.0     | -12.2  |
| 5350                               | 5460          | 1000  | 5433             | 51.3     | 14.2             | 74.0     | -8.5   |
| Measurement uncertainty            |               |       |                  | ±3 dB    |                  |          |        |

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Middle frequency: CH116    |          |       |                 |                  |          |          |        |
| Test conditions: 1 TX, P11 |          |       |                 | Test results     |          |          |        |
| <i>f</i>                   | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 3719.9                     | 43.2     | 1000  | 14.2            | 10.0             | 53.2     | 54.0     | -0.8   |
| 4999.6                     | 41.0     | 1000  | 14.2            | 14.2             | 55.2     | 54.0     | 1.2    |
| 5454.2                     | 37.1     | 1000  | 14.2            | 14.2             | 51.3     | 54.0     | -2.7   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

Note: The emission failed will be re-measured radiated and there assessed.

| PK-measurement                     |               |       |                  |          |                  |          |        |
|------------------------------------|---------------|-------|------------------|----------|------------------|----------|--------|
| Highest frequency: CH140           |               |       |                  |          |                  |          |        |
| Test conditions: 1 TX, P11, 6 Mbps |               |       |                  |          |                  |          |        |
| Chain1                             |               |       | Test results     |          |                  |          |        |
| Start <i>f</i>                     | Stop <i>f</i> | RBW   | Maximum emission |          | G <sub>out</sub> | Limit    | Margin |
| (MHz)                              | (MHz)         | (kHz) | (MHz)            | (dBμV/m) | (dBi)            | (dBμV/m) | (dB)   |
| 3600                               | 4400          | 1000  | 3800             | 40.4     | 14.2             | 74.0     | -19.4  |
| 4500                               | 5150          | 1000  | 5000             | 47.7     | 14.2             | 74.0     | -12.1  |
| 5350                               | 5460          | 1000  | 5383             | 53.3     | 14.2             | 74.0     | -6.5   |
| Measurement uncertainty            |               |       |                  | ±3 dB    |                  |          |        |

### FCC-ID: LYHMPCIE1V1

| AV-measurement             |          |       |                 |                  |          |          |        |
|----------------------------|----------|-------|-----------------|------------------|----------|----------|--------|
| Highest frequency: CH140   |          |       |                 |                  |          |          |        |
| Test conditions: 1 TX, P11 |          |       |                 | Test results     |          |          |        |
| f                          | A        | RBW   | G <sub>in</sub> | G <sub>out</sub> | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           | (dBi)            | (dBμV/m) | (dBμV/m) | (dB)   |
| 3800.0                     | 39.3     | 1000  | 14.2            | 14.2             | 53.5     | 54.0     | -0.5   |
| 4999.6                     | 43.9     | 1000  | 14.2            | 14.2             | 58.1     | 54.0     | 4.1    |
| 5378.8                     | 39.7     | 1000  | 14.2            | 14.2             | 53.9     | 54.0     | -0.1   |
| Measurement uncertainty    |          |       |                 | ±3 dB            |          |          |        |

Note: The emission failed will be re-measured radiated and there assessed.

Limit according to FCC Part 15, Section 15.407(d):

Attenuation below the general limits specified in Section 15.209(a) is not required.

Calculation formula for a distance 3 m:

$$E \text{ (dB}\mu\text{V/m)} = \text{EIRP (dBm)} + 95.2;$$

E: Field strength;

| Frequency | General limit radiated | PK limit | AV limit |
|-----------|------------------------|----------|----------|
| (MHz)     | (μV/m)                 | (dBμV/m) | (dBμV/m) |
| Above 960 | 500                    | 74.0     | 54.0     |

The requirements are **FULFILLED**.

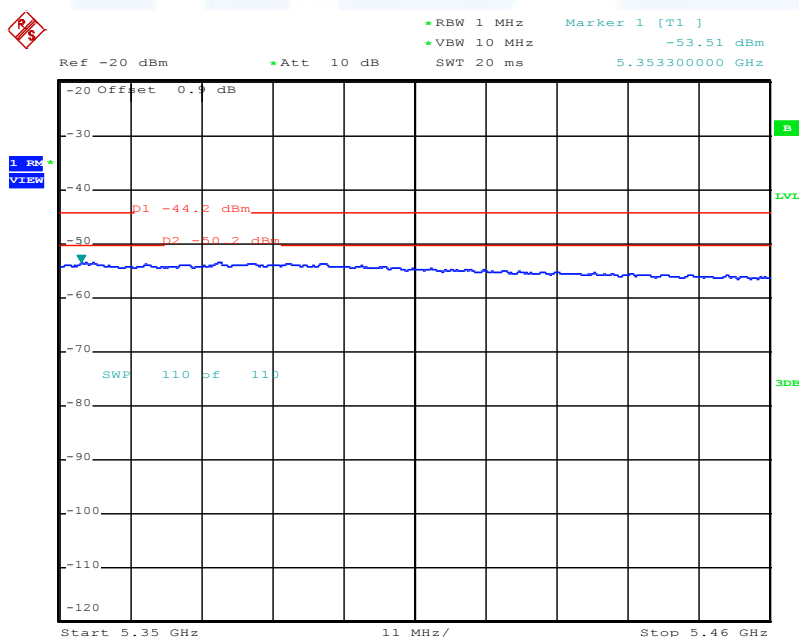
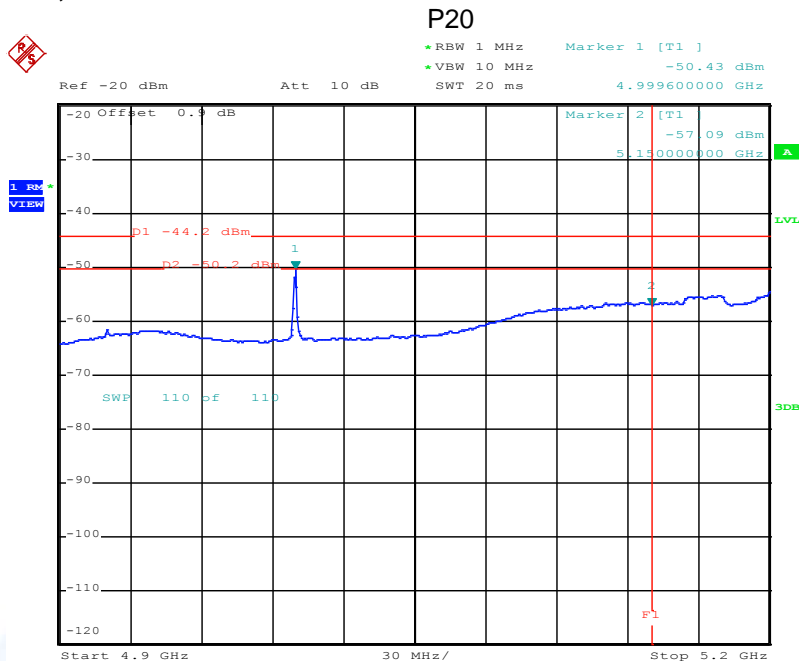
**Remarks:** For detailed test results please see the following test protocols. Only the worst cases of the plots are listed.

**FCC-ID: LYHMPCIE1V1**

**5.8.6 Test protocols SEC in restricted bands, AV measurements**

**Frequency range 5.25 GHz to 5.35 GHz:**

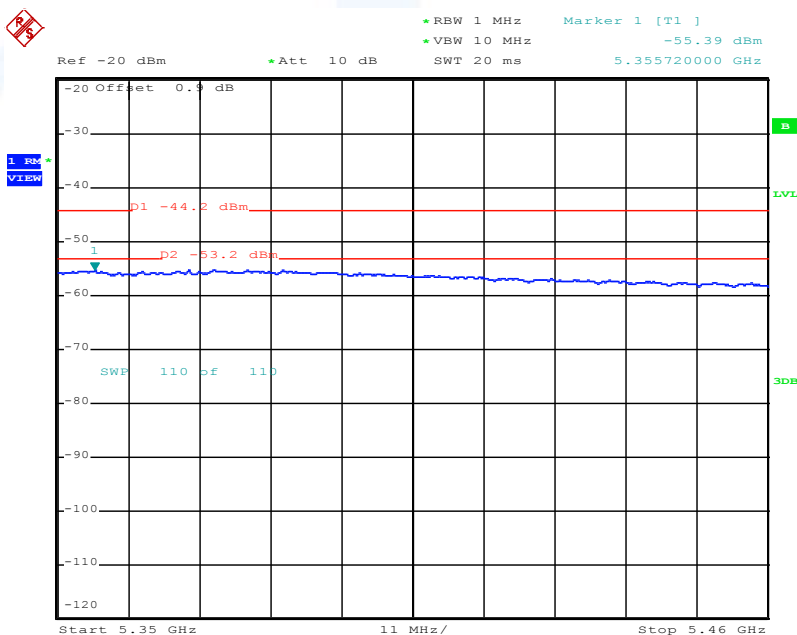
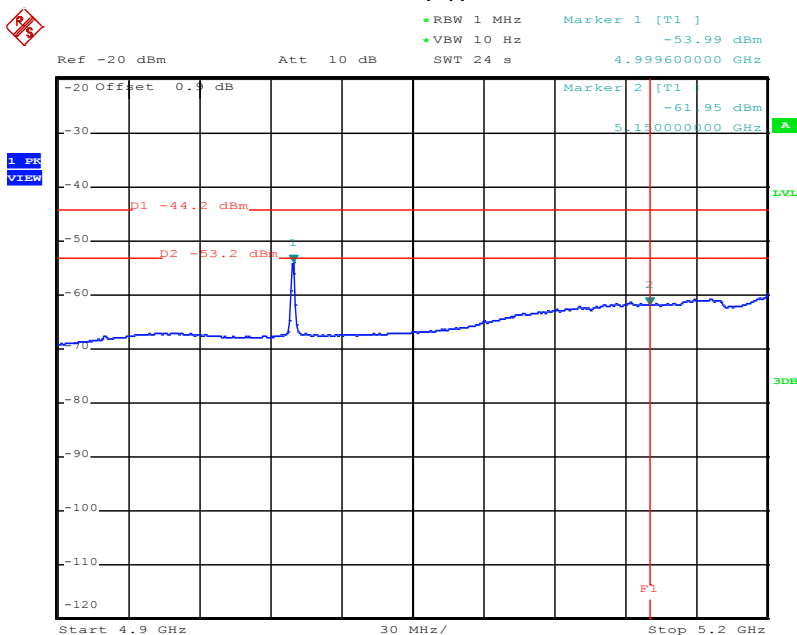
**5.8.6.1 HT20, CH52, Port1**



Note: The limits in the plots are the general field strength limits 54 dBμV/m calculated for the conducted measurement using the formula according OET 789033 D01, EIRP limit = 54 dBμV/m + 95.2 = 41.2 dBm; The final limit shown is calculated 41.2 dBm + 3 dB (for 2 port adjustment) + antenna gain;

**FCC-ID: LYHMPCIE1V1**

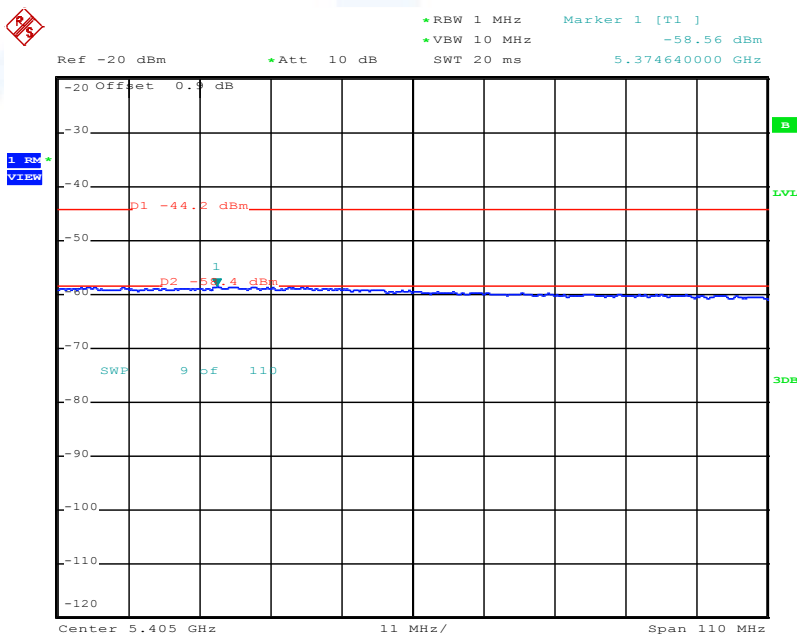
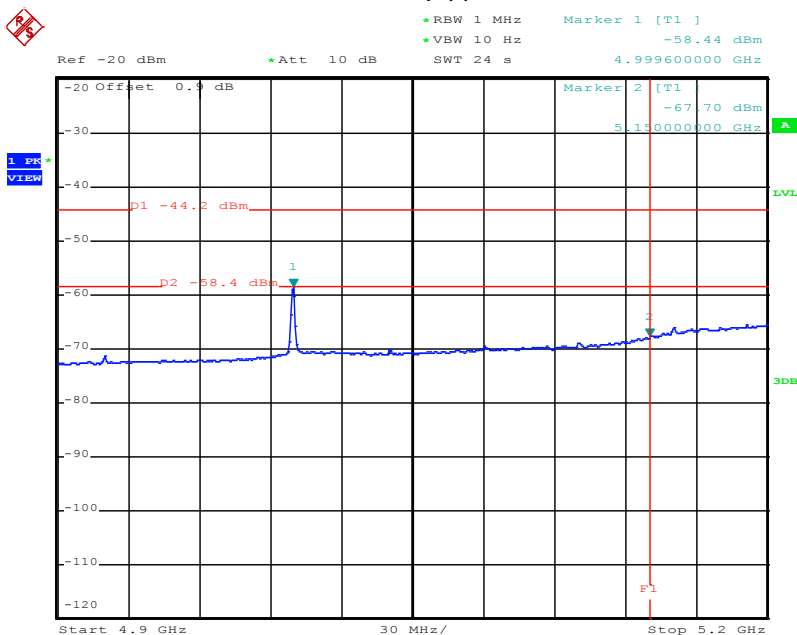
**P17**





**FCC-ID: LYHMPDIE1V1**

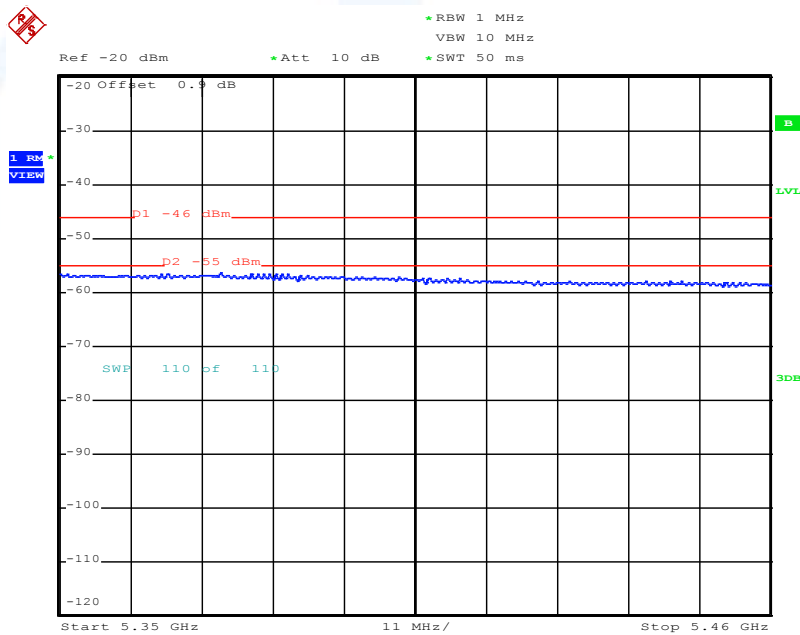
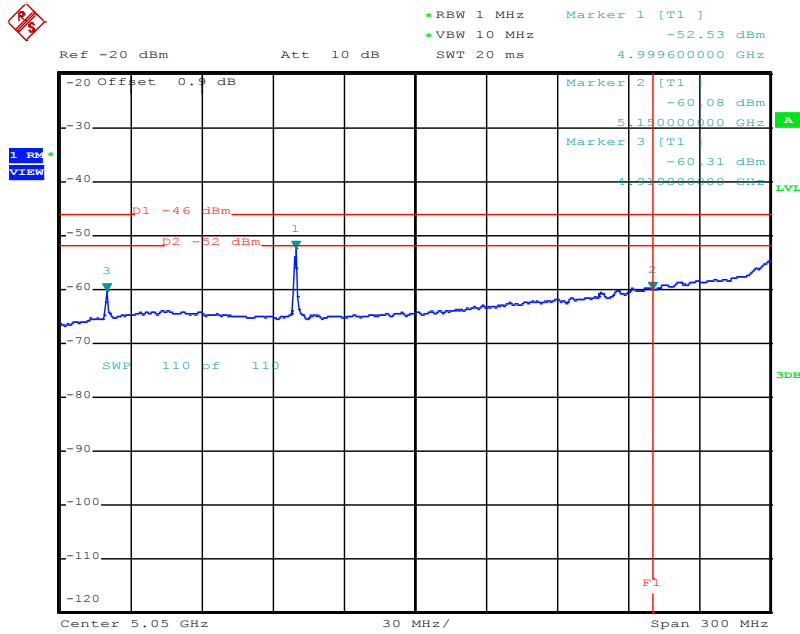
P11



**FCC-ID: LYHMPCIE1V1**

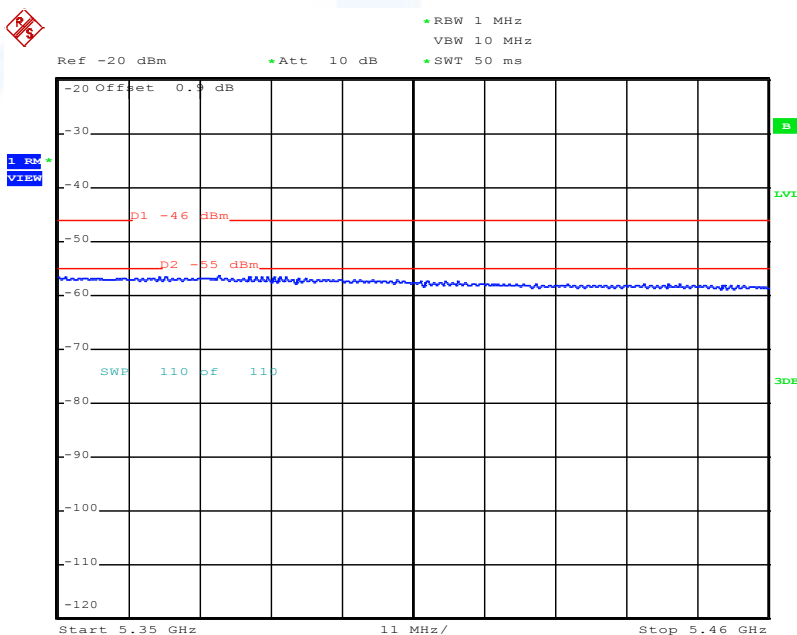
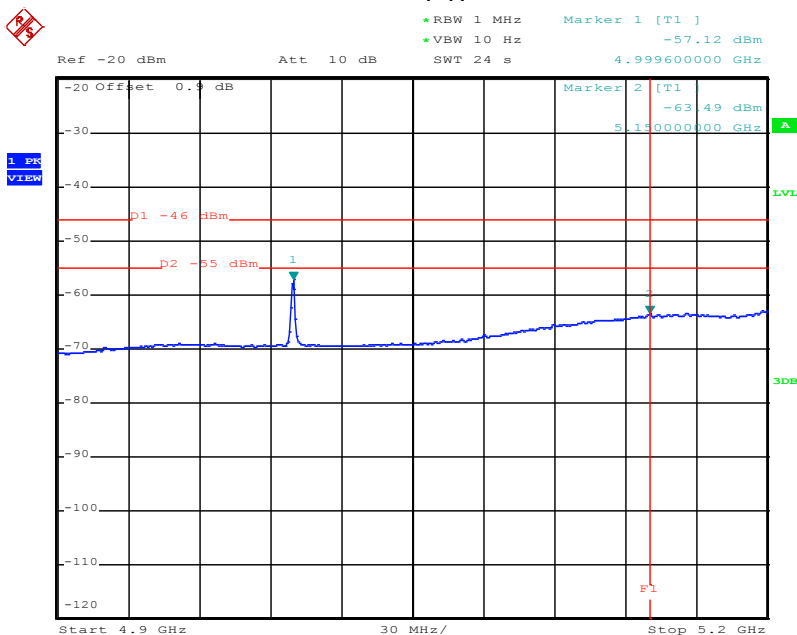
**5.8.6.2 HT40, CH52up, Port1**

P20

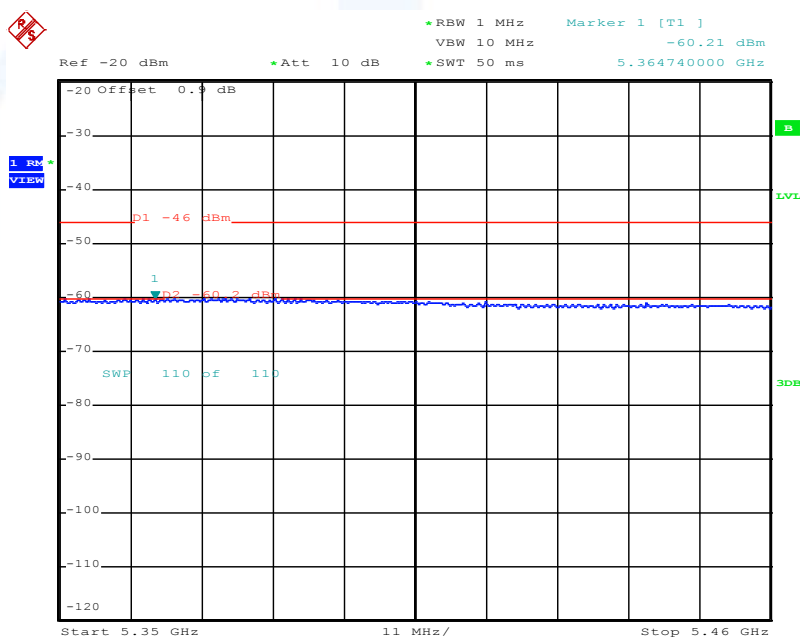
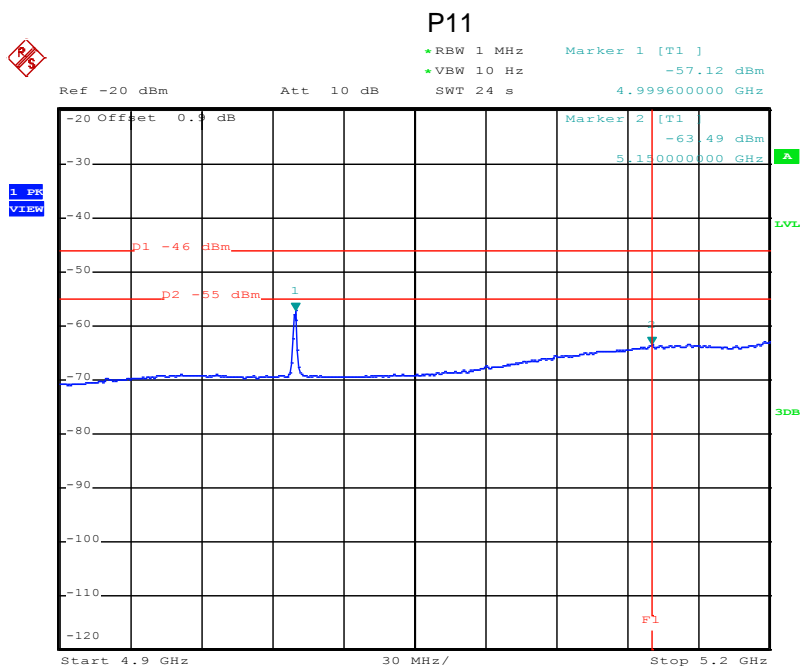


**FCC-ID: LYHMPCIE1V1**

P17



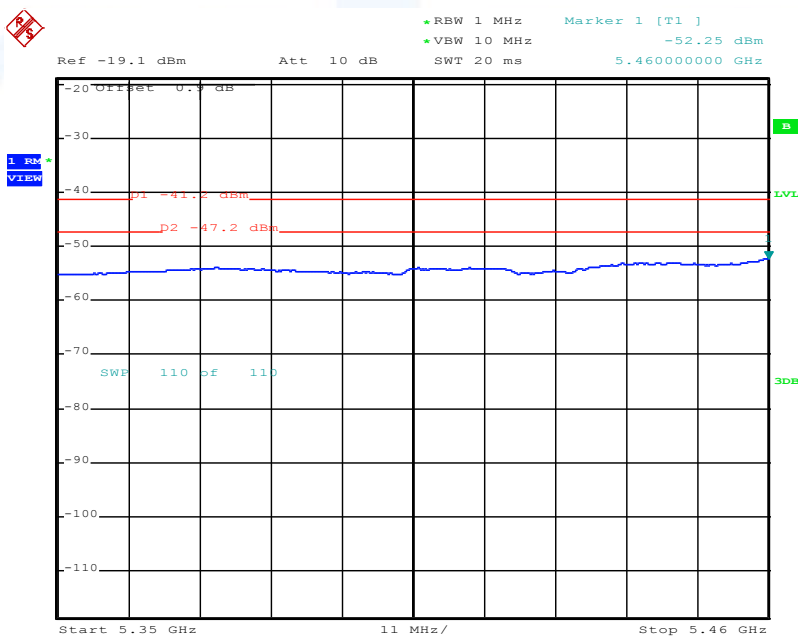
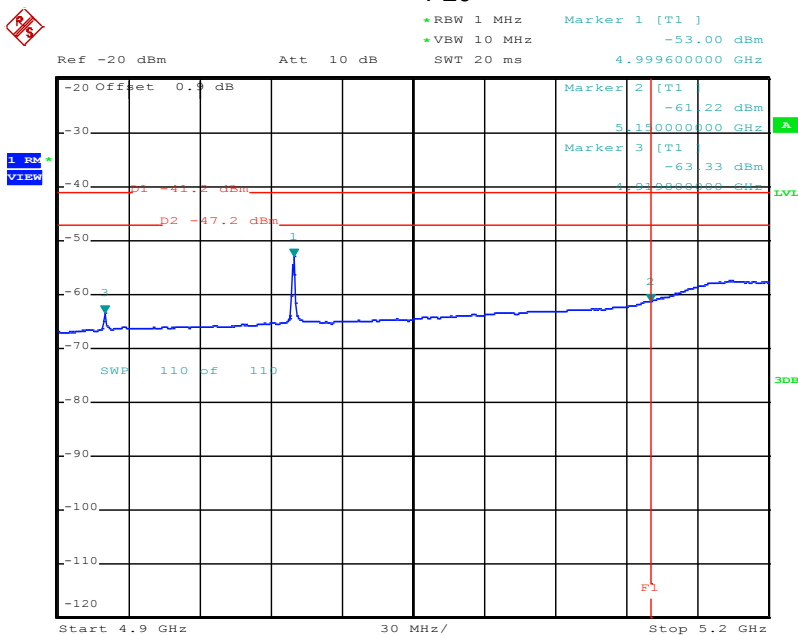
**FCC-ID: LYHMPCIE1V1**



**FCC-ID: LYHMPCIE1V1**

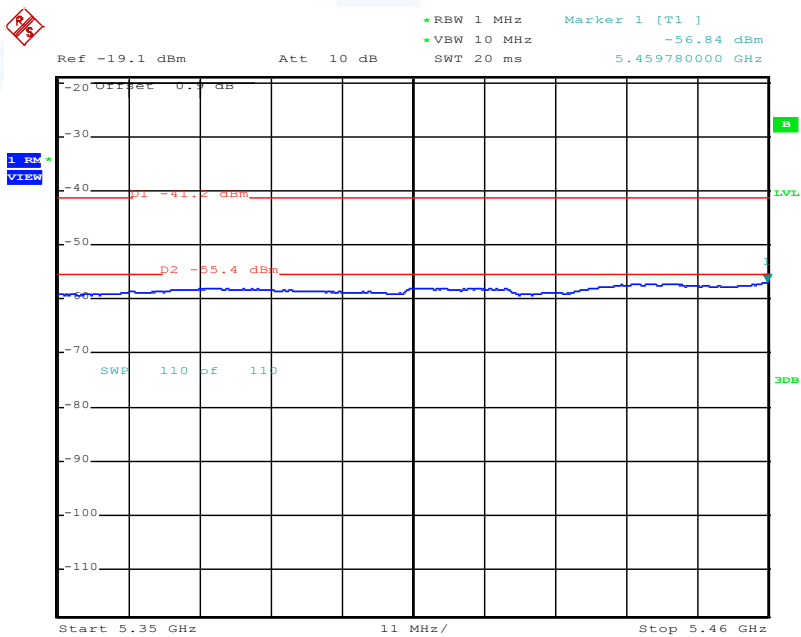
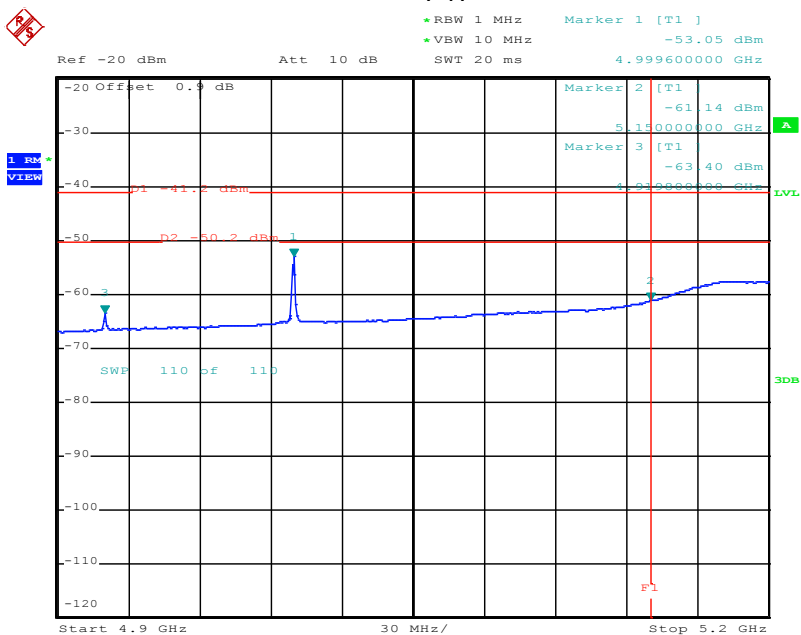
**5.8.6.3 802.11h, CH52, Port1**

**P20**



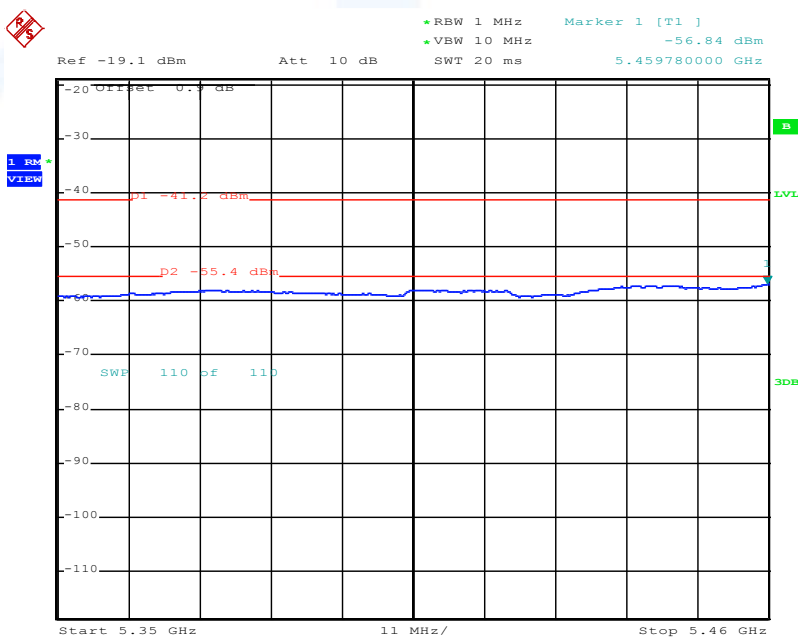
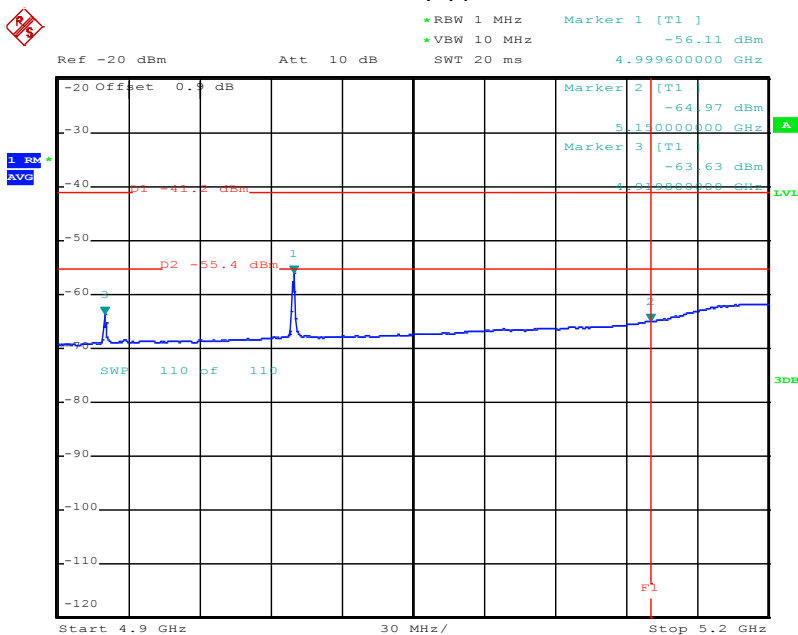
**FCC-ID: LYHMPCIE1V1**

**P17**



**FCC-ID: LYHMPCIE1V1**

P11

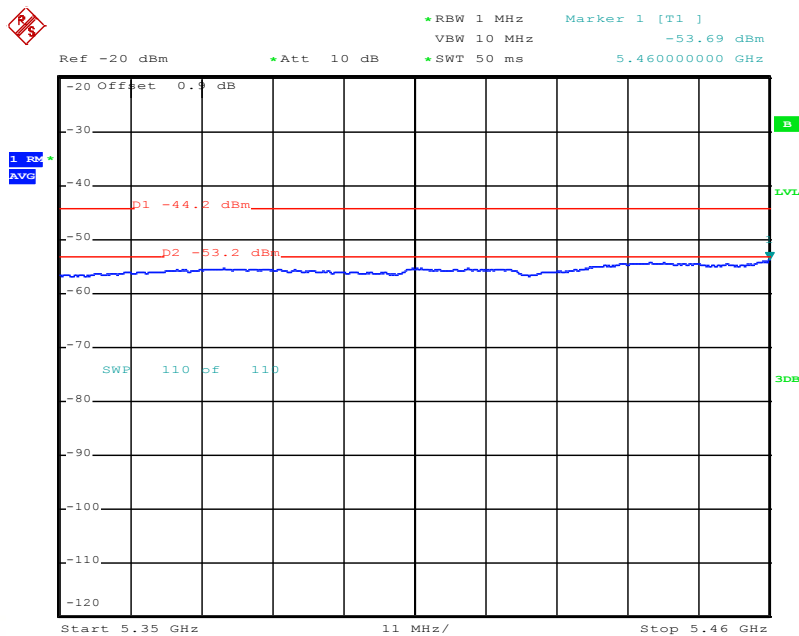


**FCC-ID: LYHMPCIE1V1**

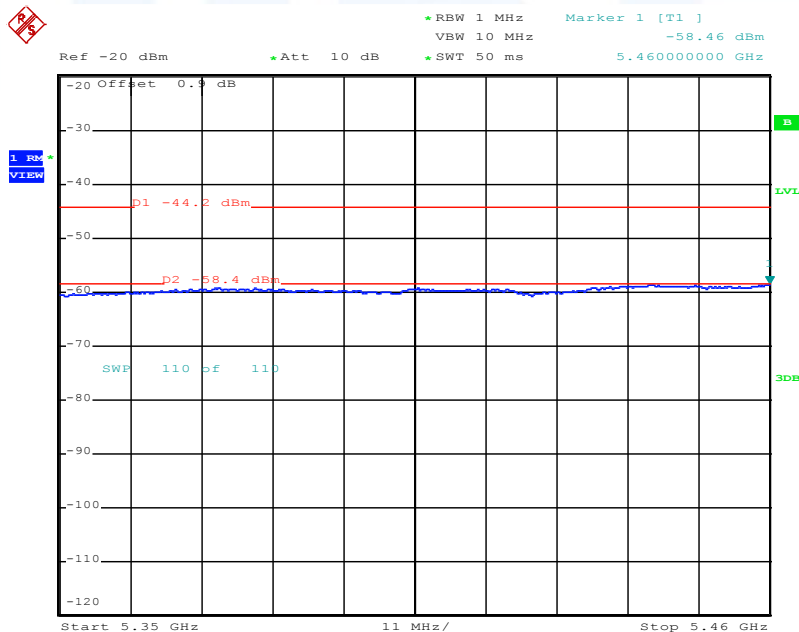
**Frequency range 5470 – 5725 MHz:**

**5.8.6.4 HT20, CH100, Port1**

**P17**



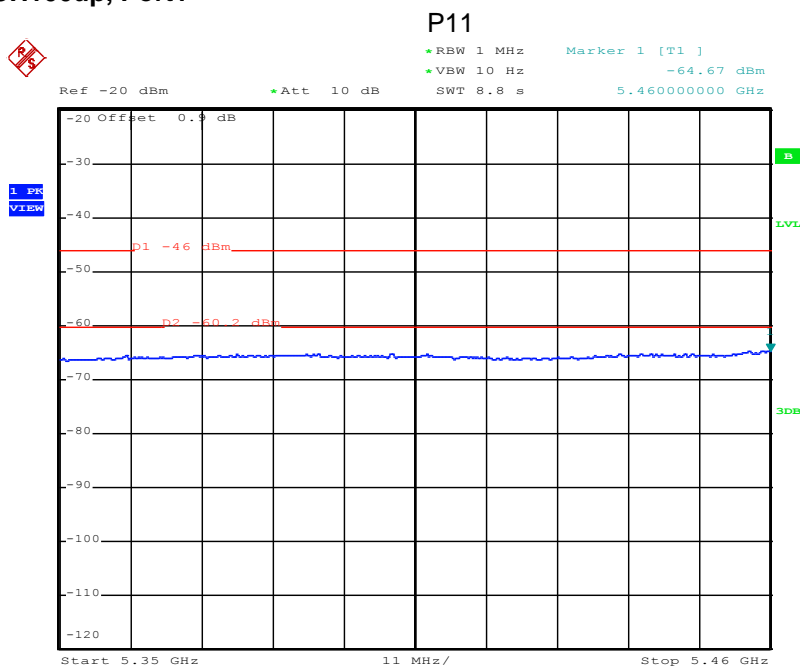
**P11**



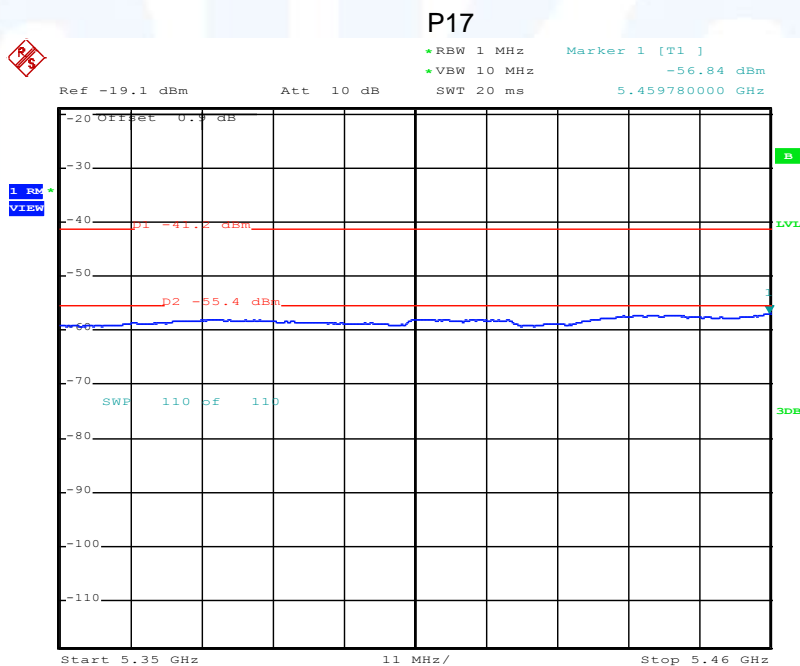


**FCC-ID: LYHMPCIE1V1**

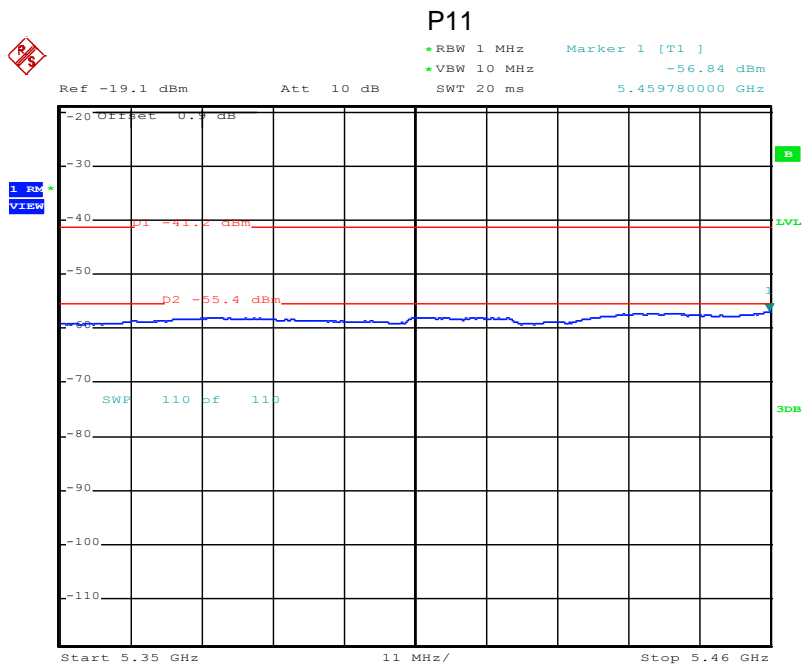
**5.8.6.5 HT40, CH100up, Port1**



**5.8.6.6 802.11a, CH100, Port1**



**FCC-ID: LYHMPCIE1V1**



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**FCC-ID: LYHMPCIE1V1**

**5.9 Spurious emissions radiated (re-measurement)**

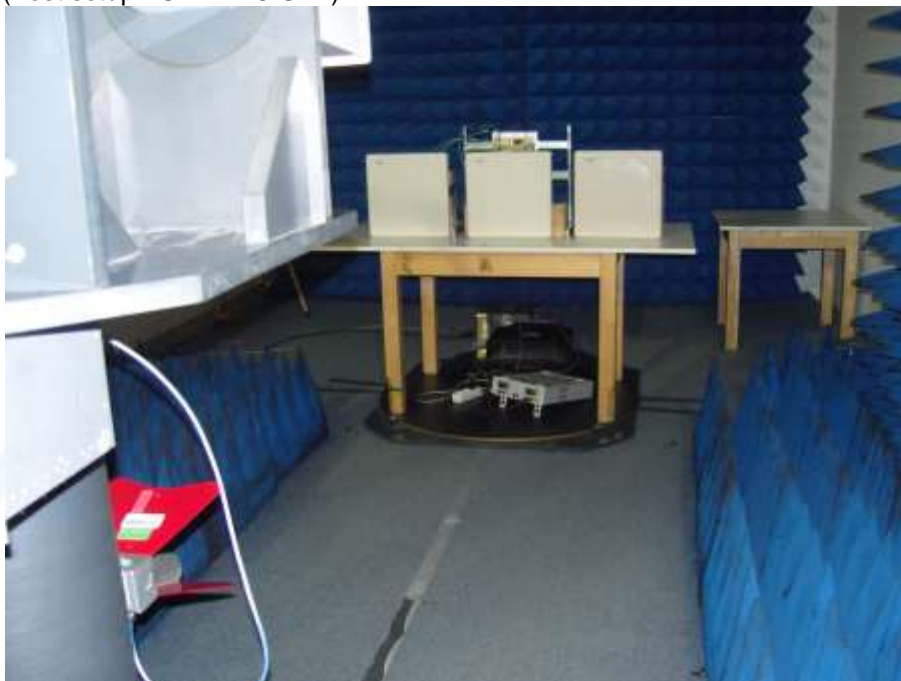
For test instruments and accessories used see section 6 Part **SER 3**.

**5.9.1 Description of the test location**

Test location: Anechoic chamber 2  
Test distance: 3 m

**5.9.2 Photo documentation of the test set-up**

Anechoic chamber (Test setup 1GHz – 18 GHz)



**5.9.3 Applicable standard**

According to FCC Part 15, Section 15.407(b):

**5.9.4 Description of Measurement**

The radiated power of the spurious emission from the EUT is measured in a test setup following the procedures set out in ANSI 63.10. The emission level of the EUT in peak mode complies with the general peak limit tested under item 5.8 conducted according OET 789033 D01. The emission level of the EUT in averaging mode will be tested under radiated conditions because of failing under conducted conditions and calculating the EIRP. The radiated measurement takes precedence and will determine about the EUT will be compliant.

Spectrum analyser settings  $f > 1$  GHz:

|                 |             |                     |                  |              |
|-----------------|-------------|---------------------|------------------|--------------|
| PK: RBW: 1 MHz, | VBW: 3 MHz, | Detector: Max peak, | Trace: Max hold, | Sweep: Auto; |
| AV: RBW: 1 MHz, | VBW: 10 Hz, | Detector: Max peak, | Trace: Max hold, | Sweep: Auto; |

**FCC-ID: LYHMPCIE1V1**

**5.9.5 Test result**

**Frequency band: 5.47 GHz to 5.725 GHz**

**802.11h:**

Ant. group 3

Restricted band 4500 MHz – 5150 MHz

| AV-measurement             |          |       |                 |              |          |          |        |
|----------------------------|----------|-------|-----------------|--------------|----------|----------|--------|
| Middle frequency: CH116    |          |       |                 |              |          |          |        |
| Test conditions: 1 TX, P11 |          |       |                 | Test results |          |          |        |
| f                          | A        | RBW   | G <sub>in</sub> |              | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           |              | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.5                     | 49.0     | 1000  | 14.2            |              | 49.0     | 54.0     | -5.0   |
| Measurement uncertainty    |          |       |                 | ±3 dB        |          |          |        |

| AV-measurement             |          |       |                 |              |          |          |        |
|----------------------------|----------|-------|-----------------|--------------|----------|----------|--------|
| Highest frequency: CH140   |          |       |                 |              |          |          |        |
| Test conditions: 1 TX, P11 |          |       |                 | Test results |          |          |        |
| f                          | A        | RBW   | G <sub>in</sub> |              | E        | AV Limit | Margin |
| (MHz)                      | (dBμV/m) | (kHz) | (dBi)           |              | (dBμV/m) | (dBμV/m) | (dB)   |
| 4999.6                     | 51.7     | 1000  | 14.2            |              | 51.7     | 54.0     | -2.3   |
| Measurement uncertainty    |          |       |                 | ±3 dB        |          |          |        |

Radiated limits according to FCC Part 15 Section 15.209(a) for spurious emissions which fall in restricted bands:

| Frequency (MHz) | Field strength of spurious emissions |          | Measurement distance (metres) |
|-----------------|--------------------------------------|----------|-------------------------------|
|                 | (μV/m)                               | dB(μV/m) |                               |
| 0.009-0.490     | 2400/F (kHz)                         |          | 300                           |
| 0.490-1.705     | 24000/F (kHz)                        |          | 30                            |
| 1.705-30        | 30                                   | 29.5     | 30                            |
| 30-88           | 100                                  | 40       | 3                             |
| 88-216          | 150                                  | 43.5     | 3                             |
| 216-960         | 200                                  | 46       | 3                             |
| Above 960       | 500                                  | 54       | 3                             |

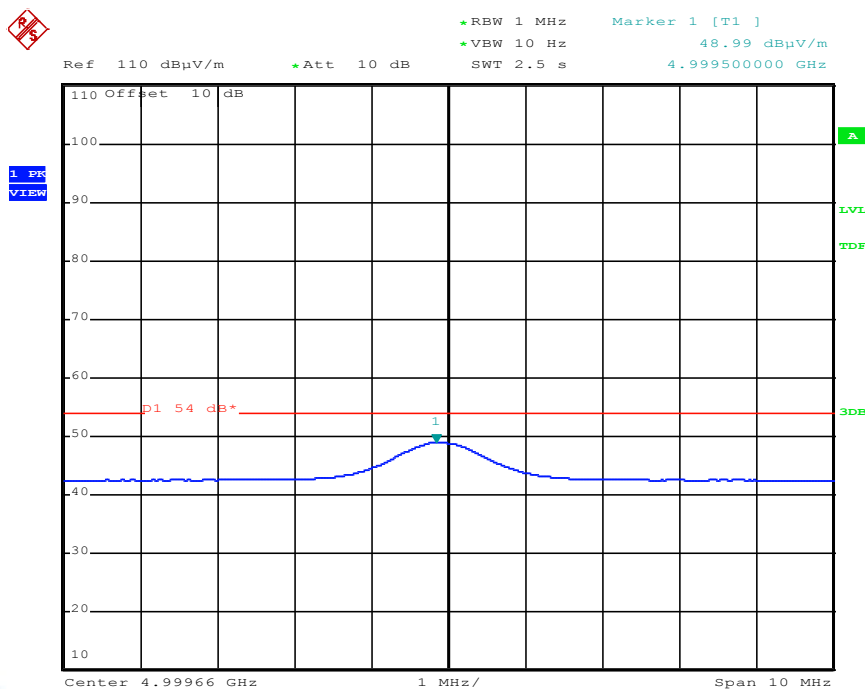
The requirements are **FULFILLED**.

**Remarks:** For detailed test results please see the following test protocols. Only the worst cases of the plots are listed.

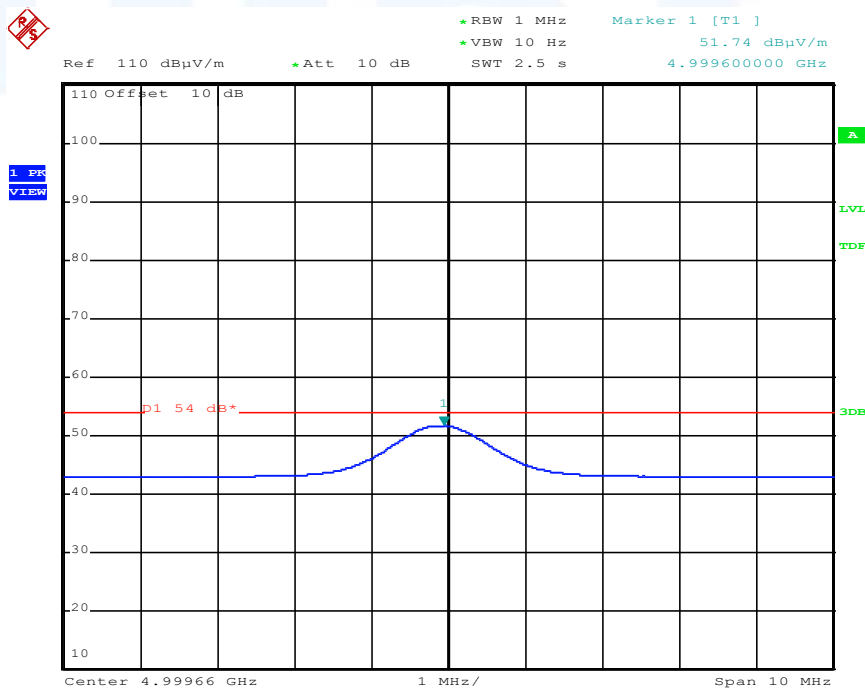
**FCC-ID: LYHMPCIE1V1**

**5.9.6 Test protocols SER in restricted bands, AV measurements**

CH116, P11



CH140, P11



**FCC-ID: LYHMPCIE1V1**

**5.10 Spurious emissions radiated (cabinet radiation)**

For test instruments and accessories used see section 6 Part **SER 1, SER 2, SER 3.**

**5.10.1 Description of the test location**

Test location: OATS 1  
Test location: Anechoic chamber 2  
Test distance: 3 m

**5.10.2 Photo documentation of the test set-up**

Open area test site (Test setup for 9 kHz – 30 MHz)



Open area test site (Test setup for 30 MHz – 300 MHz)



**FCC-ID: LYHMPCIE1V1**

Open area test site (Test setup for 300 MHz – 1000 MHz)



Anechoic chamber (Test setup 1GHz – 18 GHz)





**FCC-ID: LYHMPCIE1V1**

Anechoic chamber (Test setup for 18 GHz – 40 GHz)



**5.10.3 Applicable standard**

According to FCC Part 15, Section 15.407(b):

**5.10.4 Description of Measurement**

The radiated power of the spurious emission from the EUT cabinet is measured with terminated antenna connector in a test setup following the procedures set out in OET 789033 D01. If the emission level of the EUT in peak mode complies with the general average limit then testing will be stopped and peak values of the EUT will be reported, otherwise the emission will be measured in average mode again and also reported.

EMI receiver settings:  $f < 1$  GHz:

|                          |               |
|--------------------------|---------------|
| 9 kHz < $f$ < 150 kHz:   | RBW: 200 Hz;  |
| 150 kHz < $f$ < 30 MHz:  | RBW: 9 kHz;   |
| 30 MHz < $f$ < 1000 MHz: | RBW: 120 kHz; |

Spectrum analyser settings  $f > 1$  GHz:

|                 |              |                     |                  |              |
|-----------------|--------------|---------------------|------------------|--------------|
| PK: RBW: 1 MHz, | VBW: 3 MHz,  | Detector: Max peak, | Trace: Max hold, | Sweep: Auto; |
| AV: RBW: 1 MHz, | VBW: 10 MHz, | Detector: RMS,      | Trace: Max hold, | Sweep: Auto; |

**5.10.5 Test result**

**5.10.5.1 Frequency band: 5.25 GHz to 5.35 GHz**

**9 kHz <  $f$  < 1000 MHz:**

For all kinds of modulation no emission could be detected within 20 dB to the limit. Emissions are attenuated more than 20 dB below the permissible value need not to be reported.



### FCC-ID: LYHMPCIE1V1

1000 MHz < f < 40000 MHz:

HT20, Port1 + Port2

| Lowest frequency: <b>5260 MHz</b> |             |      |                  |      |       |        |
|-----------------------------------|-------------|------|------------------|------|-------|--------|
| Highest power setting : P20       |             |      |                  |      | EIRP  |        |
| Test results                      |             |      |                  |      |       |        |
| Start frequ.                      | Stop frequ. | RBW  | Maximum emission |      | Limit | Margin |
| 1000                              | 4000        | 1000 | 2002.0           | 50.0 | 74.0  | -24.0  |
| 4000                              | 5250        | 1000 | 4992.0           | 52.0 | 74.0  | -22.0  |
| 5350                              | 12000       | 1000 | 11808.0          | 50.5 | 74.0  | -23.5  |
| 12000                             | 18000       | 1000 | -                | < 53 | 74.0  | < -21  |
| 18000                             | 40000       | 1000 | -                | < 50 | 74.0  | < -24  |
| Measurement uncertainty           |             |      |                  |      | ±6 dB |        |

| Middle frequency: <b>5280 MHz</b> |             |       |                  |          |          |        |
|-----------------------------------|-------------|-------|------------------|----------|----------|--------|
| Highest power setting : P20       |             |       |                  |          | EIRP     |        |
| Test results                      |             |       |                  |          |          |        |
| Start frequ.                      | Stop frequ. | RBW   | Maximum emission |          | Limit    | Margin |
| (MHz)                             | (MHz)       | (kHz) | (MHz)            | (dBµV/m) | (dBµV/m) | (dB)   |
| 1000                              | 4000        | 1000  | 2002.0           | 49.5     | 74.0     | -24.5  |
| 4000                              | 5250        | 1000  | 4992.0           | 52.7     | 74.0     | -21.3  |
| 5350                              | 12000       | 1000  | 11760.0          | 51.7     | 74.0     | -22.3  |
| 12000                             | 18000       | 1000  | -                | < 53     | 74.0     | < -21  |
| 18000                             | 40000       | 1000  | -                | < 50     | 74.0     | < -24  |
| Measurement uncertainty           |             |       |                  |          | ±6 dB    |        |

| Highest frequency: <b>5320 MHz</b> |             |       |                  |          |          |        |
|------------------------------------|-------------|-------|------------------|----------|----------|--------|
| Highest power setting : P20        |             |       |                  |          | EIRP     |        |
| Test results                       |             |       |                  |          |          |        |
| Start frequ.                       | Stop frequ. | RBW   | Maximum emission |          | Limit    | Margin |
| (MHz)                              | (MHz)       | (kHz) | (MHz)            | (dBµV/m) | (dBµV/m) | (dB)   |
| 1000                               | 4000        | 1000  | 2002.0           | 50.0     | 74.0     | -24.0  |
| 4000                               | 5250        | 1000  | 4992.0           | 52.8     | 74.0     | -21.2  |
| 5350                               | 12000       | 1000  | 11660.0          | 51.2     | 74.0     | -22.8  |
| 12000                              | 18000       | 1000  | 17268.0          | 54.2     | 74.0     | -19.8  |
| 18000                              | 40000       | 1000  | -                | < 50     | 74.0     | < -24  |
| Measurement uncertainty            |             |       |                  |          | ±6 dB    |        |

| Highest power setting : P20 |             |       |                  |          | EIRP     |        |
|-----------------------------|-------------|-------|------------------|----------|----------|--------|
| <b>AV-Measurement</b>       |             |       |                  |          |          |        |
| Test results                |             |       |                  |          |          |        |
| Start frequ.                | Stop frequ. | RBW   | Maximum emission |          | Limit    | Margin |
| (MHz)                       | (MHz)       | (kHz) | (MHz)            | (dBµV/m) | (dBµV/m) | (dB)   |
| 12000                       | 18000       | 1000  | 17268.0          | 41.9     | 54.0     | -12.1  |
| Measurement uncertainty     |             |       |                  |          | ±6 dB    |        |

### FCC-ID: LYHMPCIE1V1

HT40, Port1 + Port2 + Port3:

| Lowest frequency: <b>5270 MHz</b> |             |       |                  |                |                |        |
|-----------------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Highest power setting : P20       |             |       |                  |                | EIRP           |        |
| Test results                      |             |       |                  |                |                |        |
| Start frequ.                      | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                             | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 1000                              | 4000        | 1000  | 2002.0           | 50.2           | 74.0           | -23.8  |
| 4000                              | 5250        | 1000  | 4992.0           | 52.8           | 74.0           | -21.2  |
| 5350                              | 12000       | 1000  | 10384.0          | 59.1           | 74.0           | -14.9  |
| 12000                             | 18000       | 1000  | -                | < 53           | 74.0           | < -21  |
| 18000                             | 40000       | 1000  | -                | < 50           | 74.0           | < -24  |
| Measurement uncertainty           |             |       |                  |                | ±6 dB          |        |

| Highest power setting : P20 |             |       |                  |                | EIRP           |        |
|-----------------------------|-------------|-------|------------------|----------------|----------------|--------|
| <b>AV-Measurement</b>       |             |       |                  |                |                |        |
| Test results                |             |       |                  |                |                |        |
| Start frequ.                | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                       | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 5350                        | 12000       | 1000  | 10384.0          | 47.2           | 54.0           | -6.8   |
| Measurement uncertainty     |             |       |                  |                | ±6 dB          |        |

| Highest frequency: <b>5310 MHz</b> |             |       |                  |                |                |        |
|------------------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Highest power setting : P20        |             |       |                  |                | EIRP           |        |
| Test results                       |             |       |                  |                |                |        |
| Start frequ.                       | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                              | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 1000                               | 4000        | 1000  | 2002.0           | 49.6           | 74.0           | -24.4  |
| 4000                               | 5250        | 1000  | 4992.0           | 52.8           | 74.0           | -21.2  |
| 5350                               | 12000       | 1000  | 10624.0          | 56.4           | 74.0           | -17.6  |
| 12000                              | 18000       | 1000  | 16740.0          | 53.9           | 74.0           | -20.1  |
| 18000                              | 40000       | 1000  | -                | < 50           | 74.0           | < -24  |
| Measurement uncertainty            |             |       |                  |                | ±6 dB          |        |

| Highest power setting : P20 |             |       |                  |                | EIRP           |        |
|-----------------------------|-------------|-------|------------------|----------------|----------------|--------|
| <b>AV-Measurement</b>       |             |       |                  |                |                |        |
| Test results                |             |       |                  |                |                |        |
| Start frequ.                | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                       | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 5350                        | 12000       | 1000  | 10624.0          | 45.1           | 54.0           | -8.9   |
| Measurement uncertainty     |             |       |                  |                | ±6 dB          |        |

802.11a, Port1:

| Lowest frequency: <b>5260 MHz</b> |             |       |                  |                |                |        |
|-----------------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Highest power setting : P20       |             |       |                  |                | EIRP           |        |
| Test results                      |             |       |                  |                |                |        |
| Start frequ.                      | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                             | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 1000                              | 4000        | 1000  | 2002.0           | 50.0           | 74.0           | -24.0  |
| 4000                              | 5250        | 1000  | 4992.0           | 52.0           | 74.0           | -22.0  |
| 5350                              | 12000       | 1000  | -                | < 50           | 74.0           | < -24  |
| 12000                             | 18000       | 1000  | 16812.0          | 53.8           | 74.0           | -20.2  |
| 18000                             | 40000       | 1000  | -                | < 50           | 74.0           | < -24  |
| Measurement uncertainty           |             |       |                  |                | ±6 dB          |        |

### FCC-ID: LYHMPCIE1V1

| Middle frequency: <b>5280 MHz</b> |             |       |                  |                | EIRP           |        |
|-----------------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Highest power setting : P20       |             |       |                  |                |                |        |
|                                   |             |       | Test results     |                |                |        |
| Start frequ.                      | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                             | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 1000                              | 4000        | 1000  | 2002.0           | 50.0           | 74.0           | -24.0  |
| 4000                              | 5250        | 1000  | 4992.0           | 52.0           | 74.0           | -22.0  |
| 5350                              | 12000       | 1000  | 11760.0          | 51.7           | 74.0           | -22.3  |
| 12000                             | 18000       | 1000  | 16836.0          | 53.9           | 74.0           | -20.1  |
| 18000                             | 40000       | 1000  | -                | < 50           | 74.0           | < -24  |
| Measurement uncertainty           |             |       | ±6 dB            |                |                |        |

| Highest frequency: <b>5320 MHz</b> |             |       |                  |                | EIRP           |        |
|------------------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Highest power setting : P20        |             |       |                  |                |                |        |
|                                    |             |       | Test results     |                |                |        |
| Start frequ.                       | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                              | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 1000                               | 4000        | 1000  | 2002.0           | 50.0           | 74.0           | -24.0  |
| 4000                               | 5250        | 1000  | 4992.0           | 52.8           | 74.0           | -21.2  |
| 5350                               | 12000       | 1000  | 11664.0          | 51.2           | 74.0           | -22.8  |
| 12000                              | 18000       | 1000  | 17268.0          | 54.2           | 74.0           | -19.8  |
| 18000                              | 40000       | 1000  | -                | < 50           | 74.0           | < -24  |
| Measurement uncertainty            |             |       | ±6 dB            |                |                |        |

| Highest power setting : P20 |             |       |                  |                | EIRP           |        |
|-----------------------------|-------------|-------|------------------|----------------|----------------|--------|
| <b>AV-Measurement</b>       |             |       | Test results     |                |                |        |
| Start frequ.                | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                       | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 12000                       | 18000       | 1000  | 17268.0          | 41.9           | 54.0           | -12.1  |
| Measurement uncertainty     |             |       | ±6 dB            |                |                |        |

### FCC-ID: LYHMPCIE1V1

#### 5.10.5.2 Frequency band: 5.47 GHz to 5.725 GHz

##### 9 kHz < f < 1000 MHz:

For all kinds of modulation no emission could be detected within 20 dB to the limit. Emissions are attenuated more than 20 dB below the permissible value need not to be reported.

##### 1000 MHz < f < 40000 MHz:

HT20, Port1 + Port2

|                                   |             |       |                  |                |                |        |
|-----------------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Lowest frequency: <b>5500 MHz</b> |             |       |                  |                |                |        |
| Highest power setting : P20       |             |       |                  |                | EIRP           |        |
|                                   |             |       | Test results     |                |                |        |
| Start frequ.                      | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                             | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 1000                              | 4000        | 1000  | 2002.0           | 50.2           | 74.0           | -23.8  |
| 4000                              | 5470        | 1000  | 4992.0           | 52.9           | 74.0           | -21.1  |
| 5725                              | 12000       | 1000  | 11008.0          | 50.3           | 74.0           | -23.7  |
| 12000                             | 18000       | 1000  | 16896.0          | 53.7           | 74.0           | -20.3  |
| 18000                             | 40000       | 1000  | -                | < 50           | 74.0           | < -24  |
| Measurement uncertainty           |             |       | ±6 dB            |                |                |        |

|                                   |             |       |                  |                |                |        |
|-----------------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Middle frequency: <b>5580 MHz</b> |             |       |                  |                |                |        |
| Highest power setting : P20       |             |       |                  |                | EIRP           |        |
|                                   |             |       | Test results     |                |                |        |
| Start frequ.                      | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                             | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 1000                              | 4000        | 1000  | 1996.0           | 50.6           | 74.0           | -23.4  |
| 4000                              | 5470        | 1000  | 4992.0           | 51.5           | 74.0           | -22.5  |
| 5725                              | 12000       | 1000  | 11168.0          | 53.3           | 74.0           | -20.7  |
| 12000                             | 18000       | 1000  | 16800.0          | 53.6           | 74.0           | -20.4  |
| 18000                             | 40000       | 1000  | -                | < 50           | 74.0           | < -24  |
| Measurement uncertainty           |             |       | ±6 dB            |                |                |        |

|                                    |             |       |                  |                |                |        |
|------------------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Highest frequency: <b>5700 MHz</b> |             |       |                  |                |                |        |
| Highest power setting : P20        |             |       |                  |                | EIRP           |        |
|                                    |             |       | Test results     |                |                |        |
| Start frequ.                       | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                              | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 1000                               | 4000        | 1000  | 2002.0           | 49.9           | 74.0           | -24.1  |
| 4000                               | 5470        | 1000  | 4992.0           | 52.2           | 74.0           | -21.8  |
| 5725                               | 12000       | 1000  | 11408.0          | 55.7           | 74.0           | -18.3  |
| 12000                              | 18000       | 1000  | 16728.0          | 53.5           | 74.0           | -20.5  |
| 18000                              | 40000       | 1000  | -                | < 50           | 74.0           | < -24  |
| Measurement uncertainty            |             |       | ±6 dB            |                |                |        |

|                             |             |       |                  |                |                |        |
|-----------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Highest power setting : P20 |             |       |                  |                | EIRP           |        |
| <b>AV-Measurement</b>       |             |       | Test results     |                |                |        |
| Start frequ.                | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                       | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 5725                        | 12000       | 1000  | 11408.0          | 45.1           | 54.0           | -8.9   |
| Measurement uncertainty     |             |       | ±6 dB            |                |                |        |

### FCC-ID: LYHMPCIE1V1

HT40, Port1 + Port2 + Port3:

| Lowest frequency: <b>5510 MHz</b> |             |       |                  |                | EIRP           |        |
|-----------------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Highest power setting : P20       |             |       |                  |                | EIRP           |        |
|                                   |             |       | Test results     |                |                |        |
| Start frequ.                      | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                             | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 1000                              | 4000        | 1000  | 2002.0           | 50.3           | 74.0           | -23.7  |
| 4000                              | 5470        | 1000  | 4992.0           | 52.5           | 74.0           | -21.5  |
| 5725                              | 12000       | 1000  | 11024.0          | 52.4           | 74.0           | -21.6  |
| 12000                             | 18000       | 1000  | 16824.0          | 53.7           | 74.0           | -20.3  |
| 18000                             | 40000       | 1000  | -                | < 50           | 74.0           | < -24  |
| Measurement uncertainty           |             |       | ±6 dB            |                |                |        |

| Middle frequency: <b>5550 MHz</b> |             |       |                  |                | EIRP           |        |
|-----------------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Highest power setting : P20       |             |       |                  |                | EIRP           |        |
|                                   |             |       | Test results     |                |                |        |
| Start frequ.                      | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                             | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 1000                              | 4000        | 1000  | 1996.0           | 50.4           | 74.0           | -23.6  |
| 4000                              | 5470        | 1000  | 4992.0           | 53.1           | 74.0           | -20.9  |
| 5725                              | 12000       | 1000  | 11184.0          | 56.5           | 74.0           | < -24  |
| 12000                             | 18000       | 1000  | 17904.0          | 53.7           | 74.0           | -20.3  |
| 18000                             | 40000       | 1000  | -                | < 50           | 74.0           | < -24  |
| Measurement uncertainty           |             |       | ±6 dB            |                |                |        |

| Highest power setting : P20 |             |       |                  |                | EIRP           |        |
|-----------------------------|-------------|-------|------------------|----------------|----------------|--------|
| <b>AV-Measurement</b>       |             |       |                  |                | Test results   |        |
| Start frequ.                | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                       | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 12000                       | 18000       | 1000  | 11184.0          | 43.1           | 54.0           | -10.9  |
| Measurement uncertainty     |             |       | ±6 dB            |                |                |        |

| Highest frequency: <b>5670 MHz</b> |             |       |                  |                | EIRP           |        |
|------------------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Highest power setting : P20        |             |       |                  |                | EIRP           |        |
|                                    |             |       | Test results     |                |                |        |
| Start frequ.                       | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                              | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 1000                               | 4000        | 1000  | 1996.0           | 49.9           | 74.0           | -24.1  |
| 4000                               | 5470        | 1000  | 4992.0           | 51.9           | 74.0           | -22.1  |
| 5725                               | 12000       | 1000  | 11344.0          | 58.7           | 74.0           | -15.3  |
| 12000                              | 18000       | 1000  | 17856.0          | 53.7           | 74.0           | -20.3  |
| 18000                              | 40000       | 1000  | -                | < 50           | 74.0           | < -24  |
| Measurement uncertainty            |             |       | ±6 dB            |                |                |        |

| Highest power setting : P20 |             |       |                  |                | EIRP           |        |
|-----------------------------|-------------|-------|------------------|----------------|----------------|--------|
| <b>AV-Measurement</b>       |             |       |                  |                | Test results   |        |
| Start frequ.                | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                       | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 5725                        | 12000       | 1000  | 11344.0          | 47.2           | 54.0           | -6.8   |
| Measurement uncertainty     |             |       | ±6 dB            |                |                |        |

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802.11h, Port1:

|                                   |             |       |                  |                |                |        |
|-----------------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Lowest frequency: <b>5500 MHz</b> |             |       |                  |                |                |        |
| Highest power setting : P20       |             |       |                  |                | EIRP           |        |
|                                   |             |       | Test results     |                |                |        |
| Start frequ.                      | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                             | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 1000                              | 4000        | 1000  | 2002.0           | 50.5           | 74.0           | -23.5  |
| 4000                              | 5470        | 1000  | 4992.0           | 52.5           | 74.0           | -21.5  |
| 5725                              | 12000       | 1000  | -                | < 50           | 74.0           | < -24  |
| 12000                             | 18000       | 1000  | 16500.0          | 53.7           | 74.0           | -20.3  |
| 18000                             | 40000       | 1000  | -                | < 50           | 74.0           | < -24  |
| Measurement uncertainty           |             |       | ±6 dB            |                |                |        |

|                                   |             |       |                  |                |                |        |
|-----------------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Middle frequency: <b>5580 MHz</b> |             |       |                  |                |                |        |
| Highest power setting : P20       |             |       |                  |                | EIRP           |        |
|                                   |             |       | Test results     |                |                |        |
| Start frequ.                      | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                             | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 1000                              | 4000        | 1000  | 1996.0           | 50.4           | 74.0           | -23.6  |
| 4000                              | 5470        | 1000  | 4992.0           | 52.7           | 74.0           | -21.3  |
| 5725                              | 12000       | 1000  | 11776.0          | 51.7           | 74.0           | -22.3  |
| 12000                             | 18000       | 1000  | 16836.0          | 54.1           | 74.0           | -19.9  |
| 18000                             | 40000       | 1000  | -                | < 50           | 74.0           | < -24  |
| Measurement uncertainty           |             |       | ±6 dB            |                |                |        |

|                             |             |       |                  |                |                |        |
|-----------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Highest power setting : P20 |             |       |                  |                | EIRP           |        |
| <b>AV-Measurement</b>       |             |       | Test results     |                |                |        |
| Start frequ.                | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                       | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 12000                       | 18000       | 1000  | 16836.0          | 42.0           | 54.0           | -12.0  |
| Measurement uncertainty     |             |       | ±6 dB            |                |                |        |

|                                    |             |       |                  |                |                |        |
|------------------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Highest frequency: <b>5700 MHz</b> |             |       |                  |                |                |        |
| Highest power setting : P20        |             |       |                  |                | EIRP           |        |
|                                    |             |       | Test results     |                |                |        |
| Start frequ.                       | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                              | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 1000                               | 4000        | 1000  | 1996.0           | 50.2           | 74.0           | -23.8  |
| 4000                               | 5470        | 1000  | 4992.0           | 52.4           | 74.0           | -21.6  |
| 5725                               | 12000       | 1000  | 11408.0          | 55.1           | 74.0           | -18.9  |
| 12000                              | 18000       | 1000  | 17304.0          | 53.5           | 74.0           | -20.5  |
| 18000                              | 40000       | 1000  | -                | < 50           | 74.0           | < -24  |
| Measurement uncertainty            |             |       | ±6 dB            |                |                |        |

|                             |             |       |                  |                |                |        |
|-----------------------------|-------------|-------|------------------|----------------|----------------|--------|
| Highest power setting : P20 |             |       |                  |                | EIRP           |        |
| <b>AV-Measurement</b>       |             |       | Test results     |                |                |        |
| Start frequ.                | Stop frequ. | RBW   | Maximum emission |                | Limit          | Margin |
| (MHz)                       | (MHz)       | (kHz) | (MHz)            | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   |
| 5725                        | 12000       | 1000  | 11408.0          | 44.9           | 54.0           | -9.1   |
| Measurement uncertainty     |             |       | ±6 dB            |                |                |        |

### FCC-ID: LYHMPCIE1V1

Radiated limits according to FCC Part 15 Section 15.209(a) for spurious emissions which fall in restricted bands:

| Frequency<br>(MHz) | Field strength of spurious emissions |                | Measurement distance<br>(metres) |
|--------------------|--------------------------------------|----------------|----------------------------------|
|                    | ( $\mu$ V/m)                         | dB( $\mu$ V/m) |                                  |
| 0.009-0.490        | 2400/F (kHz)                         |                | 300                              |
| 0.490-1.705        | 24000/F (kHz)                        |                | 30                               |
| 1.705-30           | 30                                   | 29.5           | 30                               |
| 30-88              | 100                                  | 40             | 3                                |
| 88-216             | 150                                  | 43.5           | 3                                |
| 216-960            | 200                                  | 46             | 3                                |
| Above 960          | 500                                  | 54             | 3                                |

#### Restricted bands of operation:

The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209

| MHz                 | MHz                   | MHz             | GHz           |
|---------------------|-----------------------|-----------------|---------------|
| 0.090 – 0.110       | 16.42 – 16.423        | 399.9 – 410     | 4.5 – 5.15    |
| 0.495 – 0.505       | 16.69475 – 16.69525   | 608 – 614       | 5.35 – 5.46   |
| 2.1735 – 2.1905     | 16.80425 – 16.80475   | 960 – 1240      | 7.25 – 7.75   |
| 4.125 – 4.128       | 25.5 – 25.67          | 1300 – 1427     | 8.025 – 8.5   |
| 4.17725 – 4.17775   | 37.5 – 38.25          | 1435 – 1626.5   | 9.0 – 9.2     |
| 4.20725 – 4.20775   | 73 – 74.6             | 1645.5 – 1646.5 | 9.3 – 9.5     |
| 6.215 – 6.218       | 74.8 – 75.2           | 1660 – 1710     | 10.6 – 12.7   |
| 6.26775 – 6.26825   | 108 – 121.94          | 1718.8 – 1722.2 | 13.25 – 13.4  |
| 6.31175 – 6.31225   | 123 – 138             | 2200 – 2300     | 14.47 – 14.5  |
| 8.291 – 8.294       | 149.9 – 150.05        | 2310 – 2390     | 15.35 – 16.2  |
| 8.362 – 8.366       | 156.52475 – 156.52525 | 2483.5 – 2500   | 17.7 – 21.4   |
| 8.37625 – 8.38675   | 156.7 – 156.9         | 2690 – 2900     | 22.01 – 23.12 |
| 8.41425 – 8.41475   | 162.0125 – 167.17     | 3260 – 3267     | 23.6 – 24.0   |
| 12.29 – 12.293      | 167.72 – 173.2        | 3332 – 3339     | 31.2 – 31.8   |
| 12.51975 – 12.52025 | 240 – 285             | 3345.8 – 3358   | 36.43 – 36.5  |
| 12.57675 – 12.57725 | 322 – 335.4           | 3600 – 4400     | Above 38.6    |

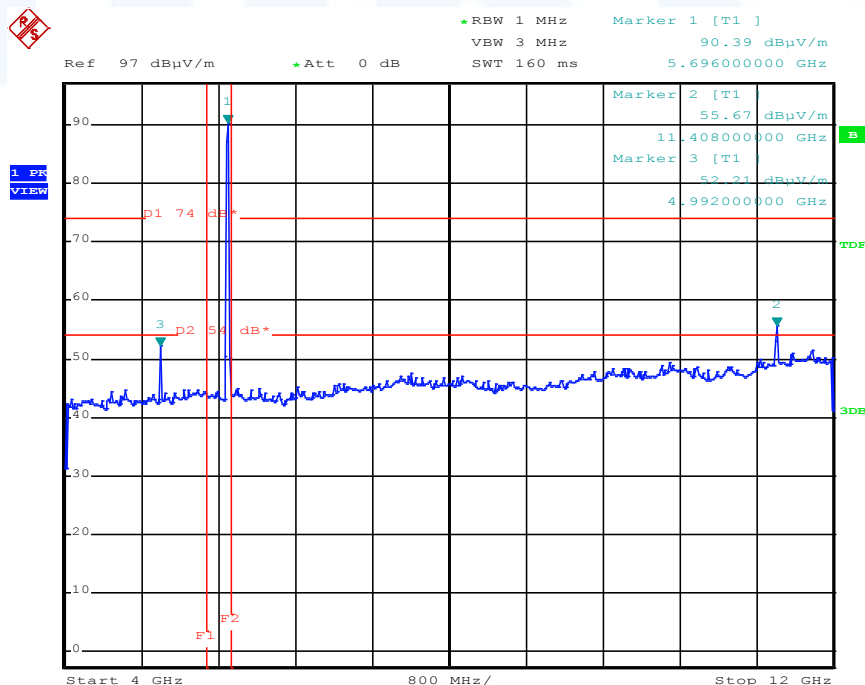
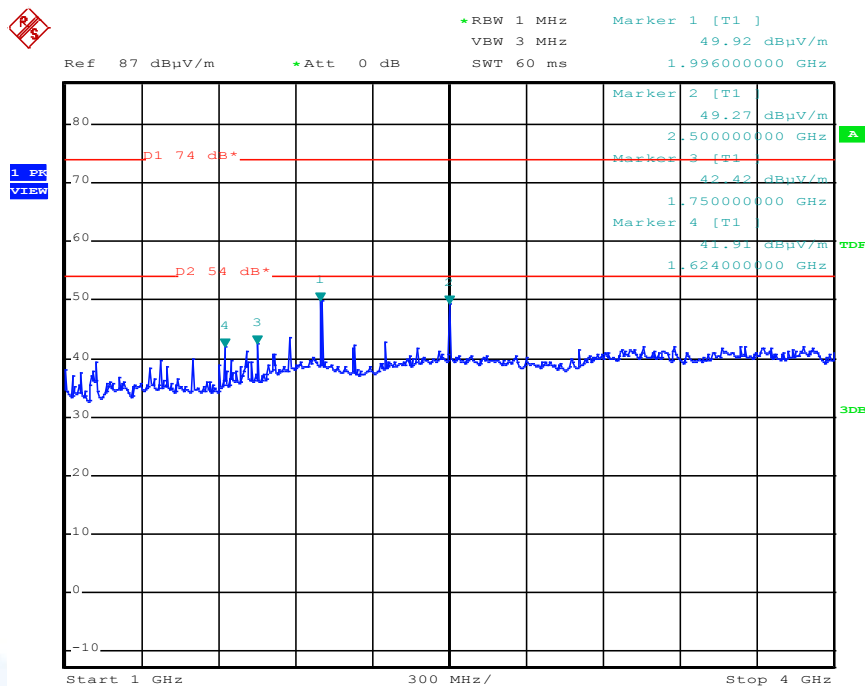
The requirements are **FULFILLED**.

**Remarks:** All emissions are more than 20 dB below the specified limit needs not to be reported. For detailed test results please see the following test protocols. Only the worst cases of the plots are listed.

**FCC-ID: LYHMPCIE1V1**

**5.10.6 Test protocols SER cabinet radiation**

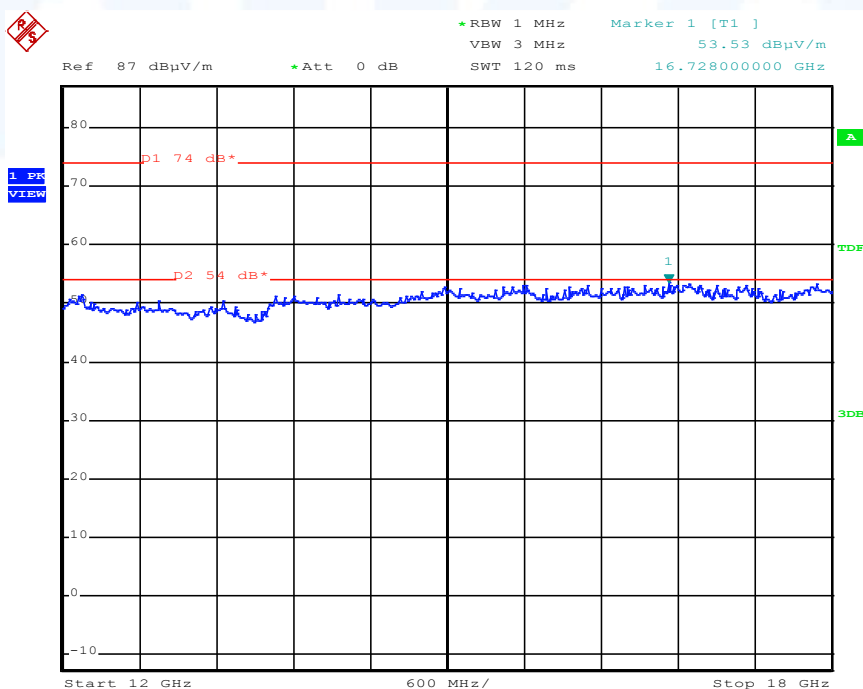
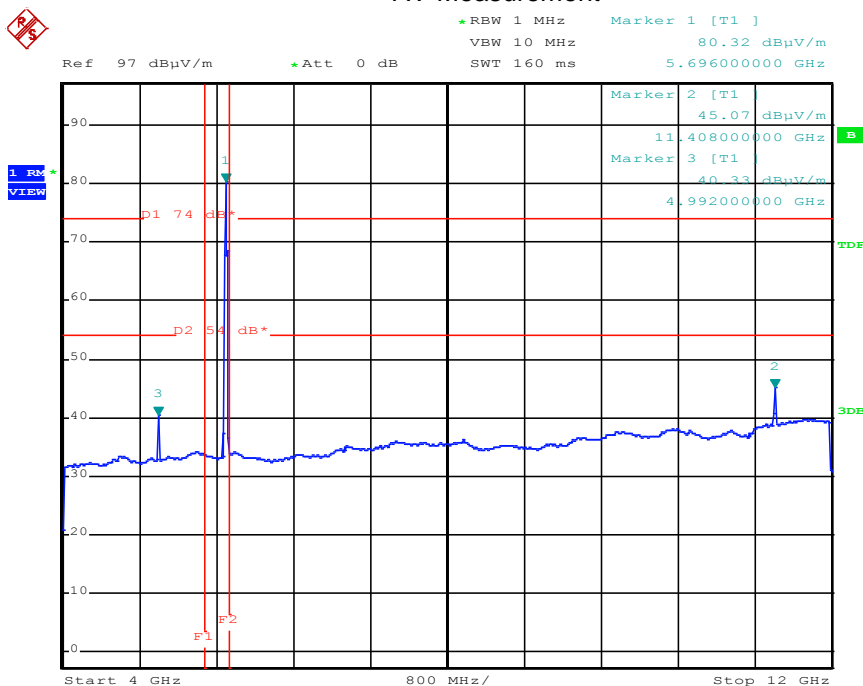
HT20, Port1 + Port2, P20, CH140:





**FCC-ID: LYHMPCIE1V1**

**AV-Measurement**

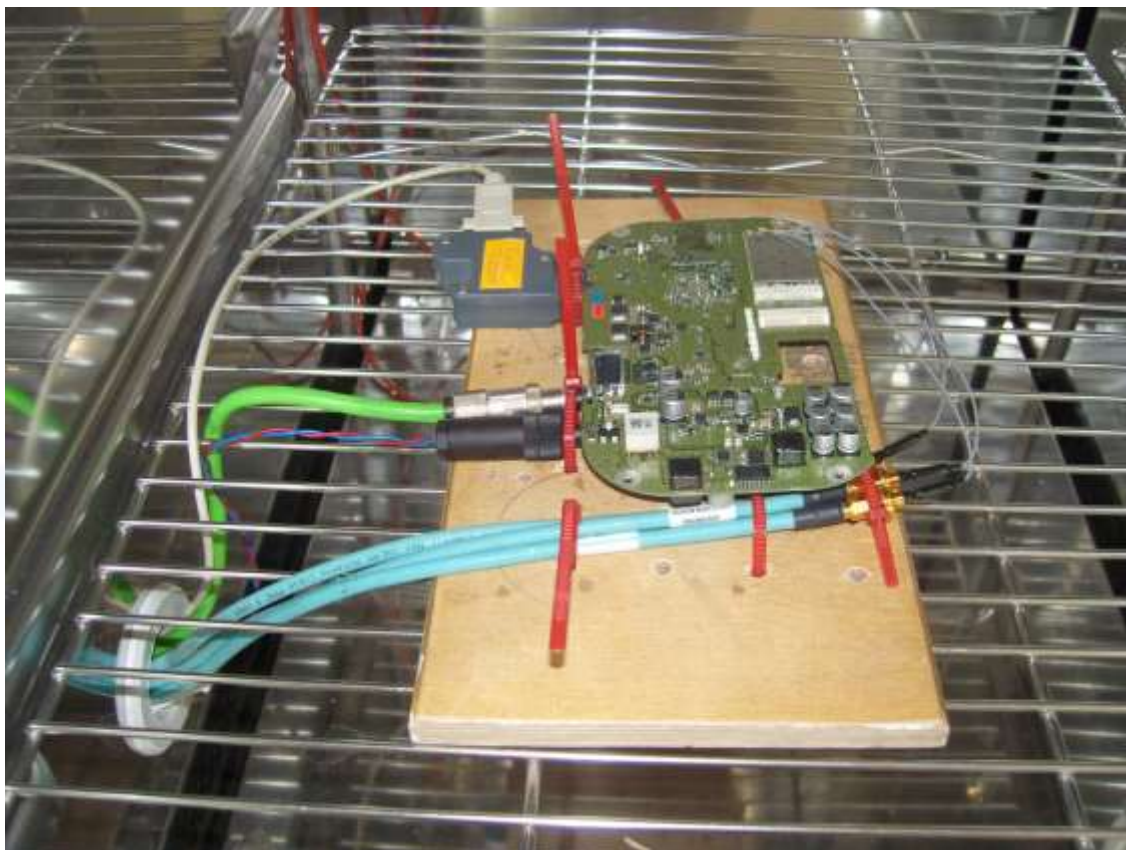


**FCC-ID: LYHMPCIE1V1****5.11 Frequency stability**

For test instruments and accessories used see section 6 Part **MB**.

**5.11.1 Description of the test location**

Test location: AREA4

**5.11.2 Photo documentation of the test setup****5.11.3 Applicable standard**

According to FCC Part 15, Subpart E, Section 15.407 (g):

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

**5.11.4 Description of Measurement**

This test has been performed over variations in temperature and voltage. The lowest and the highest channel in the operating frequency bands are measured at the 20 dB bandwidth under following conditions:

1. Supply voltage from 19.2 VDC to 28.8 VDC at normal temperature
2. Extreme temperature from -40°C to 60°C at nominal voltage.

**FCC-ID: LYHMPCIE1V1**

**5.11.5 Test result**

**Frequency band 5250 – 5350 MHz:**  
Worsed case HT20 mode, P20, MCS8:

| Test conditions         |                  | Test result     |          |                |          |
|-------------------------|------------------|-----------------|----------|----------------|----------|
|                         |                  | Frequency (MHz) |          |                |          |
| T (-40°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5250.800 | f <sub>h</sub> | 5329.040 |
| T (-30°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5250.720 | f <sub>h</sub> | 5329.200 |
| T (-20°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5251.200 | f <sub>h</sub> | 5328.560 |
| T (-10°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5251.200 | f <sub>h</sub> | 5329.280 |
| T (0°C)                 | V <sub>nom</sub> | f <sub>l</sub>  | 5250.800 | f <sub>h</sub> | 5329.280 |
| T(10°C)                 | V <sub>nom</sub> | f <sub>l</sub>  | 5250.640 | f <sub>h</sub> | 5329.040 |
| T <sub>nom</sub> (20°C) | V <sub>max</sub> | f <sub>l</sub>  | 5250.720 | f <sub>h</sub> | 5329.200 |
|                         | V <sub>min</sub> | f <sub>l</sub>  | 5250.640 | f <sub>h</sub> | 5329.040 |
| T (30°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5250.560 | f <sub>h</sub> | 5329.200 |
| T (40°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5250.720 | f <sub>h</sub> | 5329.280 |
| T (50°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5250.640 | f <sub>h</sub> | 5329.200 |
| T (60°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5250.720 | f <sub>h</sub> | 5329.200 |
| Measurement uncertainty |                  | ±1500 Hz        |          |                |          |

Occupied spectrum envelope:  
 Measured frequency nearest at the lowest band edge:  $f_l = 5250.560$  MHz  
 Measured frequency nearest at the highest band edge:  $f_h = 5329.280$  MHz

**Frequency band 5470 – 5725 MHz:**  
Worse case HT20 mode, P20, MCS8:

| Test conditions         |                  | Test result     |          |                |          |
|-------------------------|------------------|-----------------|----------|----------------|----------|
|                         |                  | Frequency (MHz) |          |                |          |
| T (-40°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5490.720 | f <sub>h</sub> | 5709.200 |
| T (-30°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5490.720 | f <sub>h</sub> | 5708.960 |
| T (-20°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5490.800 | f <sub>h</sub> | 5709.120 |
| T (-10°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5490.880 | f <sub>h</sub> | 5709.120 |
| T (0°C)                 | V <sub>nom</sub> | f <sub>l</sub>  | 5490.560 | f <sub>h</sub> | 5709.040 |
| T(10°C)                 | V <sub>nom</sub> | f <sub>l</sub>  | 5490.720 | f <sub>h</sub> | 5709.120 |
| T <sub>nom</sub> (20°C) | V <sub>max</sub> | f <sub>l</sub>  | 5490.560 | f <sub>h</sub> | 5709.200 |
|                         | V <sub>min</sub> | f <sub>l</sub>  | 5490.720 | f <sub>h</sub> | 5709.200 |
| T (30°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5490.720 | f <sub>h</sub> | 5709.120 |
| T (40°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5490.640 | f <sub>h</sub> | 5709.200 |
| T (50°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5490.640 | f <sub>h</sub> | 5708.960 |
| T (60°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5490.480 | f <sub>h</sub> | 5709.040 |
| Measurement uncertainty |                  | ±1500 Hz        |          |                |          |

Occupied spectrum envelope:  
 Measured frequency nearest at the lowest band edge:  $f_l = 5490.480$  MHz  
 Measured frequency nearest at the highest band edge:  $f_h = 5709.200$  MHz

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#### Frequency band 5250 – 5350 MHz:

Worsed case HT40 mode, P20, MCS16:

| Test conditions         |                  | Test result     |          |                |          |
|-------------------------|------------------|-----------------|----------|----------------|----------|
|                         |                  | Frequency (MHz) |          |                |          |
| T (-40°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5251.400 | f <sub>h</sub> | 5328.720 |
| T (-30°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5251.400 | f <sub>h</sub> | 5328.720 |
| T (-20°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5251.280 | f <sub>h</sub> | 5328.600 |
| T (-10°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5251.280 | f <sub>h</sub> | 5328.600 |
| T (0°C)                 | V <sub>nom</sub> | f <sub>l</sub>  | 5251.400 | f <sub>h</sub> | 5328.960 |
| T(10°C)                 | V <sub>nom</sub> | f <sub>l</sub>  | 5251.400 | f <sub>h</sub> | 5329.280 |
| T <sub>nom</sub> (20°C) | V <sub>max</sub> | f <sub>l</sub>  | 5251.280 | f <sub>h</sub> | 5328.720 |
|                         | V <sub>min</sub> | f <sub>l</sub>  | 5251.280 | f <sub>h</sub> | 5328.720 |
| T (30°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5251.400 | f <sub>h</sub> | 5328.600 |
| T (40°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5251.280 | f <sub>h</sub> | 5328.720 |
| T (50°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5251.280 | f <sub>h</sub> | 5328.600 |
| T (60°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5251.400 | f <sub>h</sub> | 5328.600 |
| Measurement uncertainty |                  | ±1500 Hz        |          |                |          |

Occupied spectrum envelope:

Measured frequency nearest at the lowest band edge:

f<sub>l</sub> = 5251.280 MHz

Measured frequency nearest at the highest band edge:

f<sub>h</sub> = 5329.280 MHz

#### Frequency band 52up70 – 5725 MHz:

Worse case HT40 mode, P20, MCS16:

| Test conditions         |                  | Test result     |          |                |          |
|-------------------------|------------------|-----------------|----------|----------------|----------|
|                         |                  | Frequency (MHz) |          |                |          |
| T (-40°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5491.280 | f <sub>h</sub> | 5688.600 |
| T (-30°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5491.280 | f <sub>h</sub> | 5688.600 |
| T (-20°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5491.160 | f <sub>h</sub> | 5688.720 |
| T (-10°C)               | V <sub>nom</sub> | f <sub>l</sub>  | 5491.400 | f <sub>h</sub> | 5688.720 |
| T (0°C)                 | V <sub>nom</sub> | f <sub>l</sub>  | 5491.400 | f <sub>h</sub> | 5688.600 |
| T(10°C)                 | V <sub>nom</sub> | f <sub>l</sub>  | 5491.160 | f <sub>h</sub> | 5688.600 |
| T <sub>nom</sub> (20°C) | V <sub>max</sub> | f <sub>l</sub>  | 5491.160 | f <sub>h</sub> | 5688.720 |
|                         | V <sub>min</sub> | f <sub>l</sub>  | 5491.160 | f <sub>h</sub> | 5688.720 |
| T (30°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5491.160 | f <sub>h</sub> | 5688.600 |
| T (40°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5491.160 | f <sub>h</sub> | 5688.600 |
| T (50°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5491.280 | f <sub>h</sub> | 5688.600 |
| T (60°C)                | V <sub>nom</sub> | f <sub>l</sub>  | 5491.280 | f <sub>h</sub> | 5688.600 |
| Measurement uncertainty |                  | ±1500 Hz        |          |                |          |

Occupied spectrum envelope:

Measured frequency nearest at the lowest band edge:

f<sub>l</sub> = 5491.160 MHz

Measured frequency nearest at the highest band edge:

f<sub>h</sub> = 5688.720 MHz

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According to FCC Part 15, Subpart E, Section 15.407 (g):

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

| Operating frequency range limit |       |
|---------------------------------|-------|
| (MHz)                           | (MHz) |
| 5250                            | 5350  |
| 5470                            | 5725  |

The requirements are **FULFILLED**.

Remarks:

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**FCC-ID: LYHMPCIE1V1**

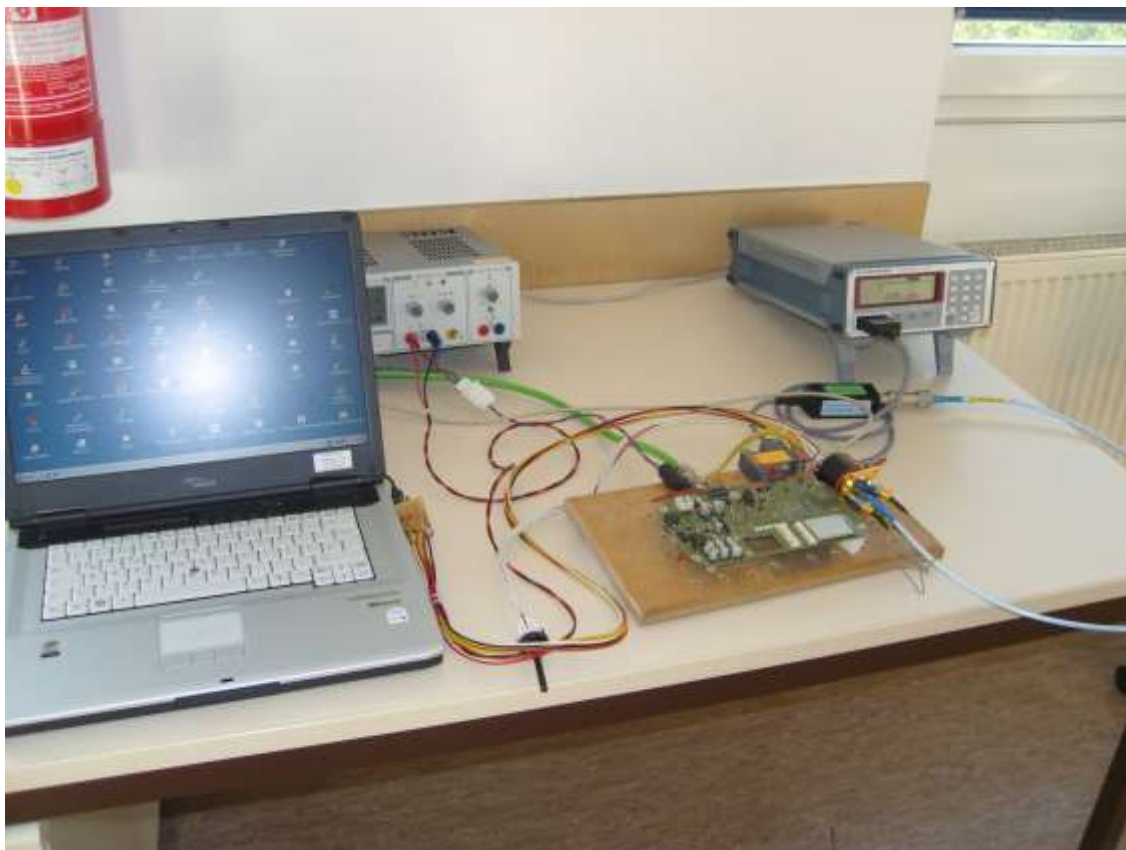
**5.12 Maximum permissible exposure (MPE)**

For test instruments and accessories used see section 6 Part **CPC 3**.

**5.12.1 Description of the test location**

Test location: AREA4

**5.12.2 Photo documentation of the test set-up**



**5.12.3 Applicable standard**

According to FCC Part 15, Section 15.407(f):

U-NII devices are subject to the radio frequency radiation exposure requirements specified in Section 1.1307(b), 2.1091 and 2.1093 of this chapter, as appropriate. All equipment shall be considered to operate in a “general population/uncontrolled” environment. The test methods used comply with ANSI/IEEE C95.1-2005, “IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”.

**5.12.4 Description of Measurement**

The maximum total power input to the antenna has been measured and conducted as described in clause 5.3 of this document. Through the Friis transmission formula, which is a far field assumption and the known maximum gain of the antenna, the maximum MPE at a defined distance away from the product, can be calculated.

Friis transmission formula:

$$P_d = \frac{P_{out} * G}{4 * \pi * r^2}$$



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where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

$G$  = gain of antenna (linear scale)

$r$  = distance between antenna and observation point (cm)

For fixed equipment the distance  $r = 20$  cm;

#### 5.12.5 Test result

WLAN Standard 802.11n, HT20, 2 TX chains, highest power level:

| Channel | Power setting | A1+A2 | Antgain | A     | G      | P      | S                     | Limit $S_{eq}$        |
|---------|---------------|-------|---------|-------|--------|--------|-----------------------|-----------------------|
| No.     |               | (dBm) | (dBi)   | (mW)  | linear | (W)    | (mW/cm <sup>2</sup> ) | (mW/cm <sup>2</sup> ) |
| 52      | P20           | 17.4  | 6.0     | 54.98 | 3.98   | 0.2189 | 0.0435                | 1.0                   |
| 56      | P20           | 18.0  | 6.0     | 63.22 | 3.98   | 0.2517 | 0.0501                | 1.0                   |
| 64      | P20           | 15.9  | 6.0     | 38.76 | 3.98   | 0.1543 | 0.0307                | 1.0                   |
| 100     | P20           | 17.5  | 6.0     | 55.77 | 3.98   | 0.2220 | 0.0442                | 1.0                   |
| 116     | P20           | 17.5  | 6.0     | 56.85 | 3.98   | 0.2263 | 0.0450                | 1.0                   |
| 140     | P20           | 17.9  | 6.0     | 61.25 | 3.98   | 0.2438 | 0.0485                | 1.0                   |

WLAN Standard 802.11n, HT40, 3 TX chains, highest power level:

| Channel | Power setting | A1+A2+A3 | Antgain | A     | G      | P      | S                     | Limit $S_{eq}$        |
|---------|---------------|----------|---------|-------|--------|--------|-----------------------|-----------------------|
| No.     |               | (dBm)    | (dBi)   | (mW)  | linear | (W)    | (mW/cm <sup>2</sup> ) | (mW/cm <sup>2</sup> ) |
| 52up    | P20           | 18.8     | 6.0     | 75.48 | 3.98   | 0.3005 | 0.0598                | 1.0                   |
| 60up    | P20           | 19.1     | 6.0     | 80.52 | 3.98   | 0.3206 | 0.0638                | 1.0                   |
| 100up   | P20           | 17.9     | 6.0     | 61.15 | 3.98   | 0.2434 | 0.0484                | 1.0                   |
| 108up   | P20           | 17.9     | 6.0     | 62.03 | 3.98   | 0.2470 | 0.0491                | 1.0                   |
| 132up   | P20           | 18.7     | 6.0     | 73.72 | 3.98   | 0.2935 | 0.0584                | 1.0                   |

WLAN Standard 802.11a, Legacy, 1 TX chain, highest power level:

| Channel | Power setting | A     | Antgain | A     | G      | P      | S                     | Limit $S_{eq}$        |
|---------|---------------|-------|---------|-------|--------|--------|-----------------------|-----------------------|
| No.     |               | (dBm) | (dBi)   | (mW)  | linear | (W)    | (mW/cm <sup>2</sup> ) | (mW/cm <sup>2</sup> ) |
| 52      | P20           | 14.6  | 6.0     | 29.04 | 3.98   | 0.1156 | 0.0230                | 1.0                   |
| 56      | P20           | 14.7  | 6.0     | 29.44 | 3.98   | 0.1172 | 0.0233                | 1.0                   |
| 64      | P20           | 14.1  | 6.0     | 25.53 | 3.98   | 0.1016 | 0.0202                | 1.0                   |
| 100     | P20           | 14.5  | 6.0     | 28.44 | 3.98   | 0.1132 | 0.0225                | 1.0                   |
| 116     | P20           | 14.5  | 6.0     | 27.86 | 3.98   | 0.1109 | 0.0221                | 1.0                   |
| 140     | P20           | 14.5  | 6.0     | 27.93 | 3.98   | 0.1112 | 0.0221                | 1.0                   |

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Limits for maximum permissible exposure (MPE):

| Frequency range<br>(MHz)                                  | Electric field strength<br>(V/m) | Magnetic field strength<br>(A/m) | Power density<br>(mW/cm <sup>2</sup> ) | Averaging time<br>(minutes) |
|---|----------------------------------|----------------------------------|--|-----------------------------|
| (B) Limits for General Population / Uncontrolled Exposure |                                  |                                  |  |                             |
| 0.3 – 3.0   | 614                              | 1.63                             | 100                                    | 30                          |
| 3.0 – 30  | 824/f                            | 2.19/f                           | 180/ f <sup>2</sup>                    | 30                          |
| 30 - 300  | 27.5                             | 0.073                            | 0.2                                    | 30                          |
| 300-1500  | ---                              | ---                              | f/1500                                 | 30                          |
| <b>1500-100000</b>  | ---                              | ---                              | <b>1.0</b>                             | <b>30</b>                   |

f = Frequency (MHz)

The requirements are **FULFILLED**.

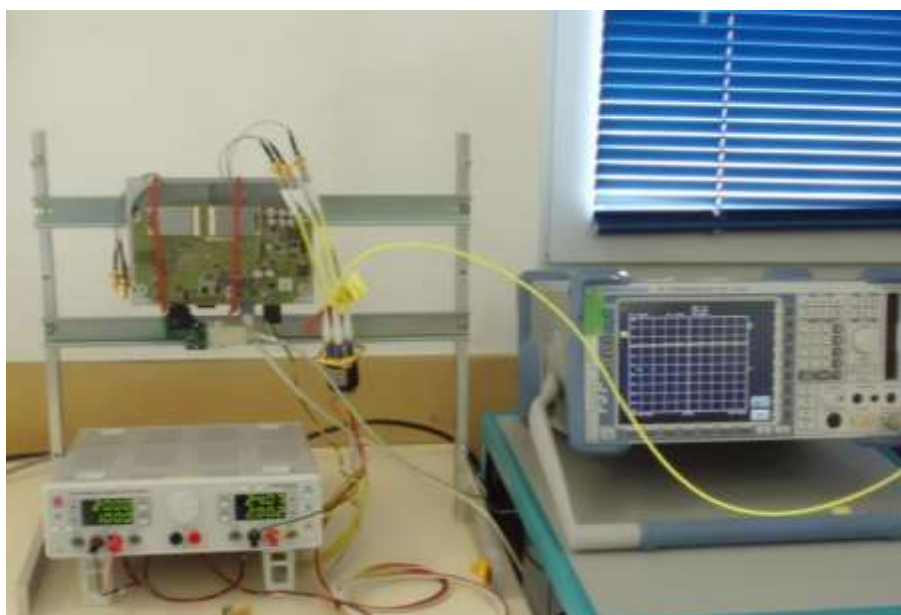
**Remarks:** This test shows the compliance with the limits for maximum permissible exposure (MPE) specified in FCC 1.1310 and the criteria to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in FCC 1.1307(b).

**5.13 Co-location and Co-transmission**

**Applicable standard:**

OET Bulletin 65, Edition 97-01, Section 2: Multiple-transmitter sites and complex environments

The MPE limits of FCC vary with frequency. Therefore, in mixed or broadband RF fields where several sources and frequencies are involved, the fraction of the recommended limit (in terms of power density or square of the electric or magnetic field strength) incurred within each frequency interval should be determined, and the sum of all fractional contributions should not exceed 1.0, or 100 % in terms of percentage.





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It may be that 2 WLAN-modules are implemented in one unit. This has been tested under this section. There is no co-location issue. The firmware of the unit splits the transmission time that one module can only transmit at a time. The MIMO antenna technology has been tested and used for the determination of the worst case.

The requirements are **FULFILLED**.

Remarks:

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**5.14 Antenna application**

**5.14.1 Applicable standard**

According to FCC Part 15C, Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit that broken antennas can be replaced by the user, but the use of a standard antenna jack is prohibited.

The EUT use the listed antennas for MIMO technique. The equipment connector is subject to the end product.

Remarks:

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## FCC-ID: LYHMPCIE1V1

### 5.14.2 Antenna requirements

According to FCC Part 15E, Section 15.407(a):

The conducted output power limit specified in paragraph (a) of 15.407 is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from intentional radiator shall be reduced below the stated values in paragraph (a)(1), (a)(2) and (a)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds the effective value.

For the output power reduction of the used antennas see the following table. The limit is calculated using the formula,  $P_{out} = 30 - (G_x - 6)$ ;

Ant. group 1 antennas with max 0 to 6 dBi gain:

| Antenna         | G <sub>x</sub><br>(dBi) | Cond. limit<br>(dBm) | max. G<br>(dBi) | A [P20]<br>(dBm) | Limit P <sub>out</sub><br>(dBm) | Reduction<br>(dB) | P set<br>5 GHz |
|-----------------|-------------------------|----------------------|-----------------|------------------|---------------------------------|-------------------|----------------|
| ANT793-4MN      | 6.0                     | 23.0                 | 6.0             | 19.1             | 23.0                            | -3.9              | P20            |
| ANT793-6MN      | 5.0                     | 23.0                 | 6.0             | 19.1             | 24.0                            | -4.9              | P20            |
| ANT795-4MC      | 5.0                     | 23.0                 | 6.0             | 19.1             | 24.0                            | -4.9              | P20            |
| ANT795-4MD      | 5.0                     | 23.0                 | 6.0             | 19.1             | 24.0                            | -4.9              | P20            |
| ANT795-4MA      | 5.0                     | 23.0                 | 6.0             | 19.1             | 24.0                            | -4.9              | P20            |
| A5E002280427-06 | 5.0                     | 23.0                 | 6.0             | 19.1             | 24.0                            | -4.9              | P20            |
| Rcoax 5G        | 0.0                     | 23.0                 | 6.0             | 19.1             | 29.0                            | -9.9              | P20            |

Ant. group 2 antennas with max 7 to 9 dBi gain:

| Antenna    | G <sub>x</sub><br>(dBi) | Cond. limit<br>(dBm) | max. G<br>(dBi) | A [P17]<br>(dBm) | Limit P <sub>out</sub><br>(dBm) | Reduction<br>(dB) | P set<br>5 GHz |
|------------|-------------------------|----------------------|-----------------|------------------|---------------------------------|-------------------|----------------|
| ANT793-6DT | 9.0                     | 23.0                 | 6.0             | 16.0             | 20.0                            | -4.0              | P17            |
| ANT793-6DG | 9.0                     | 23.0                 | 6.0             | 16.0             | 20.0                            | -4.0              | P17            |
| ANT795-6DC | 9.0                     | 23.0                 | 6.0             | 16.0             | 20.0                            | -4.0              | P17            |
| ANT795-6MN | 8.0                     | 23.0                 | 6.0             | 16.0             | 21.0                            | -5.0              | P17            |
| ANT795-6MT | 7.0                     | 23.0                 | 6.0             | 16.0             | 22.0                            | -6.0              | P17            |

Ant. group 3 antennas with max 10 to 14 dBi gain:

| Antenna    | G <sub>x</sub><br>(dBi) | Cond. limit<br>(dBm) | max. G<br>(dBi) | A [P11]<br>(dBm) | Limit P <sub>out</sub><br>(dBm) | Reduction<br>(dB) | P set<br>5 GHz |
|------------|-------------------------|----------------------|-----------------|------------------|---------------------------------|-------------------|----------------|
| ANT793-8DK | 14.2                    | 23.0                 | 6.0             | 10.4             | 14.8                            | -4.4              | P11            |
| ANT793-8DJ | 13.6                    | 23.0                 | 6.0             | 10.4             | 15.4                            | -5.0              | P11            |

**Remarks:** No power reduction results with the listed antennas.

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**6 USED TEST EQUIPMENT AND ACCESSORIES**

All test instruments used are calibrated and verified regularly. The calibration history is available on request.

| Test ID         | Model Type          | Equipment No.   | Next Calib.     | Last Calib. | Next Verif. | Last Verif. |
|-----------------|---------------------|-----------------|-----------------|-------------|-------------|-------------|
| CPC 3           | NRVS                | 02-02/07-05-005 |                 |             |             |             |
|                 | NRV-Z1              | 02-02/07-05-017 | 18/11/2013      | 18/11/2010  | 04/01/2013  | 04/01/2012  |
|                 | VLP-1602 PRO        | 02-02/50-10-015 |                 |             |             |             |
|                 | KMS102-1m           | 02-02/50-11-014 |                 |             |             |             |
|                 | KMS102-0,2m         | 02-02/50-11-016 |                 |             |             |             |
|                 | KMS102-0,2m         | 02-02/50-11-017 |                 |             |             |             |
|                 | KMS102-0,2m         | 02-02/50-11-018 |                 |             |             |             |
|                 | DC-40GHz - D/C9914  | 02-02/50-12-010 |                 |             |             |             |
| DC              | FSP 40              | 02-02/11-11-001 | 02/09/2012      | 02/09/2011  |             |             |
|                 | VLP-1602 PRO        | 02-02/50-10-015 |                 |             |             |             |
|                 | KMS102-1m           | 02-02/50-11-014 |                 |             |             |             |
|                 | KMS102-0,2m         | 02-02/50-11-016 |                 |             |             |             |
|                 | KMS102-0,2m         | 02-02/50-11-017 |                 |             |             |             |
|                 | KMS102-0,2m         | 02-02/50-11-018 |                 |             |             |             |
|                 | DC-40GHz - D/C9914  | 02-02/50-12-010 |                 |             |             |             |
| MB              | FSP 40              | 02-02/11-11-001 | 02/09/2012      | 02/09/2011  |             |             |
|                 | WK-340/40           | 02-02/45-05-001 | 31/05/2013      | 31/05/2011  | 22/06/2012  | 22/12/2011  |
|                 | VLP-1602 PRO        | 02-02/50-10-015 |                 |             |             |             |
|                 | KMS102-1m           | 02-02/50-11-014 |                 |             |             |             |
|                 | KMS102-0,2m         | 02-02/50-11-016 |                 |             |             |             |
|                 | KMS102-0,2m         | 02-02/50-11-017 |                 |             |             |             |
|                 | KMS102-0,2m         | 02-02/50-11-018 |                 |             |             |             |
|                 | DC-40GHz - D/C9914  | 02-02/50-12-010 |                 |             |             |             |
| SEC 1-3         | FSP 40              | 02-02/11-11-001 | 02/09/2012      | 02/09/2011  |             |             |
|                 | VLP-1602 PRO        | 02-02/50-10-015 |                 |             |             |             |
|                 | KMS102-1m           | 02-02/50-11-014 |                 |             |             |             |
|                 | KMS102-0,2m         | 02-02/50-11-016 |                 |             |             |             |
|                 | KMS102-0,2m         | 02-02/50-11-017 |                 |             |             |             |
|                 | KMS102-0,2m         | 02-02/50-11-018 |                 |             |             |             |
|                 | DC-40GHz - D/C9914  | 02-02/50-12-010 |                 |             |             |             |
|                 | SER 1               | FMZB 1516       | 01-02/24-01-018 | 16/02/2013  |             | 16/02/2012  |
| ESCI            |                     | 02-02/03-05-005 | 21/11/2012      | 21/11/2011  |             |             |
| S10162-B        |                     | 02-02/50-05-031 |                 |             |             |             |
| KK-EF393-21N-16 |                     | 02-02/50-05-033 |                 |             |             |             |
| NW-2000-NB      |                     | 02-02/50-05-113 |                 |             |             |             |
| SER 2           | ESVS 30             | 02-02/03-05-006 | 20/06/2012      | 20/06/2011  |             |             |
|                 | BBA 9106 / VHA 9103 | 02-02/24-05-002 | 08/09/2012      |             | 08/03/2012  |             |
|                 | UHALP 9108 A        | 02-02/24-05-004 | 23/09/2014      | 23/09/2011  | 23/03/2012  | 23/09/2011  |
|                 | S10162-B            | 02-02/50-05-031 |                 |             |             |             |
|                 | KK-EF393-21N-16     | 02-02/50-05-033 |                 |             |             |             |
|                 | NW-2000-NB          | 02-02/50-05-113 |                 |             |             |             |

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|       |                        |                 |            |            |            |
|-------|------------------------|-----------------|------------|------------|------------|
| SER 3 | FSP 40                 | 02-02/11-11-001 | 02/09/2012 | 02/09/2011 |            |
|       | AFS4-01000400-10-10P-4 | 02-02/17-05-003 |            |            |            |
|       | AMF-4F-04001200-15-10P | 02-02/17-05-004 |            |            |            |
|       | AFS5-12001800-18-10P-6 | 02-02/17-06-002 |            |            |            |
|       | 3117                   | 02-02/24-05-009 | 16/02/2013 | 16/02/2012 |            |
|       | R1 _ 18 - 40 GHz       | 02-02/30-09-002 | 19/12/2012 |            | 19/12/2011 |
|       | Sucoflex N-1000-SMA    | 02-02/50-05-072 |            |            |            |
|       | Sucoflex N-1600-SMA    | 02-02/50-05-073 |            |            |            |
|       | Sucoflex N-2000-SMA    | 02-02/50-05-075 |            |            |            |
|       | VLP-1602 PRO           | 02-02/50-10-015 |            |            |            |

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