# RADIO TEST REPORT

## Test Report No. : 32BE0278-HO-C-R1

| | | |
|---|---|---|
| **Applicant** | : | **SAMSUNG ELECTRONICS CO., LTD.** |
| **Type of Equipment** | : | **Cellular/PCS GSM/GPRS/EDGE Tablet with 802.11abgn, BT3.0** |
| **Model No.** | : | **SC-02D** |
| **FCC ID** | : | **A3LSWDSC02D** |
| **Test regulation** | : | **FCC Part 15 Subpart E: 2011** |
| **Test Result** | : | **Complied** |

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
6. This report is a revised version of 32BE0278-HO-C. 32BE0278-HO-C is replaced with this report.

**Date of test:** October 3 to November 4, 2011

**Representative test engineer:**

Katsunori Okai
Engineer of WiSE Japan,
UL Verification Service

**Approved by:**

Takahiro Hatakeda
Leader of WiSE Japan,
UL Verification Service

NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.
*As for the range of Accreditation in NVLAP, you may refer to the WEB address,
http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap

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# SECTION 1: Customer information

| | | |
|---|---|---|
| Company Name | : | SAMSUNG ELECTRONICS CO., LTD. |
| Address | : | 416, MAETAN 3-DONG, YEONGTONG-GU SUWON-CITY, GYEONGGI-DO 443-742, SOUTH KOREA |

# SECTION 2: Equipment under test (E.U.T.)

## 2.1 Identification of E.U.T.

| | | |
|---|---|---|
| Type of Equipment | : | Cellular/PCS GSM/GPRS/EDGE Tablet with 802.11abgn, BT3.0 |
| Model No. | : | SC-02D |
| Serial No. | : | Refer to Section 4, Clause 4.2 |
| Rating | : | DC4.0V |
| Receipt Date of Sample | : | September 27, 2011 |
| Modification of EUT | : | No Modification by the test lab |

## 2.2 Product Description

**Radio Specification**

**Bluetooth**

| | |
|---|---|
| Equipment Type | Transceiver |
| Frequency of Operation | 2402-2480MHz |
| Type of Modulation | FHSS |
| Bandwidth & Channel spacing | 1MHz & 1MHz |
| Antenna Type | PIFA |
| Antenna Gain | -0.63 dBi |

**WLAN (IEEE802.11a/b/g/n-20)**

| | | |
|---|---|---|
| Equipment Type | Transceiver | |
| Frequency of Operation | 2412-2462MHz | 5180-5240MHz<br>5260-5320MHz<br>5500-5700MHz<br>5745-5825MHz |
| Type of Modulation | DSSS, OFDM | OFDM |
| Bandwidth & Channel spacing | 20MHz & 5MHz | 20MHz & 20MHz |
| Antenna Type | SEMI-PIFA | |
| Antenna Gain | 2.4G: -0.4dBi | 5G: -3.8dBi |

**WLAN (IEEE802.11n-40)**

| | |
|---|---|
| Equipment Type | Transceiver |
| Frequency of Operation | 5190-5230MHz<br>5250-5320MHz<br>5510-5670MHz<br>5755-5795MHz |
| Type of Modulation | OFDM |
| Bandwidth & Channel spacing | 40MHz & 40MHz |
| Antenna Type | SEMI-PIFA |
| Antenna Gain | -3.8dBi |

**GSM**

| | |
|---|---|
| Equipment Type | Transceiver |
| Frequency of Operation | [Up Link]<br>GSM850: 824 – 849MHz<br>PCS: 1850 – 1910MHz<br>[Down Link]<br>GSM850: 869 – 894MHz<br>PCS: 1930 – 1990MHz |
| Type of Modulation | GMSK , 8PSK |
| Antenna Type | PIFA |
| Antenna Gain | GSM850: -5.0dBi<br>PCS: -1.5dBi |

# SECTION 3: Test specification, procedures & results

## 3.1 Test Specification

| | | |
|---|---|---|
| Test Specification | : | FCC Part 15 Subpart E: 2011, final revised on July 8, 2011 and effective August 8, 2011 |
| Title | : | FCC 47CFR Part15 Radio Frequency Device Subpart E Unlicensed National Information Infrastructure Devices Section 15.407 General technical requirements |

## 3.2 Procedures and results

| Item | Test Procedure | Specification | Worst margin | Results | Remarks |
|---|---|---|---|---|---|
| Conducted Emission | **FCC :**ANSI C63.4:2003 | **FCC:** 15.407(b)(6) / 15.207 | **QP** 15.3dB, 0.42820MHz, N<br>**AV** 22.0dB, 0.54806MHz, N | Complied | - |
| | **IC:** RSS-Gen 7.2.4 | **IC:** RSS-Gen 7.2.4 | | | |
| 26dB Emission Bandwidth | **FCC :**ANSI C63.4:2003<br>FCC Public Notice DA 02-2138A1 | **FCC :** 15.407(a)(1)(2)(3) | See data | N/A | Conducted |
| | **IC:** - | **IC:** - | | | |
| Maximum Peak Output Power | **FCC :**ANSI C63.4:2003,<br>FCC Public Notice DA 02-2138A1 | **FCC:** 15.407(a)(1)(2)(3) | | Complied | Conducted |
| | **IC:** - | **IC:** RSS-210 A9.2(1)(2)(3) | | | |
| Peak Power Spectral Density | **FCC :**ANSI C63.4:2003,<br>FCC Public Notice DA 02-2138A1 | **FCC:** 15.407(a)(1)(2)(3) | | Complied | Conducted |
| | **IC:** - | **IC:** RSS-210 A9.2(1)(2)(3) | | | |
| Peak Excursion Ratio | **FCC :**ANSI C63.4:2003,<br>FCC Public Notice DA 02-2138A1 | **FCC:** 15.407(a)(6) | | Complied | Conducted |
| | **IC:** - | **IC:** - | | | |
| Spurious Emission Restricted Band Edge | **FCC:** ANSI C63.4:2003 | **FCC:** 15.407(b), 15.205 and 15.209 | 3.2dB<br>5350.000MHz, AV, Hori | Complied | Conducted / Radiated |
| | **IC:** - | **IC:** RSS-210 A.9.2(1)(2)(3) | | | |
| Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.<br>For DFS tests, please see the test report number 32BE0278-HO-D issued by UL Japan, Inc. | | | | | |

*These tests were also referred to FCC Public Notice DA 02-2138A1 "Measurement Procedure Updated for Peak Transmit Power in the Unlicensed National Information Infrastructure (U-NII) Bands ".

## 3.3 Addition to standard

| Item | Test Procedure | Specification | Worst margin | Results | Remarks |
|---|---|---|---|---|---|
| 99% Occupied Band Width | RSS-Gen 4.6.1 | RSS-210 A9.2 (1)(2)(3) | N/A | N/A | Conducted |

Other than above, no addition, exclusion nor deviation has been made from the standard.

## 3.4 Uncertainty

**EMI**
The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

| Test room (semi-anechoic chamber) | Conducted emission (±dB) |
|---|---|
| | 150kHz-30MHz |
| No.1 | 3.5dB |
| No.2 | 3.6dB |
| No.3 | 3.6dB |
| No.4 | 3.6dB |

| Test room (semi-anechoic chamber) | Radiated emission | | | | | | |
|---|---|---|---|---|---|---|---|
| | (3m*)(±dB) | | | | (1m*)(±dB) | | (0.5m*)(±dB) |
| | 9kHz -30MHz | 30MHz -300MHz | 300MHz -1GHz | 1GHz -10GHz | 10GHz -18GHz | 18GHz -26.5GHz | 26.5GHz -40GHz |
| No.1 | 4.2dB | 5.0dB | 5.1dB | 5.6dB | 5.9dB | 4.4dB | 4.3dB |
| No.2 | 4.1dB | 5.2dB | 5.1dB | 5.7dB | 5.8dB | 4.3dB | 4.2dB |
| No.3 | 4.5dB | 5.0dB | 5.2dB | 5.7dB | 5.8dB | 4.5dB | 4.2dB |
| No.4 | 4.7dB | 5.2dB | 5.2dB | 5.7dB | 5.8dB | 5.1dB | 4.2dB |

*3m/1m/0.5m = Measurement distance

| Antenna terminal conducted emission and Power density (±dB) | | | Antenna terminal conducted emission (±dB) | | Channel power (±dB) |
|---|---|---|---|---|---|
| Below 1GHz | 1GHz-3GHz | 3GHz-18GHz | 18GHz-26.5GHz | 26.5GHz-40GHz | |
| 1.0dB | 1.1dB | 2.7dB | 3.2dB | 3.3dB | 1.5dB |

Conducted Emission test
The data listed in this test report has enough margin, more than the site margin.

Radiated emission test(3m)
The data listed in this report meets the limits unless the uncertainty is taken into consideration.

### 3.5 Test Location

UL Japan, Inc. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116 Facsimile : +81 596 24 8124

| | FCC Registration Number | IC Registration Number | Width x Depth x Height (m) | Size of reference ground plane (m) / horizontal conducting plane | Other rooms |
|---|---|---|---|---|---|
| No.1 semi-anechoic chamber | 313583 | 2973C-1 | 19.2 x 11.2 x 7.7m | 7.0 x 6.0m | No.1 Power source room |
| No.2 semi-anechoic chamber | 655103 | 2973C-2 | 7.5 x 5.8 x 5.2m | 4.0 x 4.0m | - |
| No.3 semi-anechoic chamber | 148738 | 2973C-3 | 12.0 x 8.5 x 5.9m | 6.8 x 5.75m | No.3 Preparation room |
| No.3 shielded room | - | - | 4.0 x 6.0 x 2.7m | N/A | - |
| No.4 semi-anechoic chamber | 134570 | 2973C-4 | 12.0 x 8.5 x 5.9m | 6.8 x 5.75m | No.4 Preparation room |
| No.4 shielded room | - | - | 4.0 x 6.0 x 2.7m | N/A | - |
| No.5 semi-anechoic chamber | - | - | 6.0 x 6.0 x 3.9m | 6.0 x 6.0m | - |
| No.6 shielded room | - | - | 4.0 x 4.5 x 2.7m | 4.75 x 5.4 m | - |
| No.6 measurement room | - | - | 4.75 x 5.4 x 3.0m | 4.75 x 4.15 m | - |
| No.7 shielded room | - | - | 4.7 x 7.5 x 2.7m | 4.7 x 7.5m | - |
| No.8 measurement room | - | - | 3.1 x 5.0 x 2.7m | N/A | - |
| No.9 measurement room | - | - | 8.0 x 4.5 x 2.8m | 2.0 x 2.0m | - |
| No.10 measurement room | - | - | 2.6 x 2.8 x 2.5m | 2.4 x 2.4m | - |
| No.11 measurement room | - | - | 3.1 x 3.4 x 3.0m | 2.4 x 3.4m | - |

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

### 3.6 Data of EMI, Test instruments, and Test set up

Refer to APPENDIX.

# SECTION 4: Operation of E.U.T. during testing

## 4.1 Operating Modes

Test operating mode was determined as follows according to "Section 1 of 6 802.11 a/b/g/n testing- Managing Complex Regulatory Approvals - " of TCB Council Workshop October 2009.

| Mode | Remarks* |
|---|---|
| IEEE 802.11a (11a)<br>IEEE 802.11n SISO 20MHz BW (11n-20) | 6Mbps, PN9<br>MCS 1, PN9 |
| IEEE 802.11n SISO 40MHz BW (11n-40) | MCS 0, PN9 |
| *The worst condition was determined based on the test result of Maximum Peak Output Power (Low channel). | |

**Power of the EUT was set by the software as follows:**

Software name & version: HW: REV0.0, SW: N024.001

[Power Setting]

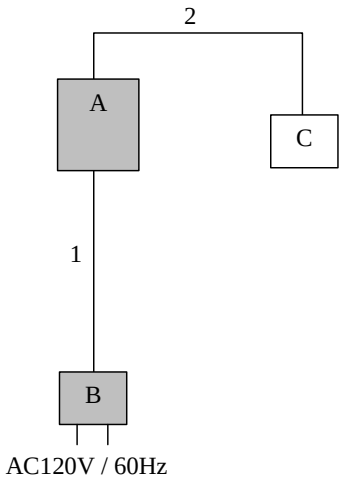
11a: 8dBm
11n-20(5GHz): 8dBm
11n-40(5GHz): 8dBm

*The above setting of the software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.

*Details of Operating mode(s)

| Test Item | Operating Mode | Tested Frequency | | |
|---|---|---|---|---|
| | | Low Band | Middle Band | Additional Band |
| Conducted emission | 11n-40 Tx*1) | - | 5510MHz | - |
| 26dB Emission Bandwidth,<br>99% Occupied Bandwidth,<br>Spurious Emission<br>(Conducted emission Band Edge compliance) | 11a Tx<br>11n-20 Tx | 5180MHz<br>5220MHz<br>5240MHz | 5260MHz<br>5300MHz<br>5320MHz | 5500MHz<br>5600MHz<br>5700MHz |
| | 11n-40 Tx | 5190MHz<br>5230MHz | 5270MHz<br>5310MHz | 5510MHz<br>5590MHz<br>5670MHz |
| Maximum Peak Output Power<br>Peak Power Spectral Density,<br>Peak Excursion Ratio,<br>Spurious Emission(Conducted) | 11a Tx *2) | 5180MHz<br>5220MHz<br>5240MHz | 5260MHz<br>5300MHz<br>5320MHz | 5500MHz<br>5600MHz<br>5700MHz |
| | 11n-40 Tx | 5190MHz<br>5230MHz | 5270MHz<br>5310MHz | 5510MHz<br>5590MHz<br>5670MHz |
| Spurious Emission(Radiated) | 11a Tx *2) | 5180MHz<br>5240MHz | 5320MHz | 5500MHz<br>5600MHz<br>5700MHz |
| | 11n-40 Tx | 5190MHz<br>5230MHz | 5310MHz | 5510MHz<br>5590MHz<br>5670MHz |
| *1) The mode was tested as a representative, because it had the highest power at antenna terminal test and the noise levels at the mode/tested frequencies were equivalent to those of other modes/tested frequencies.<br>*2) Since 11a and 11n-20 have the same modulation method and no differences in transmitting specification, test was performed on the representative mode that had the highest peak output power. | | | | |

## 4.2 Configuration and peripherals




* Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.

**Description of EUT and Support equipment**

| No. | Item | Model number | Serial number | Manufacturer | Remarks |
|---|---|---|---|---|---|
| A | Cellular/PCS GSM/GPRS/EDGE Tablet with 802.11abgn, BT3.0 | SC-02D | R24B976664D *1)<br>R24B976670T *2)<br>R24B976808Y *3) | SAMSUNG | EUT |
| B | AC Adapter | SC02 | - | SAMSUNG | EUT |
| C | Ear phone | - | - | SAMSUNG | - |

*1) Used for Antenna Terminal conducted test
*2) Used for Conducted Emission test
*3) Used for Radiated Emission tests

**List of cables used**

| No. | Name | Length (m) | Shield | | Remarks |
|---|---|---|---|---|---|
| | | | Cable | Connector | |
| 1 | USB Cable | 1.0 | Shielded | Shielded | - |
| 2 | Ear phone Cable | 1.2 | Unshielded | Unshielded | - |

## SECTION 5: Conducted Emission

**Test Procedure**

EUT was placed on a urethane platform of nominal size, 0.5m by 1.0m, raised 0.8m above the conducting ground plane.
The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center.

For the tests on EUT with other peripherals (as a whole system)
I/O cable and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. All unused 50ohm connectors of the LISN(AMN) were resistivity terminated in 50ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber or a Measurement Room.
The EUT was connected to a LISN (AMN).
An overview sweep with peak detection has been performed.

**Detector : QP and AV**
**Measurement range : 0.15-30MHz**
**Test data : APPENDIX**
**Test result : Pass**

## SECTION 6: Radiated Spurious Emission and Band Edge Compliance

**Test Procedure**

EUT was placed on a urethane platform of nominal size, 0.5m by 1.0m, raised 0.8m above the conducting ground plane.
The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.
The height of the measuring antenna varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.
The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).
The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.
The test was made with the detector (RBW/VBW) in the following table.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Below 1GHz
The result also satisfied with the general limits specified in section 15.209(a).

Above 1GHz

| | |
|---|---|
| Inside of restricted bands(Section 15.205): | Apply to limit in the Section 15.209(a). |
| Outside of the restricted bands: | Peak detector apply to limit 68.2dBuV/m(–27dBm e.i.r.p.*) in the Section 15.407(b)(1)(2)(3). |
| Restricted bandedge: | Apply to limit in the Section 15.209(a). Since this limit is severer than the limit of the inside of restricted bands. |

*Electric Field Strength to e.i.r.p. Conversion

$$E = \frac{1000000\sqrt{30P}}{3} \text{ (uV/m)} \qquad \text{:P is the e.i.r.p. (Watts)}$$

**Test Antennas are used as below;**

| Frequency | Below 30MHz | 30MHz to 300MHz | 300MHz to 1GHz | Above 1GHz |
|---|---|---|---|---|
| Antenna Type | Loop | Biconical | Logperiodic | Horn |

| Frequency | Below 1GHz | Above 1GHz | |
|---|---|---|---|
| Instrument used | Test Receiver | Spectrum Analyzer | |
| Detector | QP | PK | AV |
| IF Bandwidth | BW 120kHz(T/R) | RBW: 1MHz<br>VBW: 3MHz | RBW: 1MHz<br>VBW: 10Hz*1) |
| Test Distance | 3m | 3m (below 10GHz)<br>1m*2) (above 10GHz)<br>0.5m*3) (above 26.5GHz) | |

*1) As both cycle and Off duration were short enough, 10Hz video bandwidth was used. (See Appendix)
*2) Distance Factor: 20 x log (3.0m/1.0m) = 9.5dB
*3) Distance Factor: 20 x log (3.0m/0.5m) = 15.6dB

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

The test results and limit are rounded off to one decimal place, so some differences might be observed.

**Measurement range** : **30M-40GHz**
**Test data** : **APPENDIX**
**Test result** : **Pass**

## SECTION 7: Antenna Terminal Conducted Tests

**Test Procedure**
The tests were made with below setting connected to the antenna port with Spectrum Analyzer.

| Test | Span | RBW | VBW | Sweep time | Detector | Trace | Instrument used and Test method |
|---|---|---|---|---|---|---|---|
| 26dB Bandwidth | 30MHz, 60MHz | Close to 1% of EBW | Greater than RBW | Auto | Peak | Max Hold | Spectrum Analyzer *1) |
| 99% Occupied Bandwidth | Enough width to display 20dB Bandwidth | Close to 1% of Span | Three times of RBW | Auto | Peak | Max Hold | Spectrum Analyzer *1) |
| Maximum Peak Output Power | 50MHz/100MHz | 1MHz | 3MHz | Auto | Sample Power Averaging (100 times) | Clear Write | Spectrum Analyzer method 1 |
| Peak Power Spectral Density | 50MHz/100MHz | 1MHz | 3MHz | Auto | Sample Power Averaging (100 times) | Clear Write | Spectrum Analyzer method 2 |
| Peak Excursion Ratio | 24MHz, 54MHz | 1MHz | 3MHz | Auto | Peak<br>Sample Power Averaging (100 times) | Max Hold<br>Clear Write | Spectrum Analyzer method 1 |
| Conducted Spurious Emission *2) | 9kHz to 150kHz | 200Hz | 620Hz | Auto | Peak | Max Hold | Spectrum Analyzer |
| | 150kHz to 30MHz | 9.1kHz | 27kHz | | | | |
| | 30MHz to 1GHz | 100kHz | 300kHz | | | | |
| | 1GHz to 40GHz (Less or equal to 5GHz) | 1MHz | 3MHz | | | | |

*1) The measurement was performed with Max Hold since the duty cycle was not 100%.
*2) In the frequency range below 30MHz, RBW was narrowed to separate the noise contents. Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart..

*EBW: Enough width to display Bandwidth

The test results and limit are rounded off to two decimals place, so some differences might be observed.

**Test data : APPENDIX**
**Test result : Pass**

# APPENDIX 1: Data of EMI test

## Conducted Emission

### DATA OF CONDUCTED EMISSION TEST

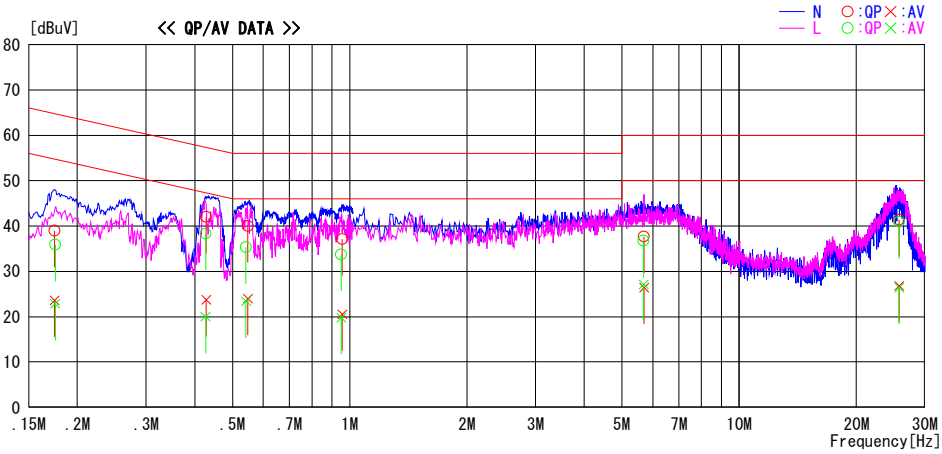
UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2011/10/06

Report No. : 32BE0278-HO

Temp./Humi. : 23deg.C / 57%RH
Engineer : Takumi Shimada

Mode / Remarks : Tx WLAN 11n-40 5510MHz MCS0

LIMIT : FCC15.207 QP
FCC15.207 AV




| Frequency | Reading Level | | Corr. | Results | | Limit | | Margin | | Phase | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | QP | AV | Factor | QP | AV | QP | AV | QP | AV | | |
| [MHz] | [dBuV] | [dBuV] | [dB] | [dBuV] | [dBuV] | [dBuV] | [dBuV] | [dB] | [dB] | | |
| 0.17463 | 25.7 | 10.3 | 13.3 | 39.0 | 23.6 | 64.7 | 54.7 | 25.7 | 31.1 | N | |
| 0.42820 | 28.7 | 10.4 | 13.3 | 42.0 | 23.7 | 57.3 | 47.3 | 15.3 | 23.6 | N | |
| 0.54806 | 26.7 | 10.7 | 13.3 | 40.0 | 24.0 | 56.0 | 46.0 | 16.0 | 22.0 | N | |
| 0.95741 | 23.6 | 7.0 | 13.5 | 37.1 | 20.5 | 56.0 | 46.0 | 18.9 | 25.5 | N | |
| 5.69636 | 23.1 | 11.8 | 14.6 | 37.7 | 26.4 | 60.0 | 50.0 | 22.3 | 23.6 | N | |
| 25.76248 | 23.1 | 8.5 | 18.3 | 41.4 | 26.8 | 60.0 | 50.0 | 18.6 | 23.2 | N | |
| 0.17523 | 22.6 | 9.5 | 13.3 | 35.9 | 22.8 | 64.7 | 54.7 | 28.8 | 31.9 | L | |
| 0.42641 | 25.0 | 6.7 | 13.3 | 38.3 | 20.0 | 57.3 | 47.3 | 19.0 | 27.3 | L | |
| 0.54172 | 22.0 | 10.1 | 13.3 | 35.3 | 23.4 | 56.0 | 46.0 | 20.7 | 22.6 | L | |
| 0.95181 | 20.2 | 6.3 | 13.5 | 33.7 | 19.8 | 56.0 | 46.0 | 22.3 | 26.2 | L | |
| 5.68130 | 22.2 | 12.5 | 14.6 | 36.8 | 27.1 | 60.0 | 50.0 | 23.2 | 22.9 | L | |
| 25.76260 | 22.6 | 8.1 | 18.3 | 40.9 | 26.4 | 60.0 | 50.0 | 19.1 | 23.6 | L | |

CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT=READING+C.F(LISN LOSS + ATT LOSS + CABLE LOSS)
Except for the above table : adequate margin data below the limits.

# 26dB Emission Bandwidth and 99% Occupied Bandwidth

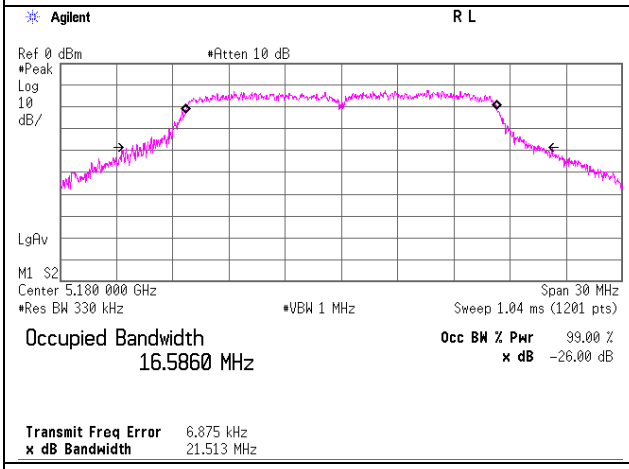
| | |
|---|---|
| Test place | Head Office EMC Lab. No.7 shielded room |
| Report No. | 32BE0278-HO |
| Date | 10/03/2011 |
| Temperature/ Humidity | 24 deg.C / 47% RH |
| Engineer | Katsunori Okai |
| Mode | 11a Tx |

| Frequency [MHz] | 26dB Emission Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] | Limit [MHz] |
|---|---|---|---|
| 5180 | 21.513 | 16.5860 | - |
| 5220 | 20.840 | 16.6000 | - |
| 5240 | 21.119 | 16.5609 | - |
| 5260 | 21.021 | 16.6001 | - |
| 5300 | 21.074 | 16.5886 | - |
| 5320 | 21.490 | 16.6059 | - |
| 5500 | 21.769 | 16.5986 | - |
| 5600 | 21,026 | 16.6077 | - |
| 5700 | 20.542 | 16.6226 | - |

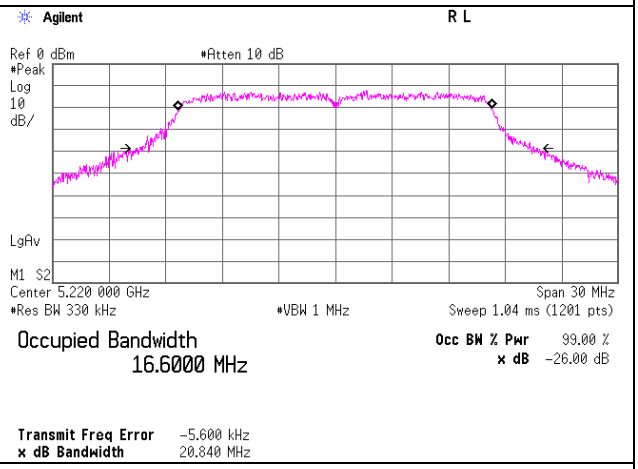
# 26dB Emission Bandwidth and 99% Occupied Bandwidth

## 11a

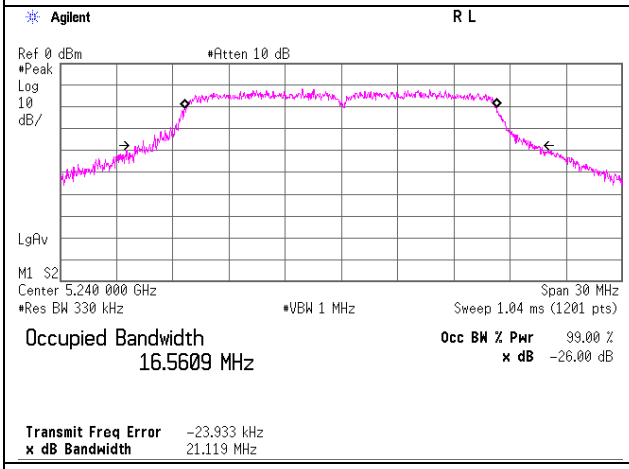
### 5180MHz



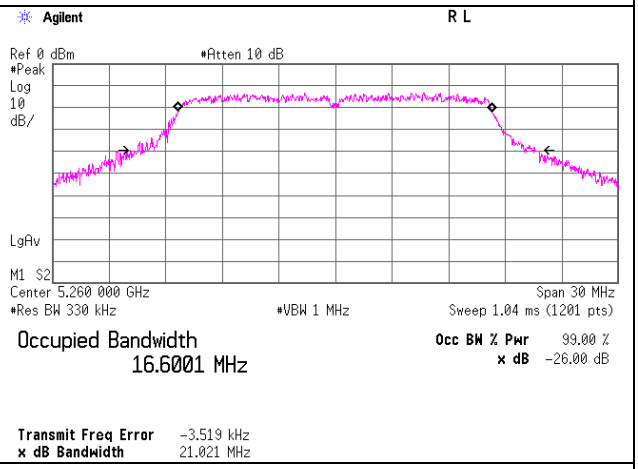

### 5220MHz



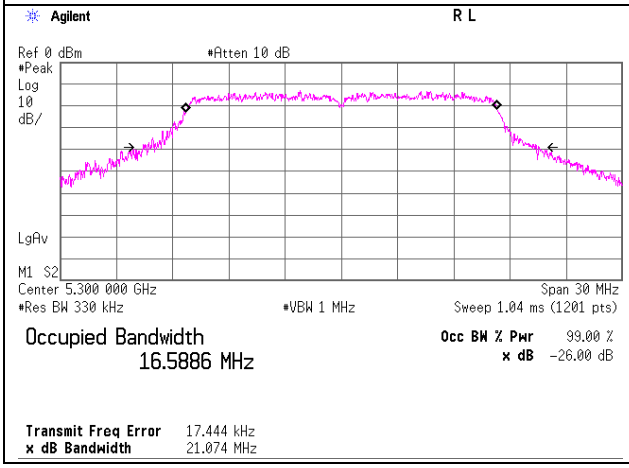

### 5240MHz



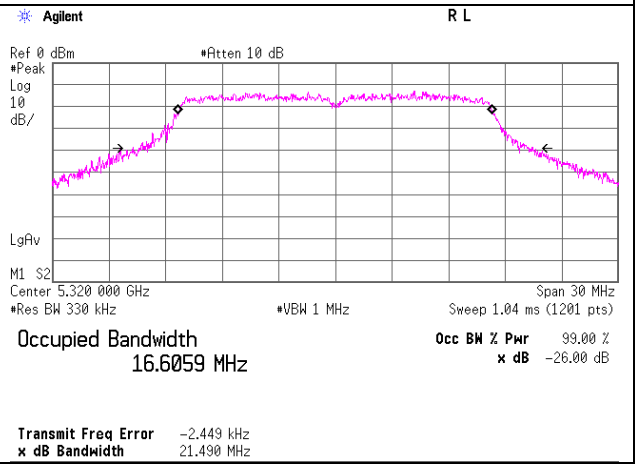

### 5260MHz




### 5300MHz



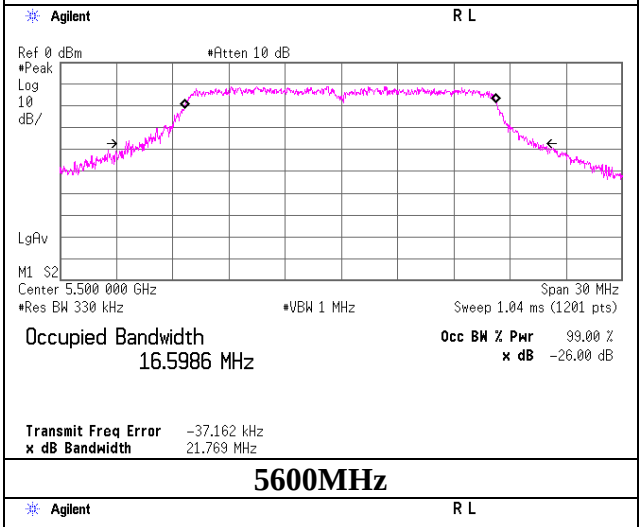

### 5320MHz



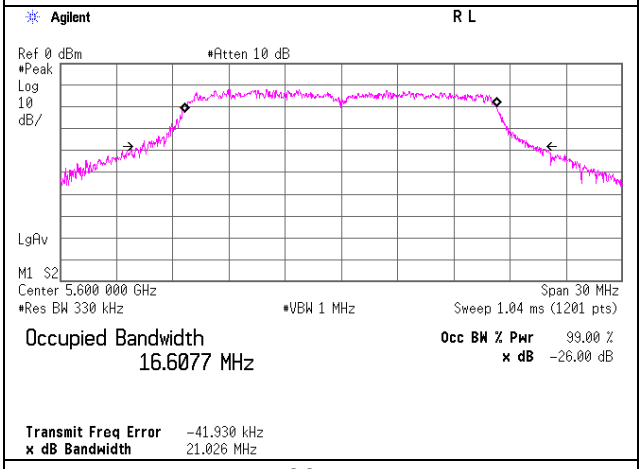
# 26dB Emission Bandwidth and 99% Occupied Bandwidth

## 11a

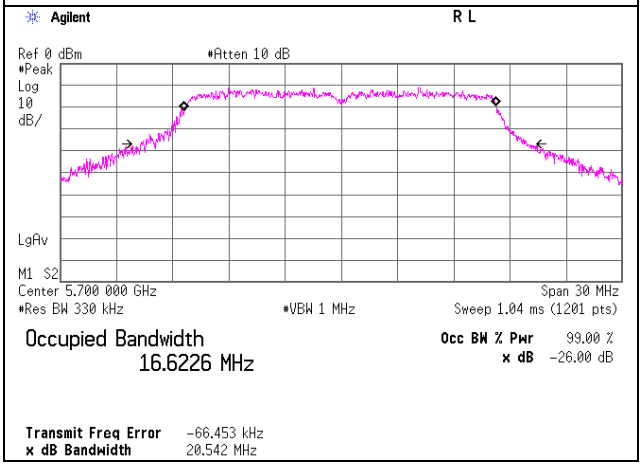
### 5500MHz




### 5600MHz




### 5700MHz



# 26dB Emission Bandwidth and 99% Occupied Bandwidth

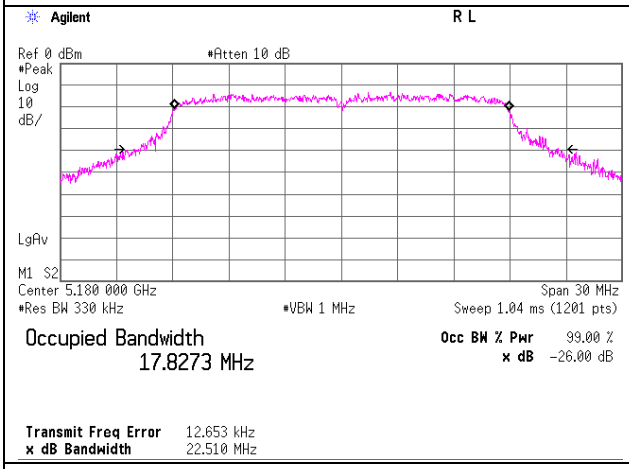
| | |
|---|---|
| Test place | Head Office EMC Lab. No.7 shielded room |
| Report No. | 32BE0278-HO |
| Date | 11/04/2011 |
| Temperature/ Humidity | 25 deg.C / 52% RH |
| Engineer | Katsunori Okai |
| Mode | 11n-20 Tx |

| Frequency [MHz] | 26dB Emission Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] | Limit [MHz] |
|---|---|---|---|
| 5180 | 22.510 | 17.8273 | - |
| 5220 | 22.355 | 17.7963 | - |
| 5240 | 22.132 | 17.7900 | - |
| 5260 | 23.055 | 17.7774 | - |
| 5300 | 22.422 | 17.7484 | - |
| 5320 | 22.175 | 17.7552 | - |
| 5500 | 23.081 | 17.8023 | - |
| 5600 | 23.293 | 17.8349 | - |
| 5700 | 23.076 | 17.7732 | - |

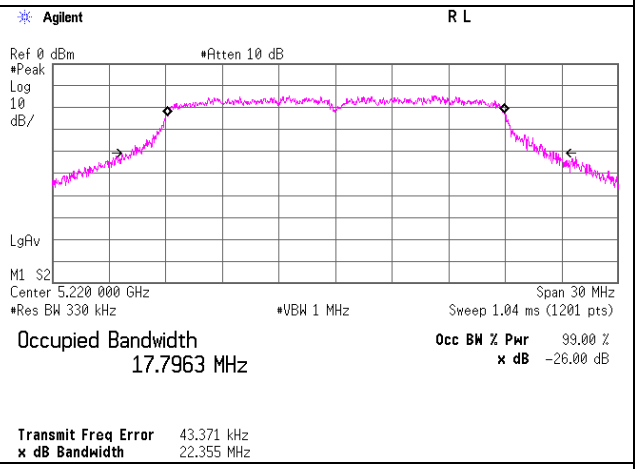
# 26dB Emission Bandwidth and 99% Occupied Bandwidth

## 11n-20

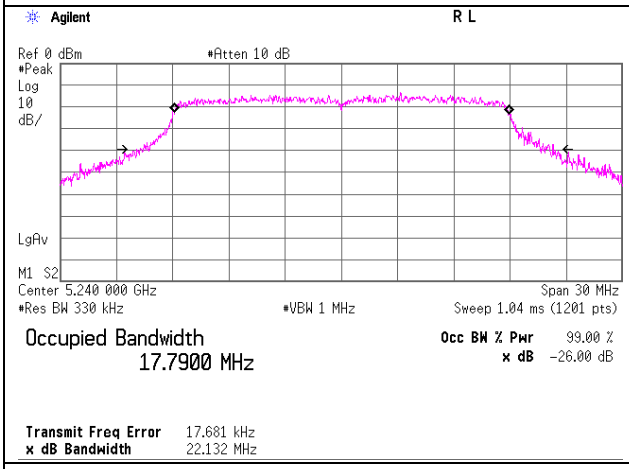
### 5180MHz



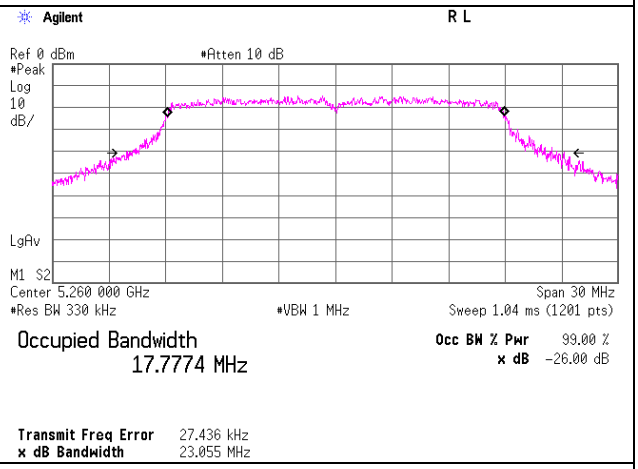

### 5220MHz



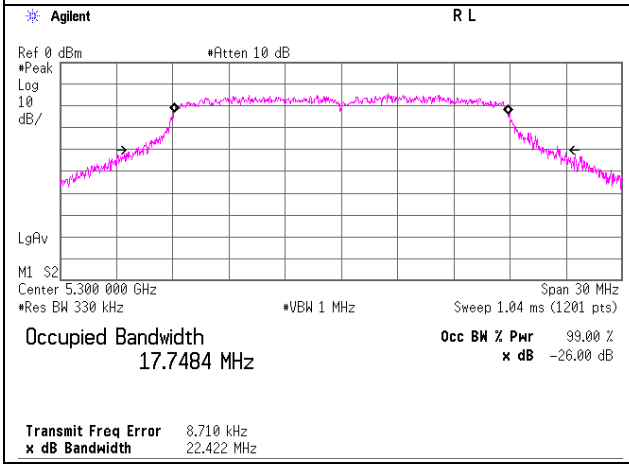

### 5240MHz



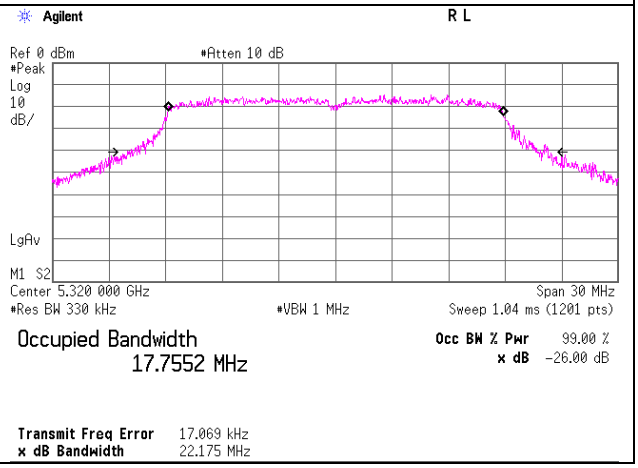

### 5260MHz




### 5300MHz



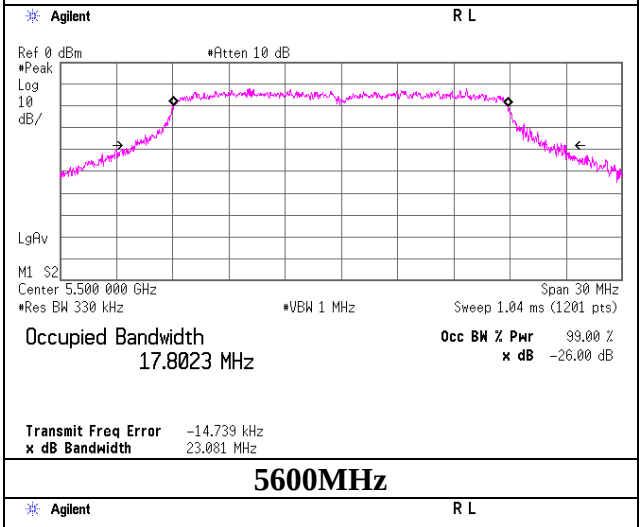

### 5320MHz



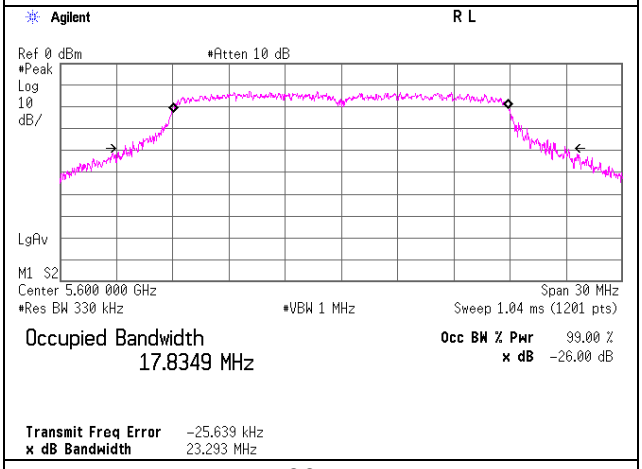
# 26dB Emission Bandwidth and 99% Occupied Bandwidth

## 11n-20

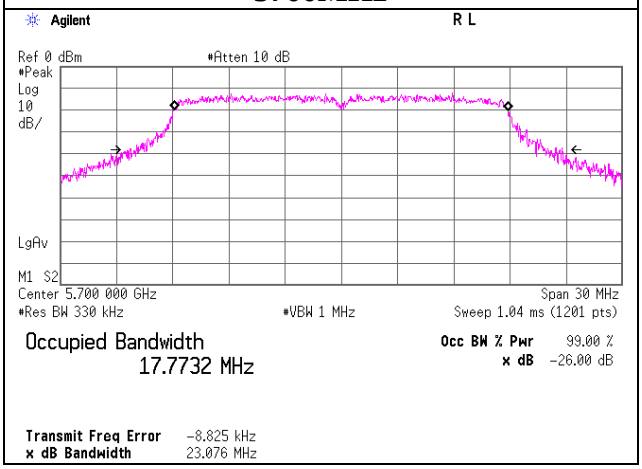
### 5500MHz




### 5600MHz




### 5700MHz



# 26dB Emission Bandwidth and 99% Occupied Bandwidth

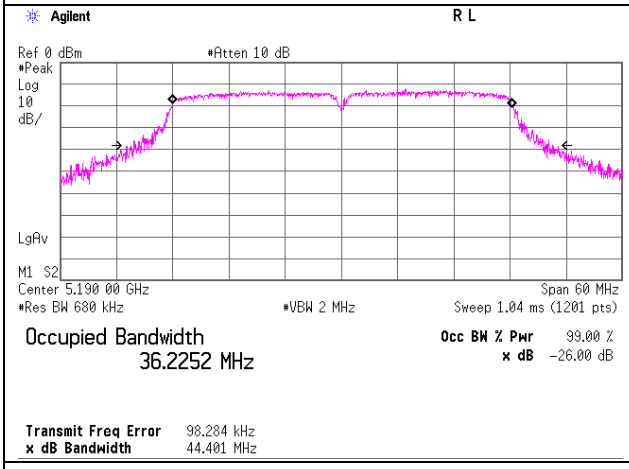
| | |
|---|---|
| Test place | Head Office EMC Lab. No.7 shielded room |
| Report No. | 32BE0278-HO |
| Date | 10/03/2011 |
| Temperature/ Humidity | 24 deg.C / 47% RH |
| Engineer | Katsunori Okai |
| Mode | 11n-40 Tx |

| Frequency [MHz] | 26dB Emission Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] | Limit [MHz] |
|---|---|---|---|
| 5190 | 44.401 | 36.2252 | - |
| 5230 | 44.896 | 36.2570 | - |
| 5270 | 45.284 | 36.3004 | - |
| 5310 | 46.083 | 36.2639 | - |
| 5510 | 44.975 | 36.2784 | - |
| 5590 | 45.117 | 36.2467 | - |
| 5670 | 45.597 | 36.2867 | - |

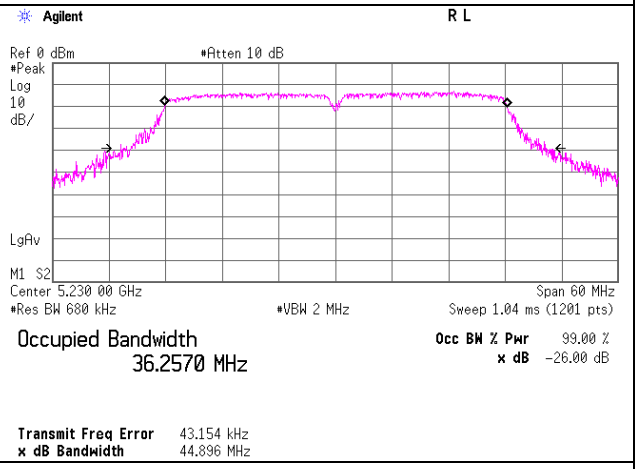
# 26dB Emission Bandwidth and 99% Occupied Bandwidth

## 11n-40

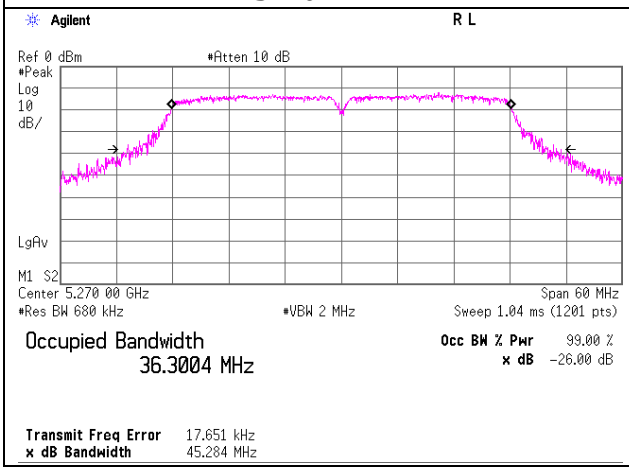
### 5190MHz



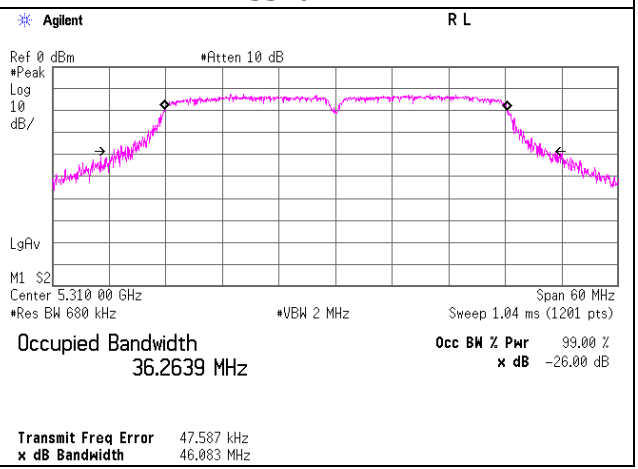

### 5230MHz




### 5270MHz



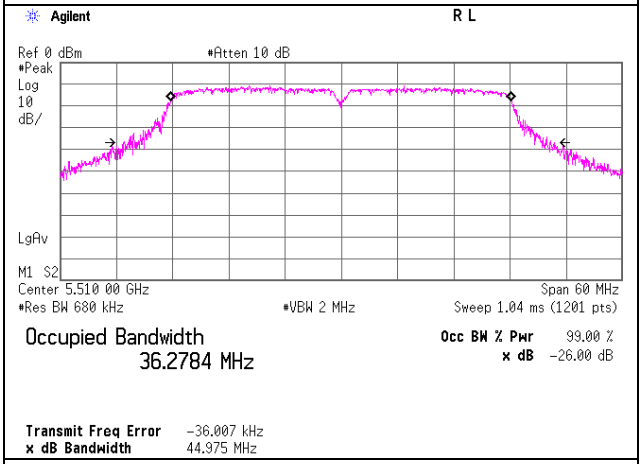

### 5310MHz



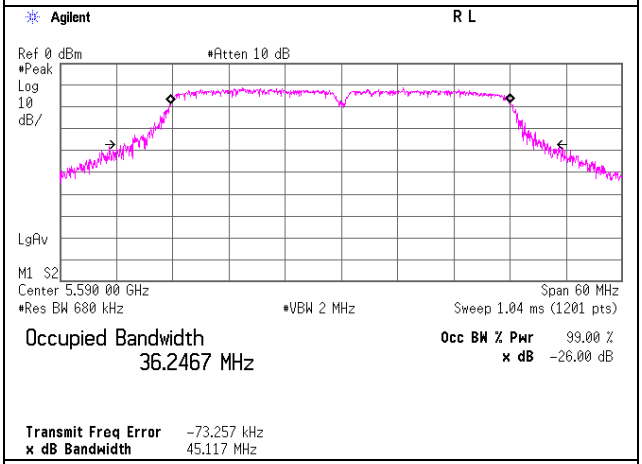
# 26dB Emission Bandwidth and 99% Occupied Bandwidth

## 11n-40

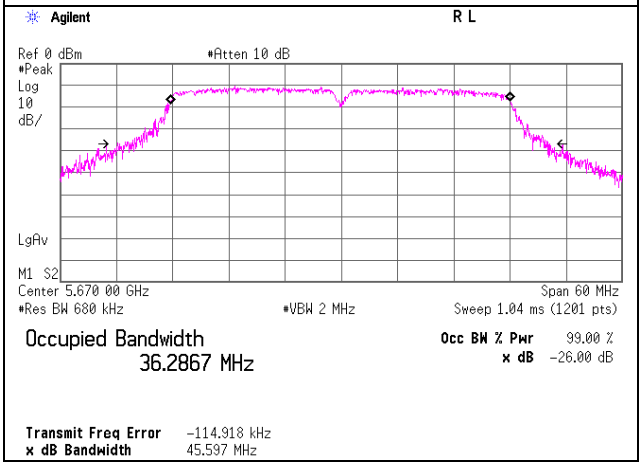
### 5510MHz




### 5590MHz




### 5670MHz



# Maximum Peak Output Power

| | |
|---|---|
| Test place | Head Office EMC Lab. No.7 shielded room |
| Report No. | 32BE0278-HO |
| Date | 10/03/2011 |
| Temperature/ Humidity | 23deg.C / 45% RH |
| Engineer | Katsunori Okai |
| Mode | 11a Tx |

| Freq. [MHz] | S/A Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Antenna Gain [dBi] | Result (Cond.) [dBm] | Result (e.i.r.p.) [dBm] | Limit (Cond.) [dBm] | Limit (e.i.r.p.) [dBm] | Margin (Cond.) [dB] | Margin (e.i.r.p.) [dB] |
|---|---|---|---|---|---|---|---|---|---|---|
| 5180.0 | -2.23 | 1.52 | 10.05 | -3.80 | 9.34 | 5.54 | 16.98 | - | 7.64 | - |
| 5220.0 | -2.48 | 1.52 | 10.05 | -3.80 | 9.09 | 5.29 | 16.98 | - | 7.89 | - |
| 5240.0 | -2.19 | 1.52 | 10.05 | -3.80 | 9.38 | 5.58 | 16.98 | - | 7.60 | - |
| 5260.0 | -3.19 | 1.53 | 10.05 | -3.80 | 8.39 | 4.59 | 23.97 | - | 15.58 | - |
| 5300.0 | -3.52 | 1.53 | 10.05 | -3.80 | 8.06 | 4.26 | 23.97 | - | 15.91 | - |
| 5320.0 | -3.64 | 1.53 | 10.05 | -3.80 | 7.94 | 4.14 | 23.97 | - | 16.03 | - |
| 5500.0 | -1.77 | 1.53 | 10.06 | -3.80 | 9.82 | 6.02 | 23.97 | - | 14.15 | - |
| 5600.0 | -2.61 | 1.54 | 10.06 | -3.80 | 8.99 | 5.19 | 23.97 | - | 14.98 | - |
| 5700.0 | -2.05 | 1.55 | 10.06 | -3.80 | 9.56 | 5.76 | 23.97 | - | 14.41 | - |

Result(Cond.) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten.Loss
Result(e.i.r.p.) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten.Loss + Antenna
15.407(a)(1) Limit(Cond.) = 16.98dBm(50mW) or 4 + 10log(26dB BW) dBm
15.407(a)(2) Limit(Cond.) = 23.97dBm(250mW) or 11 + 10log(26dB BW) dBm

ON time was only measured using Gate function.

# Maximum Peak Output Power

| | |
|---|---|
| Test place | Head Office EMC Lab. No.7 shielded room |
| Report No. | 32BE0278-HO |
| Date | 10/03/2011 |
| Temperature/ Humidity | 23deg.C / 45% RH |
| Engineer | Katsunori Okai |
| Mode | 11n-40 Tx |

| Freq. [MHz] | S/A Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Antenna Gain [dBi] | Result (Cond.) [dBm] | Result (e.i.r.p.) [dBm] | Limit (Cond.) [dBm] | Limit (e.i.r.p.) [dBm] | Margin (Cond.) [dB] | Margin (e.i.r.p.) [dB] |
|---|---|---|---|---|---|---|---|---|---|---|
| 5190.0 | -1.81 | 1.52 | 10.05 | -3.80 | 9.76 | 5.96 | 16.98 | - | 7.22 | - |
| 5230.0 | -2.31 | 1.52 | 10.05 | -3.80 | 9.26 | 5.46 | 16.98 | - | 7.72 | - |
| 5270.0 | -2.56 | 1.53 | 10.05 | -3.80 | 9.02 | 5.22 | 23.97 | - | 14.95 | - |
| 5310.0 | -2.02 | 1.53 | 10.05 | -3.80 | 9.56 | 5.76 | 23.97 | - | 14.41 | - |
| 5510.0 | -1.35 | 1.53 | 10.06 | -3.80 | 10.24 | 6.44 | 23.97 | - | 13.73 | - |
| 5590.0 | -2.28 | 1.54 | 10.06 | -3.80 | 9.32 | 5.52 | 23.97 | - | 14.65 | - |
| 5670.0 | -1.42 | 1.55 | 10.06 | -3.80 | 10.19 | 6.39 | 23.97 | - | 13.78 | - |

Result(Cond.) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten.Loss
Result(e.i.r.p.) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten.Loss + Antenna
15.407(a)(1) Limit(Cond.) = 16.98dBm(50mW) or 4 + 10log(26dB BW) dBm
15.407(a)(2) Limit(Cond.) = 23.97dBm(250mW) or 11 + 10log(26dB BW) dBm
ON time was only measured using Gate function.

# Maximum Average Output Power (Reference data for SAR testing)

**IEEE802.11a 5180-5320MHz band 6Mbps**

| Ch | Freq. | meter Reading [dBm] | Cable Loss | Atten. | Result | |
|---|---|---|---|---|---|---|
| | | | | | [dBm] | [mW] |
| | [MHz] | AVG | [dB] | [dB] | AVG | AVG |
| 36 | 5180 | -1.55 | 1.00 | 10.05 | 9.50 | 8.91 |
| 40 | 5200 | -1.67 | 1.00 | 10.05 | 9.38 | 8.67 |
| 44 | 5220 | -1.86 | 1.00 | 10.05 | 9.19 | 8.30 |
| 48 | 5240 | -1.55 | 1.00 | 10.05 | 9.50 | 8.91 |
| 52 | 5260 | -2.61 | 1.00 | 10.05 | 8.44 | 6.98 |
| 56 | 5280 | -2.69 | 1.00 | 10.05 | 8.36 | 6.85 |
| 60* | 5300 | -2.97 | 1.00 | 10.05 | 8.08 | 6.43 |
| 64 | 5320 | -3.17 | 1.00 | 10.05 | 7.88 | 6.14 |

**IEEE802.11n-20 5180-5320MHz band MCS0**

| Ch | Freq. | Power meter Reading | Cable Loss | Atten. | Result | |
|---|---|---|---|---|---|---|
| | | | | | [dBm] | [mW] |
| | [MHz] | AVG | [dB] | [dB] | AVG | AVG |
| 36 | 5180 | -1.83 | 1.00 | 10.05 | 9.22 | 8.36 |
| 40 | 5200 | -1.90 | 1.00 | 10.05 | 9.15 | 8.22 |
| 44 | 5220 | -2.47 | 1.00 | 10.05 | 8.58 | 7.21 |
| 48 | 5240 | -2.42 | 1.00 | 10.05 | 8.63 | 7.29 |
| 52 | 5260 | -2.54 | 1.00 | 10.05 | 8.51 | 7.10 |
| 56 | 5280 | -2.49 | 1.00 | 10.05 | 8.56 | 7.18 |
| 60 | 5300 | -2.77 | 1.00 | 10.05 | 8.28 | 6.73 |
| 64 | 5320 | -2.96 | 1.00 | 10.05 | 8.09 | 6.44 |

**IEEE802.11n-40 5190-5310MHz band MCS0**

| Ch | Freq. | Power meter Reading | Cable Loss | Atten. | Result | |
|---|---|---|---|---|---|---|
| | | | | | [dBm] | [mW] |
| | [MHz] | AVG | [dB] | [dB] | AVG | AVG |
| 36 | 5190 | -1.56 | 1.00 | 10.05 | 9.49 | 8.89 |
| 48 | 5230 | -1.57 | 1.00 | 10.05 | 9.48 | 8.87 |
| 56 | 5270 | -1.60 | 1.00 | 10.05 | 9.45 | 8.81 |
| 64 | 5310 | -1.59 | 1.00 | 10.05 | 9.46 | 8.83 |

Sample Calculation: Result = Reading + Cable Loss + Attenuator

# Maximum Average Output Power (Reference data for SAR testing)

**[IEEE802.11a 5500-5700MHz band] band 24Mbps**

| Ch | Freq. [MHz] | meter Reading [dBm] AVG | Cable Loss [dB] | Atten. [dB] | Result [dBm] AVG | Result [mW] AVG |
|---|---|---|---|---|---|---|
| 100* | 5500 | -1.35 | 1.00 | 10.06 | 9.71 | 9.35 |
| 104 | 5520 | -1.43 | 1.00 | 10.06 | 9.63 | 9.18 |
| 108 | 5540 | -1.49 | 1.00 | 10.06 | 9.57 | 9.06 |
| 112 | 5560 | -1.54 | 1.00 | 10.06 | 9.52 | 8.95 |
| 116 | 5580 | -1.31 | 1.00 | 10.06 | 9.75 | 9.44 |
| 120 | 5600 | -1.87 | 1.00 | 10.06 | 9.19 | 8.30 |
| 124 | 5620 | -1.94 | 1.00 | 10.06 | 9.12 | 8.17 |
| 128* | 5640 | -1.43 | 1.00 | 10.06 | 9.63 | 9.18 |
| 132 | 5660 | -1.44 | 1.00 | 10.06 | 9.62 | 9.16 |
| 136 | 5680 | -1.41 | 1.00 | 10.06 | 9.65 | 9.23 |
| 140 | 5700 | -1.41 | 1.00 | 10.06 | 9.65 | 9.23 |

**[IEEE802.11n-20 5500-5700MHz band] MCS0**

| Ch | Freq. [MHz] | meter Reading [dBm] AVG | Cable Loss [dB] | Atten. [dB] | Result [dBm] AVG | Result [mW] AVG |
|---|---|---|---|---|---|---|
| 100 | 5500 | -1.45 | 1.00 | 10.06 | 9.61 | 9.14 |
| 104 | 5520 | -1.61 | 1.00 | 10.06 | 9.45 | 8.81 |
| 108 | 5540 | -1.78 | 1.00 | 10.06 | 9.28 | 8.47 |
| 112 | 5560 | -1.97 | 1.00 | 10.06 | 9.09 | 8.11 |
| 116 | 5580 | -1.96 | 1.00 | 10.06 | 9.10 | 8.13 |
| 120 | 5600 | -1.89 | 1.00 | 10.06 | 9.17 | 8.26 |
| 124 | 5620 | -1.99 | 1.00 | 10.06 | 9.07 | 8.07 |
| 128 | 5640 | -1.65 | 1.00 | 10.06 | 9.41 | 8.73 |
| 132 | 5660 | -1.53 | 1.00 | 10.06 | 9.53 | 8.97 |
| 136 | 5680 | -1.44 | 1.00 | 10.06 | 9.62 | 9.16 |
| 140 | 5700 | -1.35 | 1.00 | 10.06 | 9.71 | 9.35 |

**[IEEE802.11n-40 5500-5700MHz band] MCS3**

| Ch | Freq. [MHz] | meter Reading [dBm] AVG | Cable Loss [dB] | Atten. [dB] | Result [dBm] AVG | Result [mW] AVG |
|---|---|---|---|---|---|---|
| 100 | 5510 | -1.36 | 1.00 | 10.06 | 9.70 | 9.33 |
| 104 | 5550 | -1.44 | 1.00 | 10.06 | 9.62 | 9.16 |
| 108 | 5590 | -1.41 | 1.00 | 10.06 | 9.65 | 9.23 |
| 112 | 5630 | -1.43 | 1.00 | 10.06 | 9.63 | 9.18 |
| 116 | 5670 | -1.32 | 1.00 | 10.06 | 9.74 | 9.42 |

Sample Calculation: Result = Reading + Cable Loss + Attenuator

# Peak Power Spectral Density

| | |
|---|---|
| Test place | Head Office EMC Lab. No.7 shielded room |
| Report No. | 32BE0278-HO |
| Date | 10/03/2011 |
| Temperature/ Humidity | 23deg.C. / 45% RH |
| Engineer | Katsunori Okai |
| Mode | 11a Tx |

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---|---|---|---|---|---|---|
| 5180.0 | -12.61 | 1.52 | 10.05 | -1.04 | 4.00 | 5.04 |
| 5220.0 | -12.99 | 1.52 | 10.05 | -1.42 | 4.00 | 5.42 |
| 5240.0 | -12.90 | 1.52 | 10.05 | -1.33 | 4.00 | 5.33 |
| 5260.0 | -13.97 | 1.53 | 10.05 | -2.39 | 11.00 | 13.39 |
| 5300.0 | -13.74 | 1.53 | 10.05 | -2.16 | 11.00 | 13.16 |
| 5320.0 | -14.25 | 1.53 | 10.05 | -2.67 | 11.00 | 13.67 |
| 5500.0 | -12.37 | 1.53 | 10.06 | -0.78 | 11.00 | 11.78 |
| 5600.0 | -13.46 | 1.54 | 10.06 | -1.86 | 11.00 | 12.86 |
| 5700.0 | -12.62 | 1.55 | 10.06 | -1.01 | 11.00 | 12.01 |

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator

ON time was only measured using Gate function.

# Peak Power Spectral Density

| | |
|---|---|
| Test place | Head Office EMC Lab. No.7 shielded room |
| Report No. | 32BE0278-HO |
| Date | 10/03/2011 |
| Temperature/ Humidity | 23deg.C. / 45% RH |
| Engineer | Katsunori Okai |
| Mode | 11n-40 Tx |

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---|---|---|---|---|---|---|
| 5190.0 | -15.40 | 1.52 | 10.05 | -3.83 | 4.00 | 7.83 |
| 5230.0 | -16.10 | 1.52 | 10.05 | -4.53 | 4.00 | 8.53 |
| 5270.0 | -16.42 | 1.52 | 10.05 | -4.85 | 11.00 | 15.85 |
| 5310.0 | -15.68 | 1.53 | 10.05 | -4.10 | 11.00 | 15.10 |
| 5510.0 | -15.21 | 1.53 | 10.06 | -3.62 | 11.00 | 14.62 |
| 5590.0 | -16.17 | 1.54 | 10.06 | -4.57 | 11.00 | 15.57 |
| 5670.0 | -15.29 | 1.55 | 10.06 | -3.68 | 11.00 | 14.68 |

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator

ON time was only measured using Gate function.

**UL Japan, Inc.**
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**4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN**
**Telephone : +81 596 24 8116**
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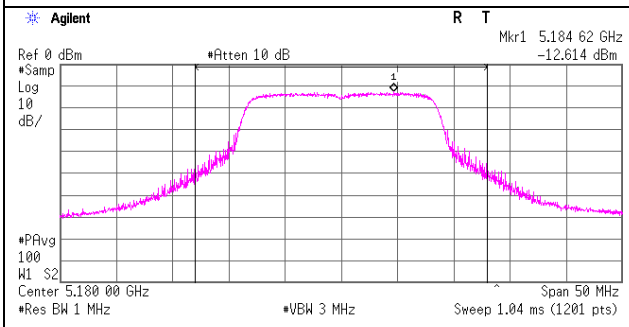
# Maximum Peak Output Power & Peak Power Spectral Density

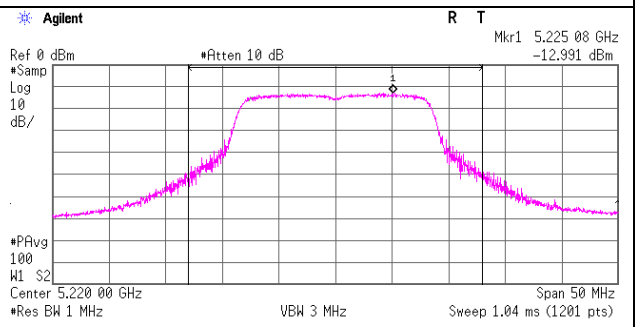
## 11a

### 5180MHz



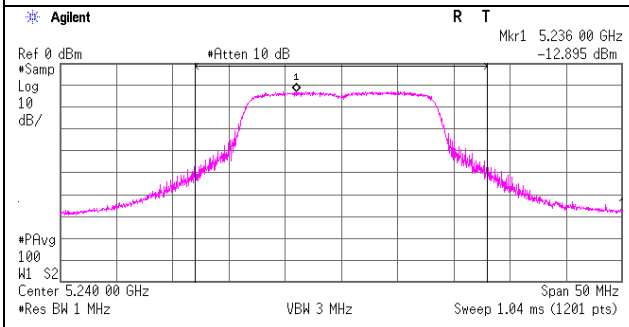

| Channel Power | Power Spectral Density |
|---|---|
| -2.23 dBm /26.0000 MHz | -76.38 dBm/Hz |

### 5220MHz



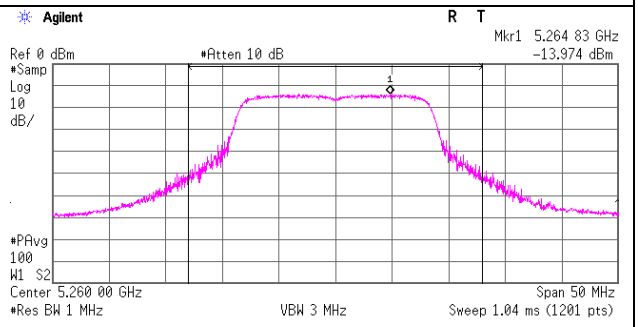

| Channel Power | Power Spectral Density |
|---|---|
| -2.48 dBm /26.0000 MHz | -76.63 dBm/Hz |

### 5240MHz



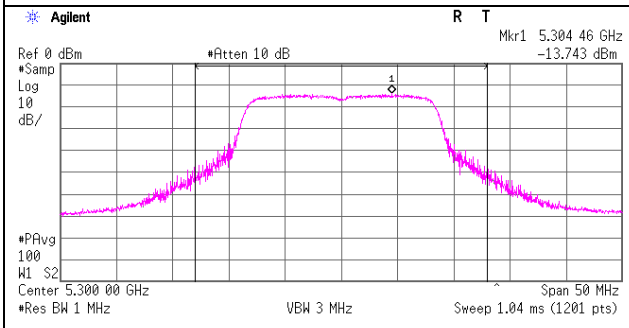

| Channel Power | Power Spectral Density |
|---|---|
| -2.19 dBm /26.0000 MHz | -76.34 dBm/Hz |

### 5260MHz



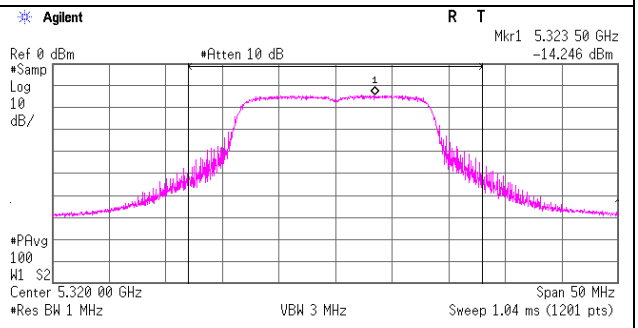

| Channel Power | Power Spectral Density |
|---|---|
| -3.19 dBm /26.0000 MHz | -77.34 dBm/Hz |

### 5300MHz




| Channel Power | Power Spectral Density |
|---|---|
| -3.52 dBm /26.0000 MHz | -77.67 dBm/Hz |

### 5320MHz

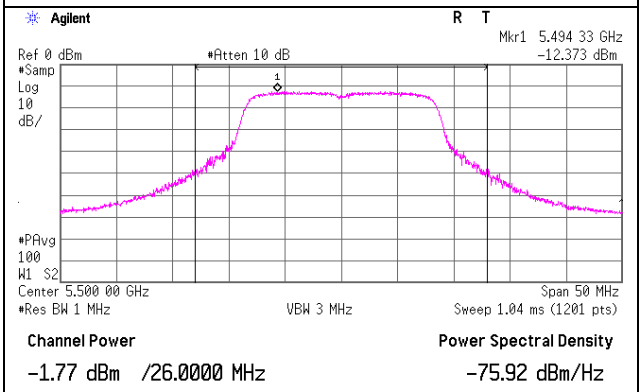



| Channel Power | Power Spectral Density |
|---|---|
| -3.64 dBm /26.0000 MHz | -77.79 dBm/Hz |

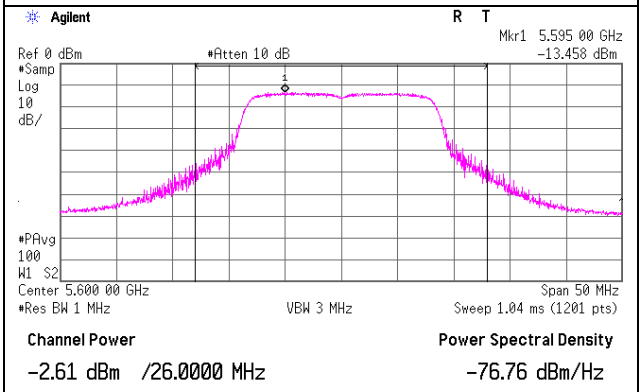
# Maximum Peak Output Power & Peak Power Spectral Density

## 11a

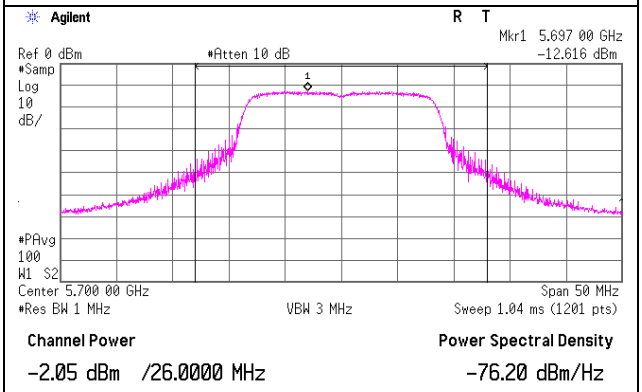
### 5500MHz




### 5600MHz



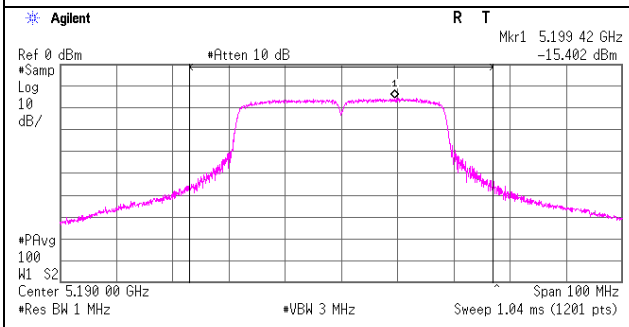

### 5700MHz



# Maximum Peak Output Power & Peak Power Spectral Density

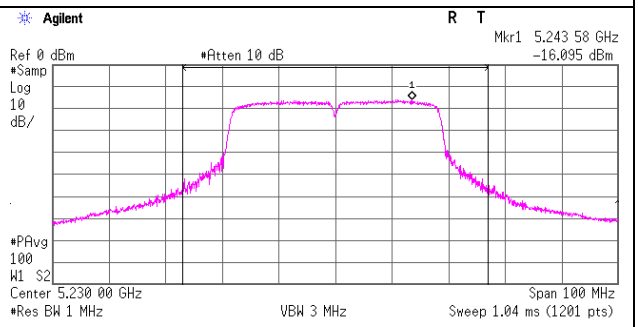
## 11n-40

### 5190MHz



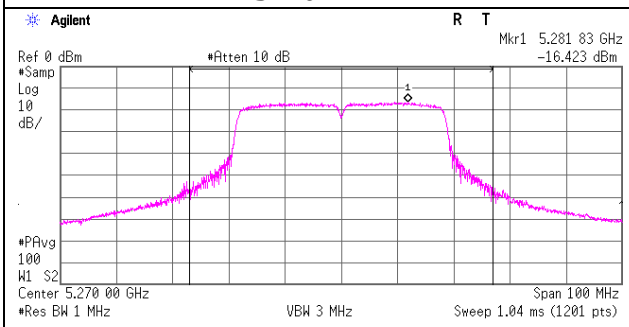

| Channel Power | Power Spectral Density |
|---|---|
| -1.81 dBm /54.0000 MHz | -79.14 dBm/Hz |

### 5230MHz



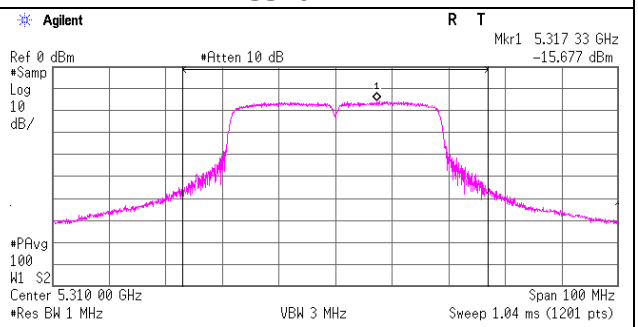

| Channel Power | Power Spectral Density |
|---|---|
| -2.31 dBm /54.0000 MHz | -79.63 dBm/Hz |

### 5270MHz




| Channel Power | Power Spectral Density |
|---|---|
| -2.56 dBm /54.0000 MHz | -79.89 dBm/Hz |

### 5310MHz

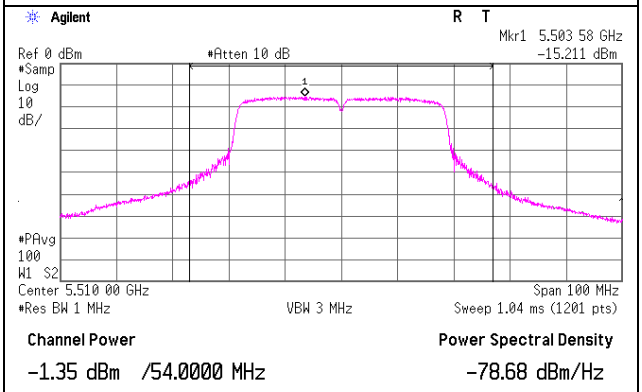



| Channel Power | Power Spectral Density |
|---|---|
| -2.02 dBm /54.0000 MHz | -79.35 dBm/Hz |

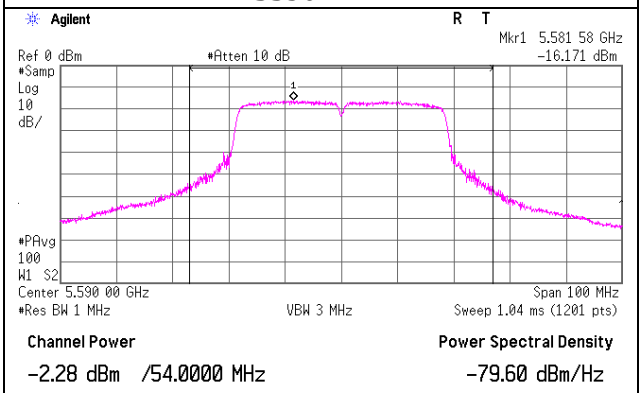
# Maximum Peak Output Power & Peak Power Spectral Density

## 11n-40

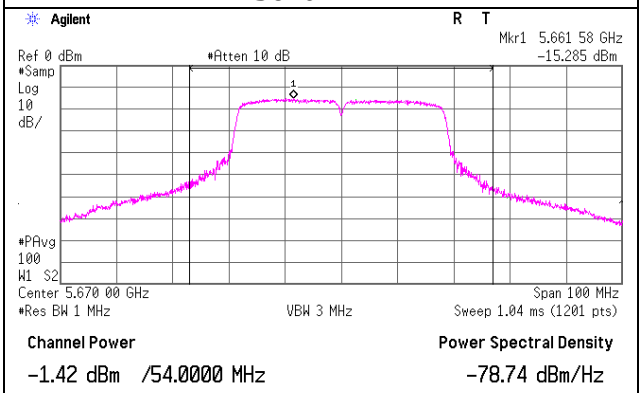
### 5510MHz




### 5590MHz




### 5670MHz



# Maximum Peak Output Power
## (Reference data)

| | |
|---|---|
| Test place | Head Office EMC Lab. No.7 shielded room |
| Report No. | 32BE0278-HO |
| Date | 10/03/2011 |
| Temperature/ Humidity | 23deg.C. / 45% RH |
| Engineer | Katsunori Okai |
| Mode | 11a, 11n-20 Tx |

5180MHz
11a

| Data Rate [Mbps] | Reading [dBm] | Remark |
|---|---|---|
| 6 | -2.23 | * |
| 9 | -2.45 | |
| 12 | -2.39 | |
| 18 | -2.44 | |
| 24 | -2.56 | |
| 36 | -2.47 | |
| 48 | -2.56 | |
| 54 | -2.50 | |

11n-20

| MCS Number | Reading [dBm] | Remark |
|---|---|---|
| 0 | -2.51 | |
| 1 | -2.44 | * |
| 2 | -2.56 | |
| 3 | -2.46 | |
| 4 | -2.59 | |
| 5 | -2.65 | |
| 6 | -2.58 | |
| 7 | -2.76 | |

* Worst Rate
All comparison were carried out on same frequency and measurement factors.

ON time was only measured using Gate function.

# Maximum Peak Output Power
## (Reference data)

| | |
|---|---|
| Test place | Head Office EMC Lab. No.7 shielded room |
| Report No. | 32BE0278-HO |
| Date | 10/03/2011 |
| Temperature/ Humidity | 23deg.C. / 45% RH |
| Engineer | Katsunori Okai |
| Mode | 11n-40 Tx |

5190MHz

| MCS Number | Reading [dBm] | Remark |
|---|---|---|
| 0 | -1.81 | * |
| 1 | -2.07 | |
| 2 | -1.99 | |
| 3 | -2.02 | |
| 4 | -2.01 | |
| 5 | -2.07 | |
| 6 | -1.93 | |
| 7 | -1.91 | |

* Worst MCS
All comparison were carried out on same frequency and measurement factors.

ON time was only measured using Gate function.

# Radiated Spurious Emission

| | | |
|---|---|---|
| Report No. | 32BE0278-HO | |
| Semi Anechoic Chamber | No.1 | No.2 |
| Date | 10/21/2011 | 10/22/2011 |
| Temperature/ Humidity | 23 deg.C / 52% RH | 24 deg.C / 55% RH |
| Engineer | Takayuki Shimada (1-18GHz) | Takayuki Shimada (18-40GHz) |
| Mode | 11a Tx 5180MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Inside or Outside of Restricted Bands | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 5150.000 | PK | 56.5 | 31.1 | 3.3 | 35.7 | 55.2 | 73.9 | 18.7 | Bandedge | |
| Hori | 10360.000 | PK | 45.5 | 38.9 | -2.8 | 36.2 | 45.4 | 68.2 | 22.8 | Outside | |
| Hori | 15540.000 | PK | 46.0 | 38.3 | -1.4 | 35.8 | 47.1 | 73.9 | 26.8 | Inside | |
| Hori | 5150.000 | AV | 43.9 | 31.1 | 3.3 | 35.7 | 42.6 | 53.9 | 11.3 | Bandedge | |
| Hori | 10360.000 | AV | 37.2 | 38.9 | -2.8 | 36.2 | 37.1 | 68.2 | 31.1 | Outside | |
| Hori | 15540.000 | AV | 33.4 | 38.3 | -1.4 | 35.8 | 34.5 | 53.9 | 19.4 | Inside | |
| Vert | 5150.000 | PK | 56.7 | 31.1 | 3.3 | 35.7 | 55.4 | 73.9 | 18.5 | Bandedge | |
| Vert | 10360.000 | PK | 45.5 | 38.9 | -2.8 | 36.2 | 45.4 | 68.2 | 22.8 | Outside | |
| Vert | 15540.000 | PK | 46.3 | 38.3 | -1.4 | 35.8 | 47.4 | 73.9 | 26.5 | Inside | |
| Vert | 5150.000 | AV | 44.4 | 31.1 | 3.3 | 35.7 | 43.1 | 53.9 | 10.8 | Bandedge | |
| Vert | 10360.000 | AV | 37.2 | 38.9 | -2.8 | 36.2 | 37.1 | 68.2 | 31.1 | Outside | |
| Vert | 15540.000 | AV | 33.4 | 38.3 | -1.4 | 35.8 | 34.5 | 53.9 | 19.4 | Inside | |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

# Radiated Spurious Emission

| | | |
|---|---|---|
| Report No. | 32BE0278-HO | |
| Semi Anechoic Chamber | No.1 | No.2 |
| Date | 10/21/2011 | 10/22/2011 |
| Temperature/ Humidity | 23 deg.C / 52% RH | 24 deg.C / 55% RH |
| Engineer | Takayuki Shimada (1-18GHz) | Takayuki Shimada (18-40GHz) |
| Mode | 11a Tx 5240MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Inside or Outside of Restricted Bands | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 10480.000 | PK | 44.4 | 39.1 | -2.8 | 36.1 | 44.6 | 68.2 | 23.6 | Outside | |
| Hori | 15720.000 | PK | 45.5 | 37.6 | -1.3 | 36.1 | 45.7 | 73.9 | 28.2 | Inside | |
| Hori | 10480.000 | AV | 37.3 | 39.1 | -2.8 | 36.1 | 37.5 | 68.2 | 30.7 | Outside | |
| Hori | 15720.000 | AV | 33.6 | 37.6 | -1.3 | 36.1 | 33.8 | 53.9 | 20.1 | Inside | |
| Vert | 10480.000 | PK | 44.6 | 39.1 | -2.8 | 36.1 | 44.8 | 68.2 | 23.4 | Outside | |
| Vert | 15720.000 | PK | 45.5 | 37.6 | -1.3 | 36.1 | 45.7 | 73.9 | 28.2 | Inside | |
| Vert | 10480.000 | AV | 37.3 | 39.1 | -2.8 | 36.1 | 37.5 | 68.2 | 30.7 | Outside | |
| Vert | 15720.000 | AV | 33.6 | 37.6 | -1.3 | 36.1 | 33.8 | 53.9 | 20.1 | Inside | |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

# Radiated Spurious Emission

| | | |
|---|---|---|
| Report No. | 32BE0278-HO | |
| Semi Anechoic Chamber | No.1 | No.2 |
| Date | 10/21/2011 | 10/22/2011 |
| Temperature/ Humidity | 23 deg.C / 52% RH | 24 deg.C / 55% RH |
| Engineer | Takayuki Shimada (1-18GHz) | Takayuki Shimada (18-40GHz) |
| Mode | 11a Tx 5320MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Inside or Outside of Restricted Bands | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 5350.000 | PK | 62.1 | 31.3 | 3.3 | 35.7 | 61.0 | 73.9 | 12.9 | Bandedge | |
| Hori | 10640.000 | PK | 44.7 | 39.5 | -2.6 | 35.9 | 45.7 | 73.9 | 28.2 | Inside | |
| Hori | 15960.000 | PK | 45.6 | 36.8 | -1.3 | 36.4 | 44.7 | 73.9 | 29.2 | Inside | |
| Hori | 5350.000 | AV | 48.8 | 31.3 | 3.3 | 35.7 | 47.7 | 53.9 | 6.2 | Bandedge | |
| Hori | 10640.000 | AV | 32.2 | 39.5 | -2.6 | 35.9 | 33.2 | 53.9 | 20.7 | Inside | |
| Hori | 15960.000 | AV | 33.8 | 36.8 | -1.3 | 36.4 | 32.9 | 53.9 | 21.0 | Inside | |
| Vert | 5350.000 | PK | 61.3 | 31.3 | 3.3 | 35.7 | 60.2 | 73.9 | 13.7 | Bandedge | |
| Vert | 10640.000 | PK | 44.8 | 39.5 | -2.6 | 35.9 | 45.8 | 73.9 | 28.1 | Inside | |
| Vert | 15960.000 | PK | 45.9 | 36.8 | -1.3 | 36.4 | 45.0 | 73.9 | 28.9 | Inside | |
| Vert | 5350.000 | AV | 48.3 | 31.3 | 3.3 | 35.7 | 47.2 | 53.9 | 6.7 | Bandedge | |
| Vert | 10640.000 | AV | 32.2 | 39.5 | -2.6 | 35.9 | 33.2 | 53.9 | 20.7 | Inside | |
| Vert | 15960.000 | AV | 33.8 | 36.8 | -1.3 | 36.4 | 32.9 | 53.9 | 21.0 | Inside | |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

# Radiated Spurious Emission

| | | | |
|---|---|---|---|
| Report No. | 32BE0278-HO | | |
| Semi Anechoic Chamber | No.1 | No.1 | No.2 |
| Date | 10/20/2011 | 10/21/2011 | 10/22/2011 |
| Temperature/ Humidity | 22 deg.C / 48% RH | 23 deg.C / 52% RH | 24 deg.C / 55% RH |
| Engineer | Takayuki Shimada (1-10GHz) | Takayuki Shimada (10-18GHz) | Takayuki Shimada (18-40GHz) |
| Mode | 11a Tx 5500MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Inside or Outside of Restricted Bands | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 5460.000 | PK | 53.4 | 31.4 | 3.4 | 35.7 | 52.5 | 73.9 | 21.4 | Inside | |
| Hori | 5470.000 | PK | 57.9 | 31.4 | 3.4 | 35.7 | 57.0 | 68.2 | 11.2 | Outside | |
| Hori | 11000.000 | PK | 45.0 | 40.4 | -2.4 | 35.6 | 47.4 | 73.9 | 26.5 | Inside | |
| Hori | 16500.000 | PK | 46.0 | 38.4 | -1.1 | 36.0 | 47.3 | 68.2 | 20.9 | Outside | |
| Hori | 5460.000 | AV | 38.3 | 31.4 | 3.4 | 35.7 | 37.4 | 53.9 | 16.5 | Inside | |
| Hori | 5470.000 | AV | 44.8 | 31.4 | 3.4 | 35.7 | 43.9 | 68.2 | 24.3 | Outside | |
| Hori | 11000.000 | AV | 32.4 | 40.4 | -2.4 | 35.6 | 34.8 | 53.9 | 19.1 | Inside | |
| Hori | 16500.000 | AV | 37.5 | 38.4 | -1.1 | 36.0 | 38.8 | 68.2 | 29.4 | Outside | |
| Vert | 5460.000 | PK | 55.9 | 31.4 | 3.4 | 35.7 | 55.0 | 73.9 | 18.9 | Inside | |
| Vert | 5470.000 | PK | 59.2 | 31.4 | 3.4 | 35.7 | 58.3 | 68.2 | 9.9 | Outside | |
| Vert | 11000.000 | PK | 44.8 | 40.4 | -2.4 | 35.6 | 47.2 | 73.9 | 26.7 | Inside | |
| Vert | 16500.000 | PK | 45.8 | 38.4 | -1.1 | 36.0 | 47.1 | 68.2 | 21.1 | Outside | |
| Vert | 5460.000 | AV | 40.0 | 31.4 | 3.4 | 35.7 | 39.1 | 53.9 | 14.8 | Inside | |
| Vert | 5470.000 | AV | 45.9 | 31.4 | 3.4 | 35.7 | 45.0 | 68.2 | 23.2 | Outside | |
| Vert | 11000.000 | AV | 32.4 | 40.4 | -2.4 | 35.6 | 34.8 | 53.9 | 19.1 | Inside | |
| Vert | 16500.000 | AV | 37.5 | 38.4 | -1.1 | 36.0 | 38.8 | 68.2 | 29.4 | Outside | |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

# Radiated Spurious Emission

| | | | |
|---|---|---|---|
| Report No. | 32BE0278-HO | | |
| Semi Anechoic Chamber | No.1 | No.1 | No.2 |
| Date | 10/20/2011 | 10/21/2011 | 10/22/2011 |
| Temperature/ Humidity | 22 deg.C / 48% RH | 23 deg.C / 52% RH | 24 deg.C / 55% RH |
| Engineer | Takayuki Shimada (1-10GHz) | Takayuki Shimada (10-18GHz) | Takayuki Shimada (18-40GHz) |
| Mode | 11a Tx 5600MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Inside or Outside of Restricted Bands | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 11200.000 | PK | 44.7 | 40.1 | -2.3 | 35.7 | 46.8 | 73.9 | 27.1 | Inside | |
| Hori | 16800.000 | PK | 45.8 | 39.5 | -1.1 | 35.8 | 48.4 | 68.2 | 19.8 | Outside | |
| Hori | 11200.000 | AV | 32.2 | 40.1 | -2.3 | 35.7 | 34.3 | 53.9 | 19.6 | Inside | |
| Hori | 16800.000 | AV | 37.4 | 39.5 | -1.1 | 35.8 | 40.0 | 68.2 | 28.2 | Outside | |
| Vert | 11200.000 | PK | 44.9 | 40.1 | -2.3 | 35.7 | 47.0 | 73.9 | 26.9 | Inside | |
| Vert | 16800.000 | PK | 45.8 | 39.5 | -1.1 | 35.8 | 48.4 | 68.2 | 19.8 | Outside | |
| Vert | 11200.000 | AV | 32.2 | 40.1 | -2.3 | 35.7 | 34.3 | 53.9 | 19.6 | Inside | |
| Vert | 16800.000 | AV | 37.4 | 39.5 | -1.1 | 35.8 | 40.0 | 68.2 | 28.2 | Outside | |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

# Radiated Spurious Emission

| | | | |
|---|---|---|---|
| Report No. | 32BE0278-HO | | |
| Semi Anechoic Chamber | No.1 | No.1 | No.2 |
| Date | 10/20/2011 | 10/21/2011 | 10/22/2011 |
| Temperature/ Humidity | 22 deg.C / 48% RH | 23 deg.C / 52% RH | 24 deg.C / 55% RH |
| Engineer | Takayuki Shimada (1-10GHz) | Takayuki Shimada (10-18GHz) | Takayuki Shimada (18-40GHz) |
| Mode | 11a Tx 5700MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Inside or Outside of Restricted Bands | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 5725.000 | PK | 59.9 | 31.7 | 3.5 | 35.6 | 59.5 | 68.2 | 8.7 | Outside | |
| Hori | 11400.000 | PK | 44.5 | 39.7 | -2.3 | 35.8 | 46.1 | 73.9 | 27.8 | Inside | |
| Hori | 17100.000 | PK | 44.7 | 41.1 | -0.9 | 35.6 | 49.3 | 68.2 | 18.9 | Outside | |
| Hori | 5725.000 | AV | 46.0 | 31.7 | 3.5 | 35.6 | 45.6 | 68.2 | 22.6 | Outside | |
| Hori | 11400.000 | AV | 31.9 | 39.7 | -2.3 | 35.8 | 33.5 | 53.9 | 20.4 | Inside | |
| Hori | 17100.000 | AV | 36.0 | 41.1 | -0.9 | 35.6 | 40.6 | 68.2 | 27.6 | Outside | |
| Vert | 5725.000 | PK | 60.5 | 31.7 | 3.5 | 35.6 | 60.1 | 68.2 | 8.1 | Outside | |
| Vert | 11400.000 | PK | 44.3 | 39.7 | -2.3 | 35.8 | 45.9 | 73.9 | 28.0 | Inside | |
| Vert | 17100.000 | PK | 44.6 | 41.1 | -0.9 | 35.6 | 49.2 | 68.2 | 19.0 | Outside | |
| Vert | 5725.000 | AV | 46.5 | 31.7 | 3.5 | 35.6 | 46.1 | 68.2 | 22.1 | Outside | |
| Vert | 11400.000 | AV | 31.9 | 39.7 | -2.3 | 35.8 | 33.5 | 53.9 | 20.4 | Inside | |
| Vert | 17100.000 | AV | 36.0 | 41.1 | -0.9 | 35.6 | 40.6 | 68.2 | 27.6 | Outside | |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

# Radiated Spurious Emission

| | | |
|---|---|---|
| Report No. | 32BE0278-HO | |
| Semi Anechoic Chamber | No.1 | No.2 |
| Date | 10/21/2011 | 10/22/2011 |
| Temperature/ Humidity | 23 deg.C / 52% RH | 24 deg.C / 55% RH |
| Engineer | Takayuki Shimada (1-18GHz) | Takayuki Shimada (18-40GHz) |
| Mode | 11n-40 Tx 5190MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Inside or Outside of Restricted Bands | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 5150.000 | PK | 62.5 | 31.1 | 3.3 | 35.7 | 61.2 | 73.9 | 12.7 | Bandedge | |
| Hori | 10380.000 | PK | 44.3 | 39.0 | -2.8 | 36.2 | 44.3 | 68.2 | 23.9 | Outside | |
| Hori | 15570.000 | PK | 44.9 | 38.2 | -1.4 | 35.9 | 45.8 | 73.9 | 28.1 | Inside | |
| Hori | 5150.000 | AV | 49.2 | 31.1 | 3.3 | 35.7 | 47.9 | 53.9 | 6.0 | Bandedge | |
| Hori | 10380.000 | AV | 36.3 | 39.0 | -2.8 | 36.2 | 36.3 | 68.2 | 31.9 | Outside | |
| Hori | 15570.000 | AV | 33.1 | 38.2 | -1.4 | 35.9 | 34.0 | 53.9 | 19.9 | Inside | |
| Vert | 5150.000 | PK | 60.6 | 31.1 | 3.3 | 35.7 | 59.3 | 73.9 | 14.6 | Bandedge | |
| Vert | 10380.000 | PK | 44.5 | 39.0 | -2.8 | 36.2 | 44.5 | 68.2 | 23.7 | Outside | |
| Vert | 15570.000 | PK | 44.8 | 38.2 | -1.4 | 35.9 | 45.7 | 73.9 | 28.2 | Inside | |
| Vert | 5150.000 | AV | 47.6 | 31.1 | 3.3 | 35.7 | 46.3 | 53.9 | 7.6 | Bandedge | |
| Vert | 10380.000 | AV | 36.3 | 39.0 | -2.8 | 36.2 | 36.3 | 68.2 | 31.9 | Outside | |
| Vert | 15570.000 | AV | 33.1 | 38.2 | -1.4 | 35.9 | 34.0 | 53.9 | 19.9 | Inside | |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

# Radiated Spurious Emission

| | | |
|---|---|---|
| Report No. | 32BE0278-HO | |
| Semi Anechoic Chamber | No.1 | No.2 |
| Date | 10/21/2011 | 10/22/2011 |
| Temperature/ Humidity | 23 deg.C / 52% RH | 24 deg.C / 55% RH |
| Engineer | Takayuki Shimada (1-18GHz) | Takayuki Shimada (18-40GHz) |
| Mode | 11n-40 Tx 5230MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Inside or Outside of Restricted Bands | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 10460.000 | PK | 45.0 | 39.1 | -2.8 | 36.1 | 45.2 | 68.2 | 23.0 | Outside | |
| Hori | 15690.000 | PK | 45.3 | 37.7 | -1.3 | 36.0 | 45.7 | 73.9 | 28.2 | Inside | |
| Hori | 10460.000 | AV | 36.4 | 39.1 | -2.8 | 36.1 | 36.6 | 68.2 | 31.6 | Outside | |
| Hori | 15690.000 | AV | 33.3 | 37.7 | -1.3 | 36.0 | 33.7 | 53.9 | 20.2 | Inside | |
| Vert | 10460.000 | PK | 44.7 | 39.1 | -2.8 | 36.1 | 44.9 | 68.2 | 23.3 | Outside | |
| Vert | 15690.000 | PK | 45.4 | 37.7 | -1.3 | 36.0 | 45.8 | 73.9 | 28.1 | Inside | |
| Vert | 10460.000 | AV | 36.4 | 39.1 | -2.8 | 36.1 | 36.6 | 68.2 | 31.6 | Outside | |
| Vert | 15690.000 | AV | 33.3 | 37.7 | -1.3 | 36.0 | 33.7 | 53.9 | 20.2 | Inside | |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

# Radiated Spurious Emission

| | | |
|---|---|---|
| Report No. | 32BE0278-HO | |
| Semi Anechoic Chamber | No.1 | No.2 |
| Date | 10/21/2011 | 10/22/2011 |
| Temperature/ Humidity | 23 deg.C / 52% RH | 24 deg.C / 55% RH |
| Engineer | Takayuki Shimada (1-18GHz) | Takayuki Shimada (18-40GHz) |
| Mode | 11n-40 Tx 5310MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Inside or Outside of Restricted Bands | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 5350.000 | PK | 65.1 | 31.3 | 3.3 | 35.7 | 64.0 | 73.9 | 9.9 | Bandedge | |
| Hori | 10620.000 | PK | 44.1 | 39.4 | -2.6 | 35.9 | 45.0 | 73.9 | 28.9 | Inside | |
| Hori | 15930.000 | PK | 45.6 | 36.9 | -1.3 | 36.4 | 44.8 | 73.9 | 29.1 | Inside | |
| Hori | 5350.000 | AV | 51.8 | 31.3 | 3.3 | 35.7 | 50.7 | 53.9 | 3.2 | Bandedge | |
| Hori | 10620.000 | AV | 31.9 | 39.4 | -2.6 | 35.9 | 32.8 | 53.9 | 21.1 | Inside | |
| Hori | 15930.000 | AV | 33.9 | 36.9 | -1.3 | 36.4 | 33.1 | 53.9 | 20.8 | Inside | |
| Vert | 5350.000 | PK | 64.6 | 31.3 | 3.3 | 35.7 | 63.5 | 73.9 | 10.4 | Bandedge | |
| Vert | 10620.000 | PK | 44.3 | 39.4 | -2.6 | 35.9 | 45.2 | 73.9 | 28.7 | Inside | |
| Vert | 15930.000 | PK | 45.8 | 36.9 | -1.3 | 36.4 | 45.0 | 73.9 | 28.9 | Inside | |
| Vert | 5350.000 | AV | 50.9 | 31.3 | 3.3 | 35.7 | 49.8 | 53.9 | 4.1 | Bandedge | |
| Vert | 10620.000 | AV | 31.9 | 39.4 | -2.6 | 35.9 | 32.8 | 53.9 | 21.1 | Inside | |
| Vert | 15930.000 | AV | 33.9 | 36.9 | -1.3 | 36.4 | 33.1 | 53.9 | 20.8 | Inside | |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

# Radiated Spurious Emission

| | | |
|---|---|---|
| Report No. | 32BE0278-HO | |
| Semi Anechoic Chamber | No.1 | No.2 |
| Date | 10/21/2011 | 10/22/2011 |
| Temperature/ Humidity | 23 deg.C / 52% RH | 24 deg.C / 55% RH |
| Engineer | Takayuki Shimada (1-18GHz) | Takayuki Shimada (18-40GHz, 30-1000MHz) |
| Mode | 11n-40 Tx 5510MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Inside or Outside of Restricted Bands | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 42.104 | QP | 26.9 | 14.1 | 6.9 | 28.6 | 19.3 | 40.0 | 20.7 | Outside | |
| Hori | 106.666 | QP | 28.1 | 11.3 | 7.5 | 28.4 | 18.5 | 43.5 | 25.0 | Outside | |
| Hori | 160.000 | QP | 32.9 | 15.1 | 7.9 | 28.1 | 27.8 | 43.5 | 15.7 | Outside | |
| Hori | 320.000 | QP | 27.7 | 16.5 | 8.9 | 27.8 | 25.3 | 46.0 | 20.7 | Outside | |
| Hori | 373.332 | QP | 33.6 | 17.3 | 9.2 | 28.1 | 32.0 | 46.0 | 14.0 | Outside | |
| Hori | 480.000 | QP | 26.9 | 18.9 | 9.7 | 28.7 | 26.8 | 46.0 | 19.2 | Outside | |
| Hori | 5460.000 | PK | 61.2 | 31.4 | 3.4 | 35.7 | 60.3 | 73.9 | 13.6 | Inside | |
| Hori | 5470.000 | PK | 61.4 | 31.4 | 3.4 | 35.7 | 60.5 | 68.2 | 7.7 | Outside | |
| Hori | 11020.000 | PK | 44.6 | 40.4 | -2.4 | 35.6 | 47.0 | 73.9 | 26.9 | Inside | |
| Hori | 16530.000 | PK | 45.4 | 38.5 | -1.1 | 36.0 | 46.8 | 68.2 | 21.4 | Outside | |
| Hori | 5460.000 | AV | 47.8 | 31.4 | 3.4 | 35.7 | 46.9 | 53.9 | 7.0 | Inside | |
| Hori | 5470.000 | AV | 48.4 | 31.4 | 3.4 | 35.7 | 47.5 | 68.2 | 20.7 | Outside | |
| Hori | 11020.000 | AV | 32.1 | 40.4 | -2.4 | 35.6 | 34.5 | 53.9 | 19.4 | Inside | |
| Hori | 16530.000 | AV | 37.3 | 38.5 | -1.1 | 36.0 | 38.7 | 68.2 | 29.5 | Outside | |
| Vert | 42.104 | QP | 33.8 | 14.1 | 6.9 | 28.6 | 26.2 | 40.0 | 13.8 | Outside | |
| Vert | 106.666 | QP | 26.9 | 11.3 | 7.5 | 28.4 | 17.3 | 43.5 | 26.2 | Outside | |
| Vert | 160.000 | QP | 26.0 | 15.1 | 7.9 | 28.1 | 20.9 | 43.5 | 22.6 | Outside | |
| Vert | 320.000 | QP | 23.9 | 16.5 | 8.9 | 27.8 | 21.5 | 46.0 | 24.5 | Outside | |
| Vert | 373.332 | QP | 31.4 | 17.3 | 9.2 | 28.1 | 29.8 | 46.0 | 16.2 | Outside | |
| Vert | 480.000 | QP | 25.4 | 18.9 | 9.7 | 28.7 | 25.3 | 46.0 | 20.7 | Outside | |
| Vert | 5460.000 | PK | 62.9 | 31.4 | 3.4 | 35.7 | 62.0 | 73.9 | 11.9 | Inside | |
| Vert | 5470.000 | PK | 63.8 | 31.4 | 3.4 | 35.7 | 62.9 | 68.2 | 5.3 | Outside | |
| Vert | 11020.000 | PK | 44.5 | 40.4 | -2.4 | 35.6 | 46.9 | 73.9 | 27.0 | Inside | |
| Vert | 16530.000 | PK | 45.4 | 38.5 | -1.1 | 36.0 | 46.8 | 68.2 | 21.4 | Outside | |
| Vert | 5460.000 | AV | 49.6 | 31.4 | 3.4 | 35.7 | 48.7 | 53.9 | 5.2 | Inside | |
| Vert | 5470.000 | AV | 50.7 | 31.4 | 3.4 | 35.7 | 49.8 | 68.2 | 18.4 | Outside | |
| Vert | 11020.000 | AV | 32.1 | 40.4 | -2.4 | 35.6 | 34.5 | 53.9 | 19.4 | Inside | |
| Vert | 16530.000 | AV | 37.3 | 38.5 | -1.1 | 36.0 | 38.7 | 68.2 | 29.5 | Outside | |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

# Radiated Spurious Emission

| | | |
|---|---|---|
| Report No. | 32BE0278-HO | |
| Semi Anechoic Chamber | No.1 | No.2 |
| Date | 10/21/2011 | 10/22/2011 |
| Temperature/ Humidity | 23 deg.C / 52% RH | 24 deg.C / 55% RH |
| Engineer | Takayuki Shimada (1-18GHz) | Takayuki Shimada (18-40GHz) |
| Mode | 11n-40 Tx 5590MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Inside or Outside of Restricted Bands | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 11180.000 | PK | 44.2 | 40.1 | -2.4 | 35.7 | 46.2 | 73.9 | 27.7 | Inside | |
| Hori | 16770.000 | PK | 45.5 | 39.4 | -1.1 | 35.8 | 48.0 | 68.2 | 20.2 | Outside | |
| Hori | 11180.000 | AV | 32.2 | 40.1 | -2.4 | 35.7 | 34.2 | 53.9 | 19.7 | Inside | |
| Hori | 16770.000 | AV | 37.5 | 39.4 | -1.1 | 35.8 | 40.0 | 68.2 | 28.2 | Outside | |
| Vert | 11180.000 | PK | 44.1 | 40.1 | -2.4 | 35.7 | 46.1 | 73.9 | 27.8 | Inside | |
| Vert | 16770.000 | PK | 45.7 | 39.4 | -1.1 | 35.8 | 48.2 | 68.2 | 20.0 | Outside | |
| Vert | 11180.000 | AV | 32.2 | 40.1 | -2.4 | 35.7 | 34.2 | 53.9 | 19.7 | Inside | |
| Vert | 16770.000 | AV | 37.5 | 39.4 | -1.1 | 35.8 | 40.0 | 68.2 | 28.2 | Outside | |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

# Radiated Spurious Emission

| | | |
|---|---|---|
| Report No. | 32BE0278-HO | |
| Semi Anechoic Chamber | No.1 | No.2 |
| Date | 10/21/2011 | 10/22/2011 |
| Temperature/ Humidity | 23 deg.C / 52% RH | 24 deg.C / 55% RH |
| Engineer | Takayuki Shimada (1-18GHz) | Takayuki Shimada (18-40GHz) |
| Mode | 11n-40 Tx 5670MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Inside or Outside of Restricted Bands | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 5725.000 | PK | 59.8 | 31.7 | 3.5 | 35.6 | 59.4 | 68.2 | 8.8 | Outside | |
| Hori | 11340.000 | PK | 44.3 | 39.8 | -2.3 | 35.8 | 46.0 | 73.9 | 27.9 | Inside | |
| Hori | 17010.000 | PK | 45.3 | 40.2 | -1.0 | 35.6 | 48.9 | 68.2 | 19.3 | Outside | |
| Hori | 5725.000 | AV | 46.5 | 31.7 | 3.5 | 35.6 | 46.1 | 68.2 | 22.1 | Outside | |
| Hori | 11340.000 | AV | 32.0 | 39.8 | -2.3 | 35.8 | 33.7 | 53.9 | 20.2 | Inside | |
| Hori | 17010.000 | AV | 36.7 | 40.2 | -1.0 | 35.6 | 40.3 | 68.2 | 27.9 | Outside | |
| Vert | 5725.000 | PK | 59.4 | 31.7 | 3.5 | 35.6 | 59.0 | 68.2 | 9.2 | Outside | |
| Vert | 11340.000 | PK | 44.2 | 39.8 | -2.3 | 35.8 | 45.9 | 73.9 | 28.0 | Inside | |
| Vert | 17010.000 | PK | 45.5 | 40.2 | -1.0 | 35.6 | 49.1 | 68.2 | 19.1 | Outside | |
| Vert | 5725.000 | AV | 46.1 | 31.7 | 3.5 | 35.6 | 45.7 | 68.2 | 22.5 | Outside | |
| Vert | 11340.000 | AV | 32.0 | 39.8 | -2.3 | 35.8 | 33.7 | 53.9 | 20.2 | Inside | |
| Vert | 17010.000 | AV | 36.7 | 40.2 | -1.0 | 35.6 | 40.3 | 68.2 | 27.9 | Outside | |

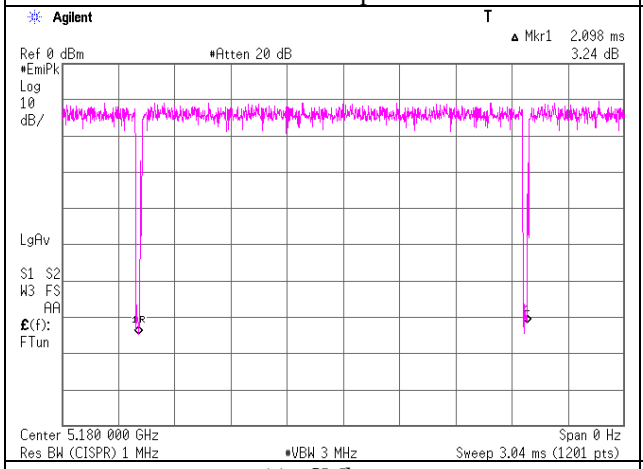
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

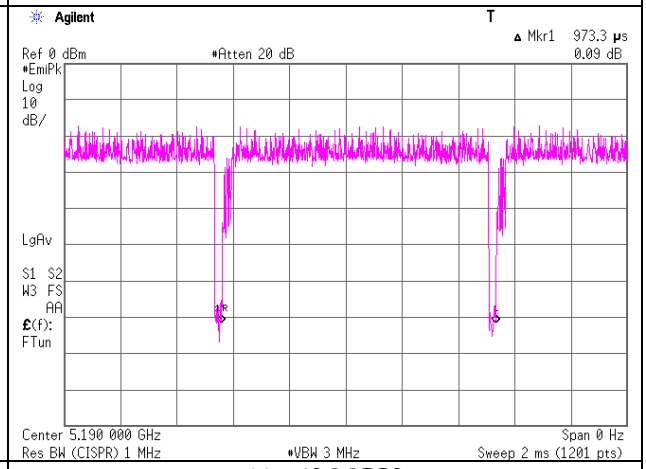
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

# VBW (AV) Calculation

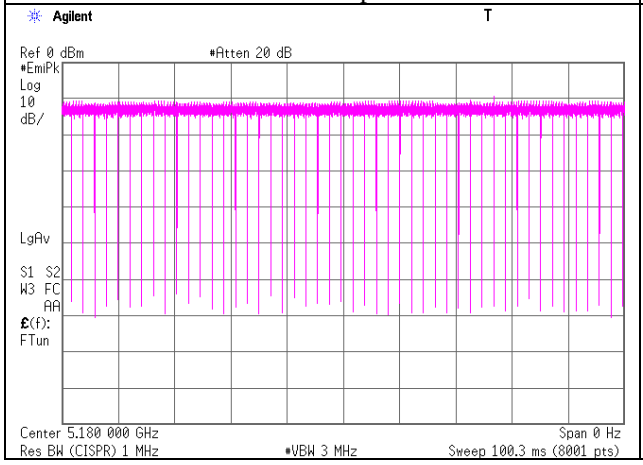
11a 6Mbps



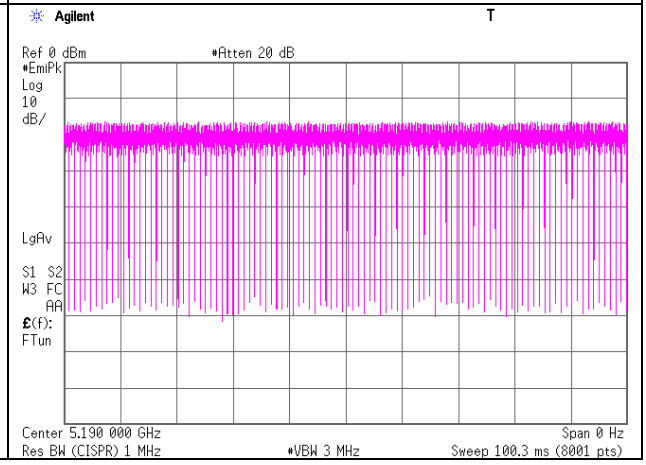

11n-40 MCS0




11a 6Mbps



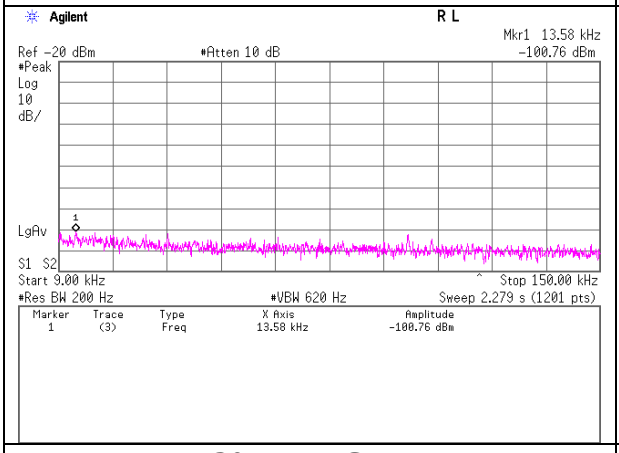

11n-40 MCS0



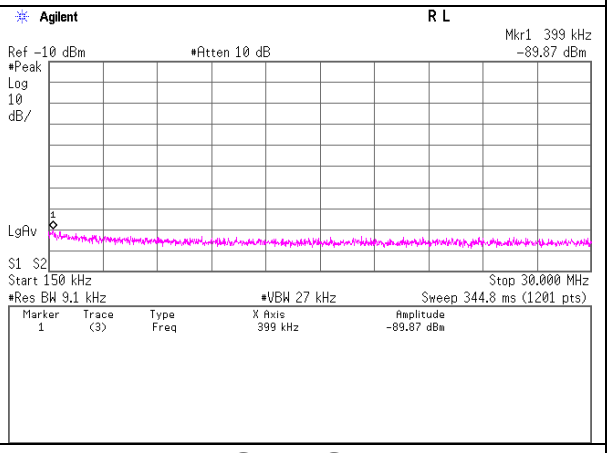
# Conducted Spurious Emission

## 11a Tx 5180MHz

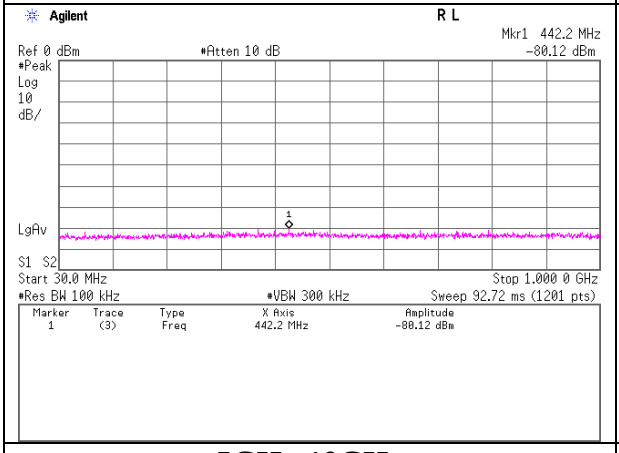
### 9kHz-150kHz



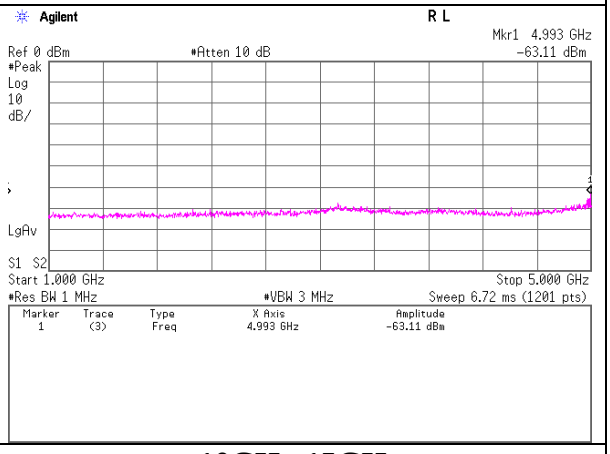

### 150kHz-30MHz



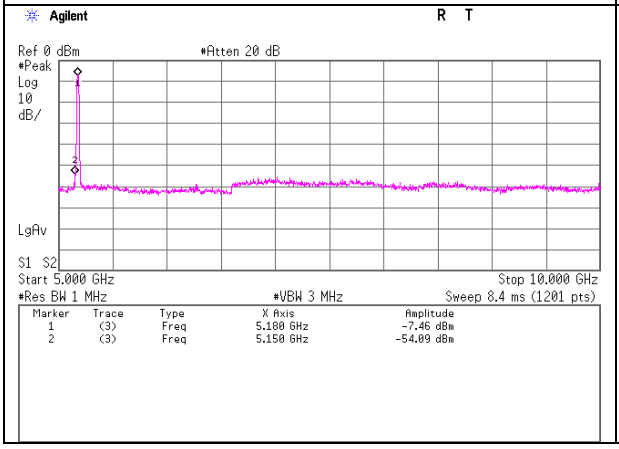

### 30MHz-1GHz



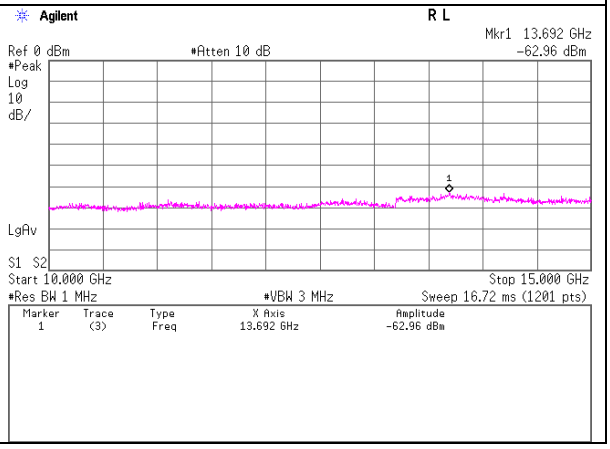

### 1GHz-5GHz




### 5GHz-10GHz



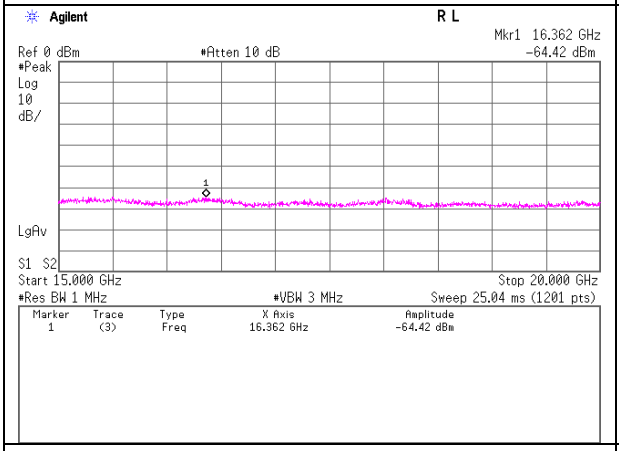

### 10GHz-15GHz



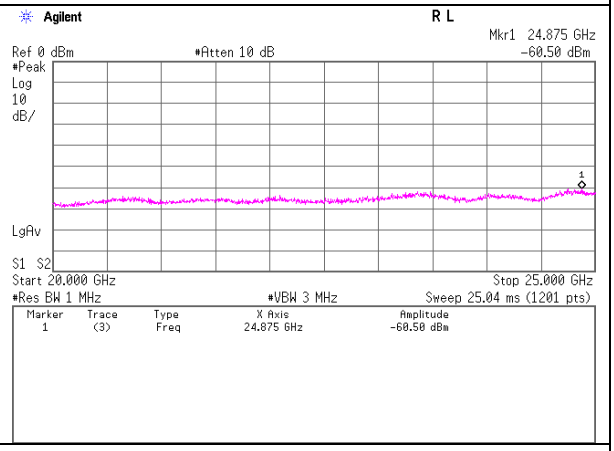
# Conducted Spurious Emission

## 11a Tx 5180MHz

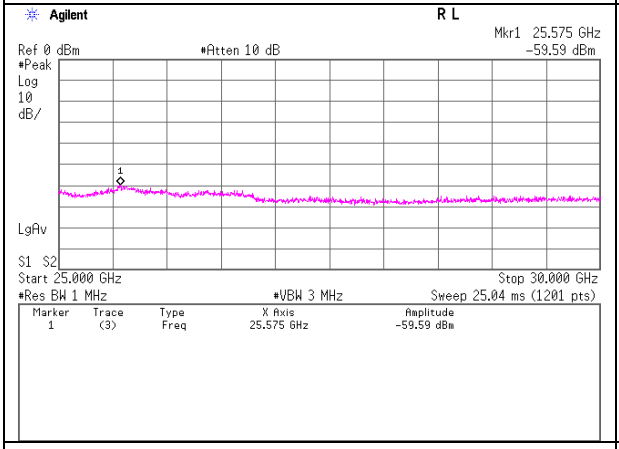
### 15GHz-20GHz



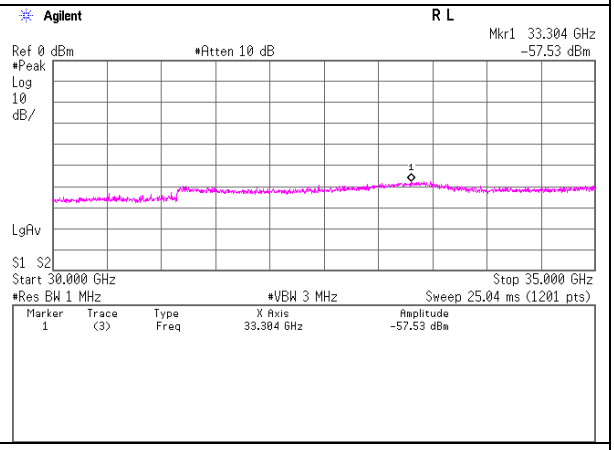

### 20GHz-25GHz



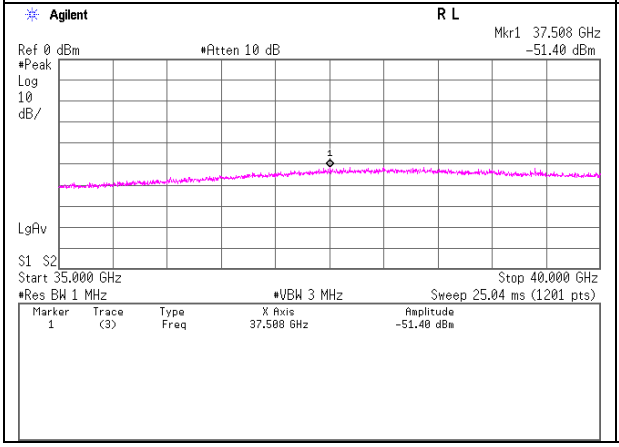

### 25GHz-30GHz




### 30GHz-35GHz



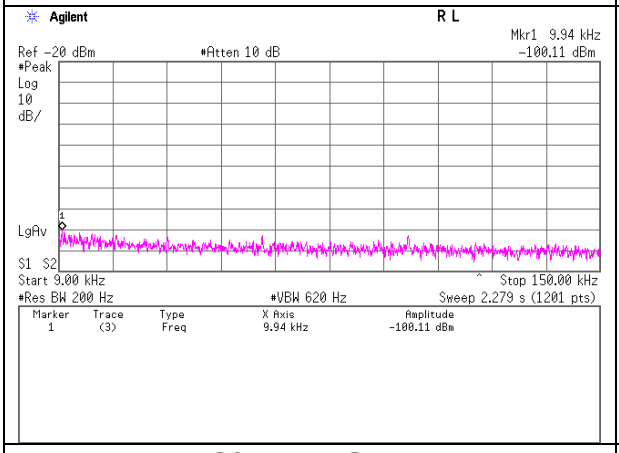

### 35GHz-40GHz



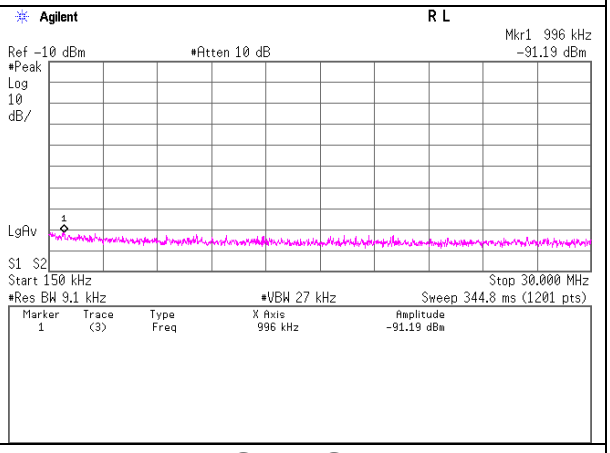
# Conducted Spurious Emission

## 11a Tx 5220MHz

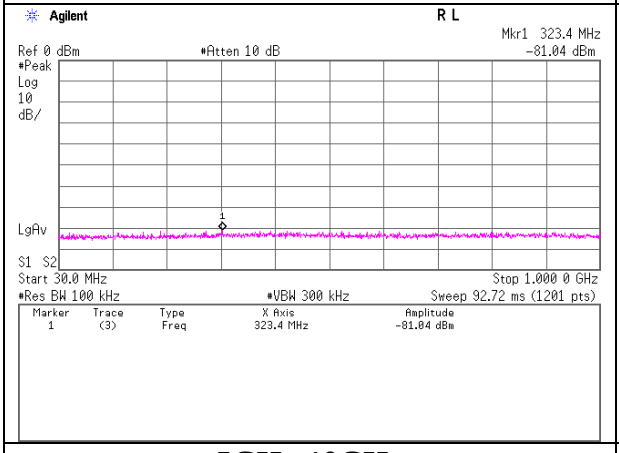
### 9kHz-150kHz



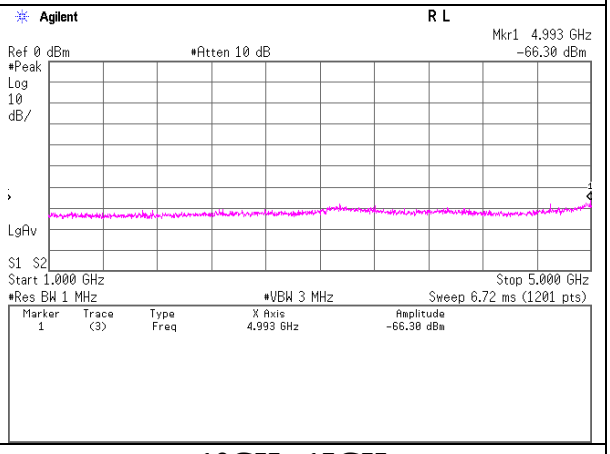

### 150kHz-30MHz



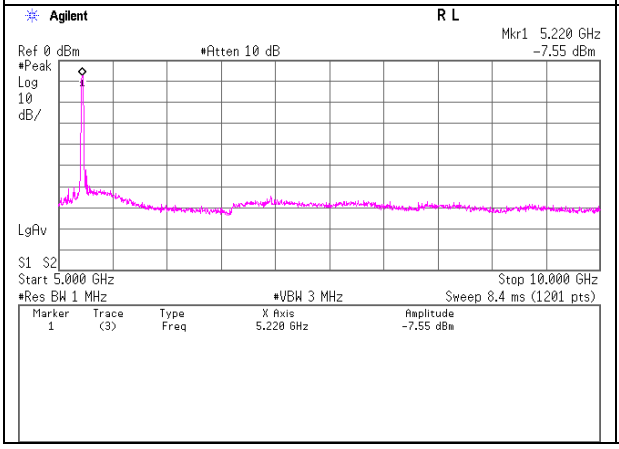

### 30MHz-1GHz



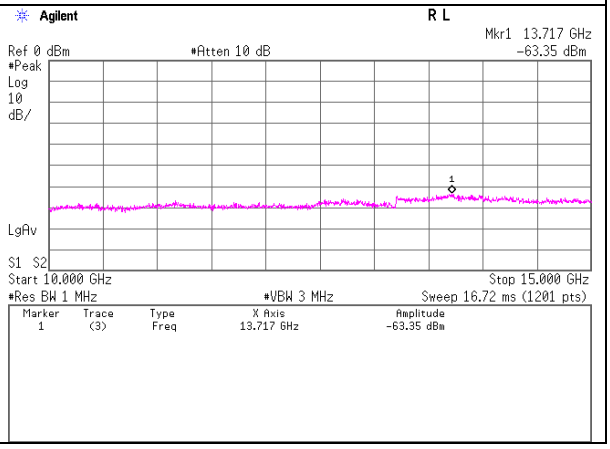

### 1GHz-5GHz




### 5GHz-10GHz



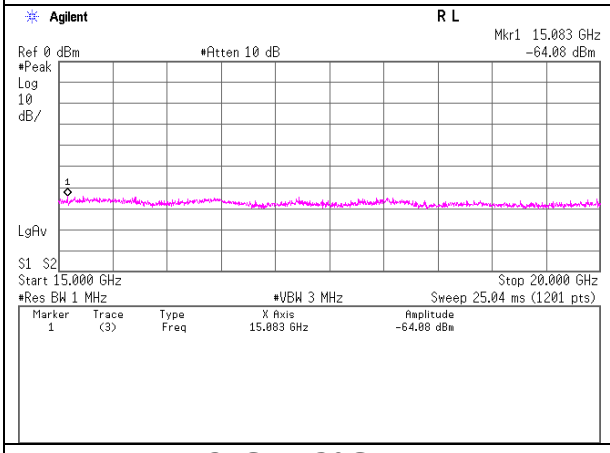

### 10GHz-15GHz



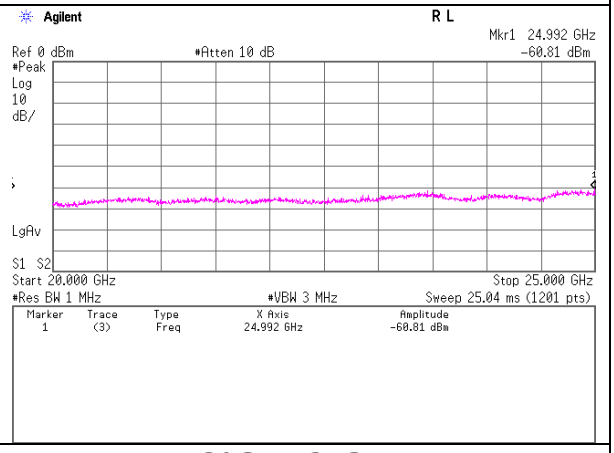
# Conducted Spurious Emission

## 11a Tx 5220MHz

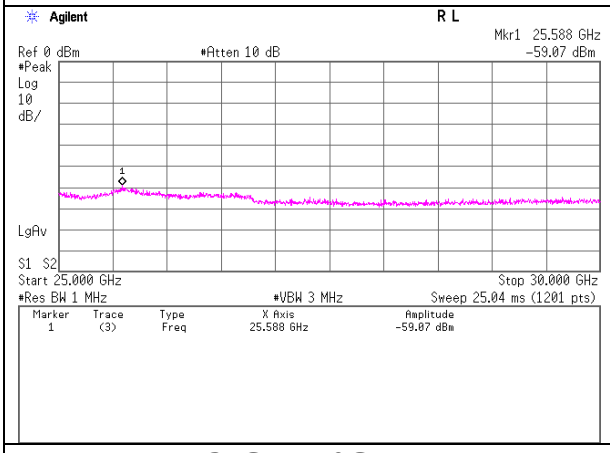
### 15GHz-20GHz



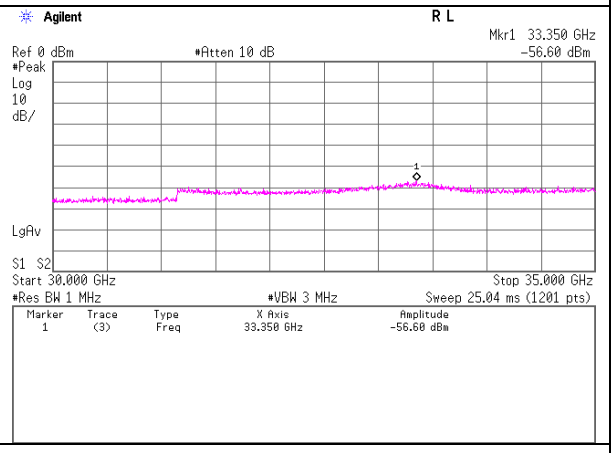

### 20GHz-25GHz



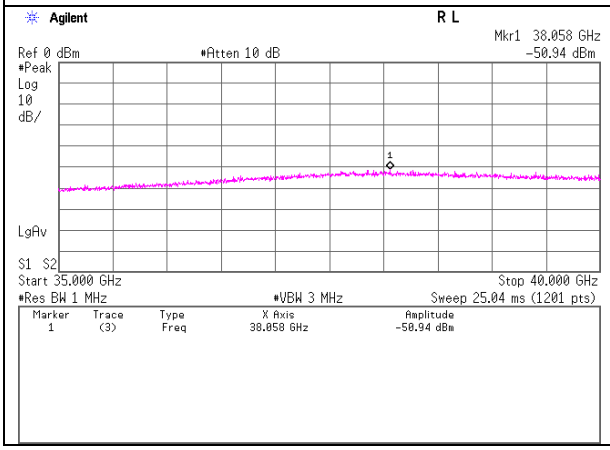

### 25GHz-30GHz




### 30GHz-35GHz



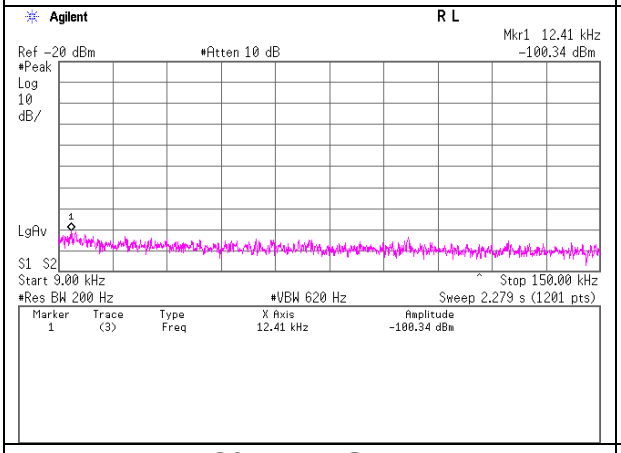

### 35GHz-40GHz



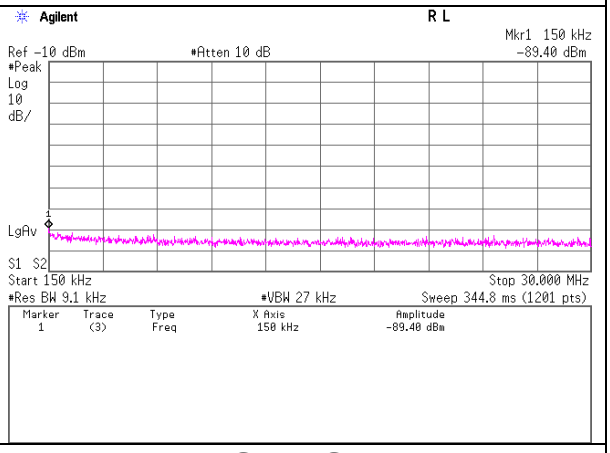
# Conducted Spurious Emission

## 11a Tx 5240MHz

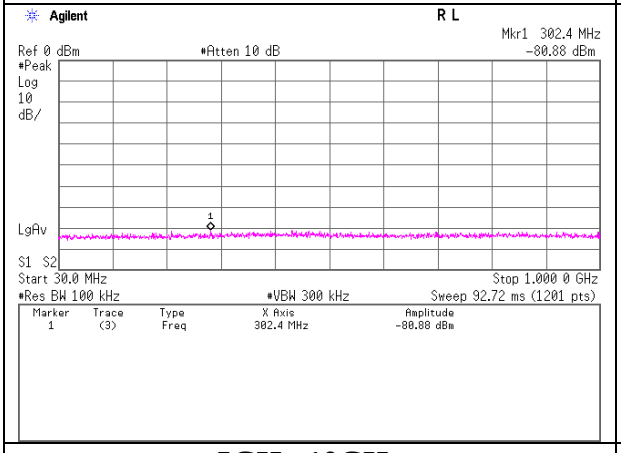
### 9kHz-150kHz



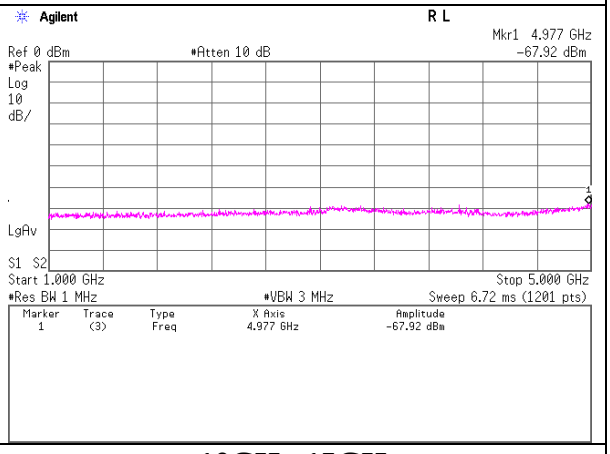

### 150kHz-30MHz



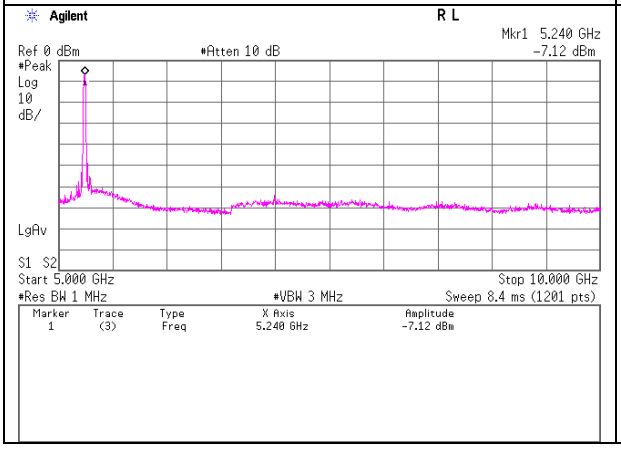

### 30MHz-1GHz



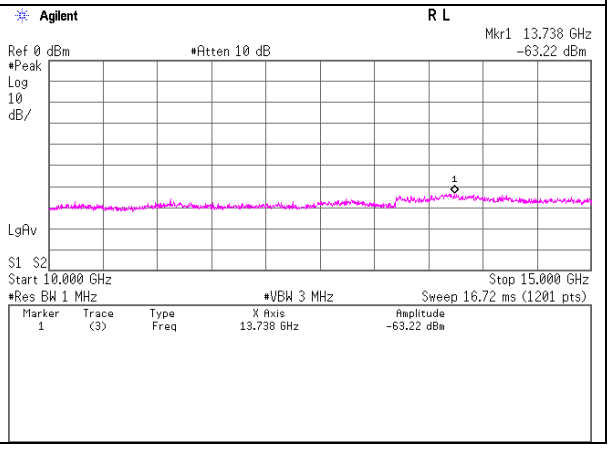

### 1GHz-5GHz




### 5GHz-10GHz



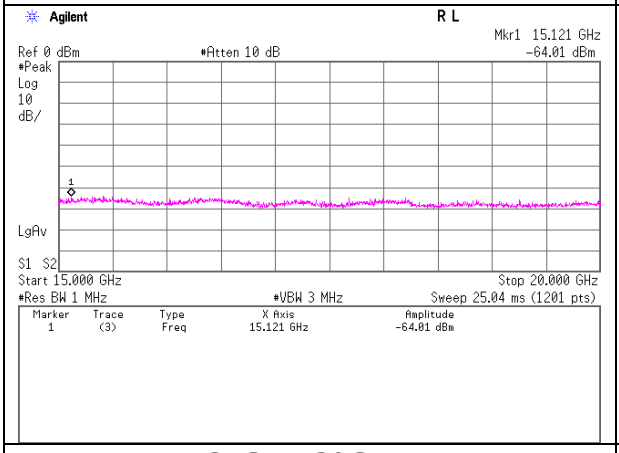

### 10GHz-15GHz



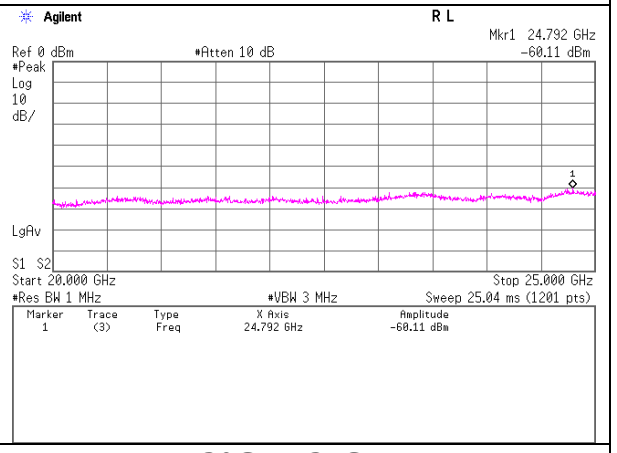
# Conducted Spurious Emission

## 11a Tx 5240MHz

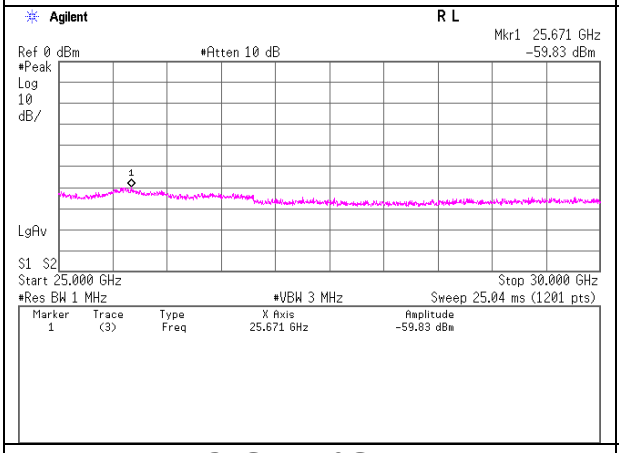
### 15GHz-20GHz



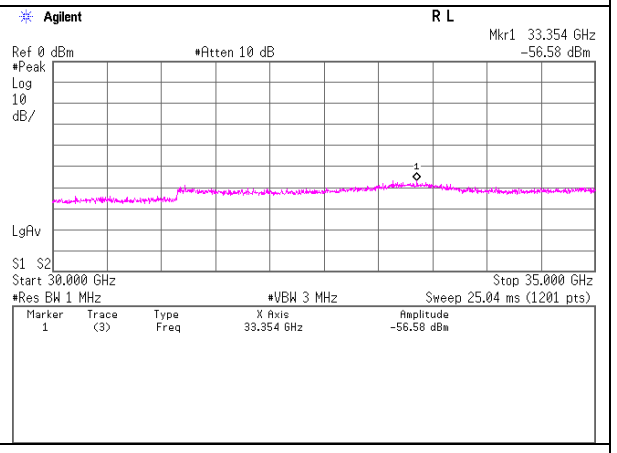

### 20GHz-25GHz



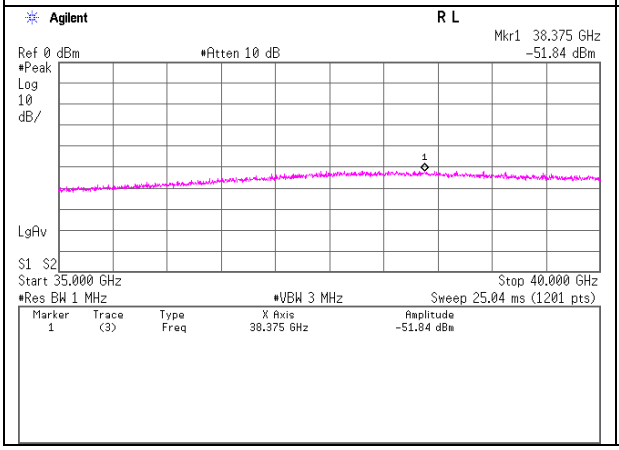

### 25GHz-30GHz




### 30GHz-35GHz



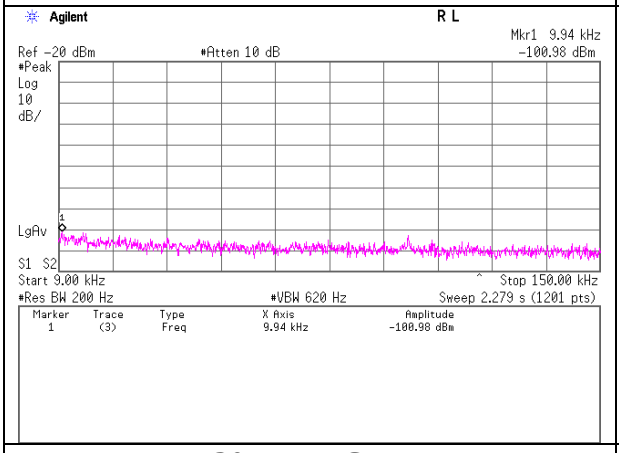

### 35GHz-40GHz



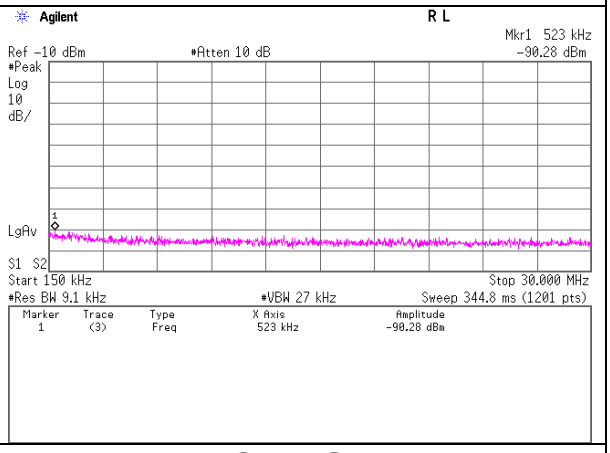
# Conducted Spurious Emission

## 11a Tx 5260MHz

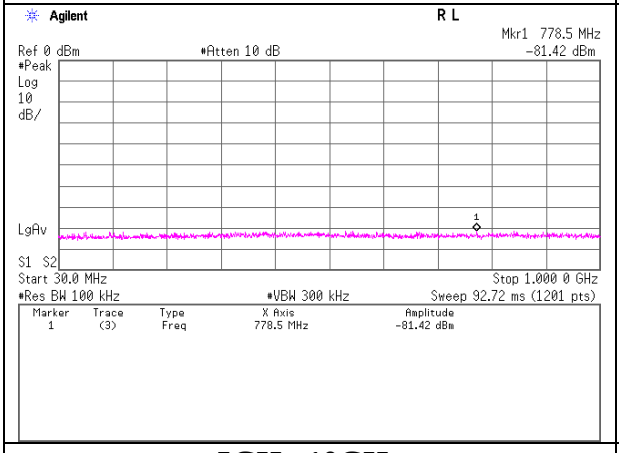
### 9kHz-150kHz



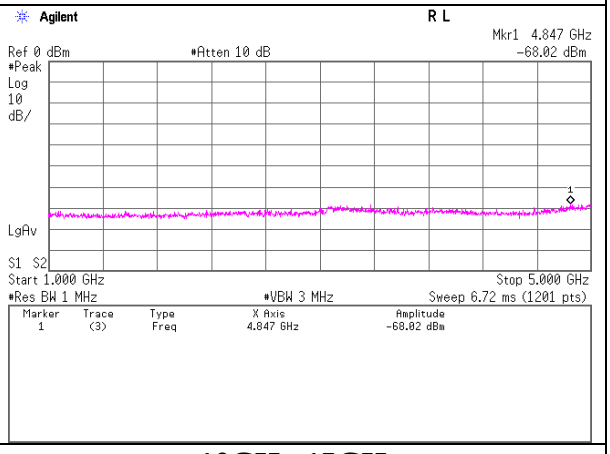

### 150kHz-30MHz



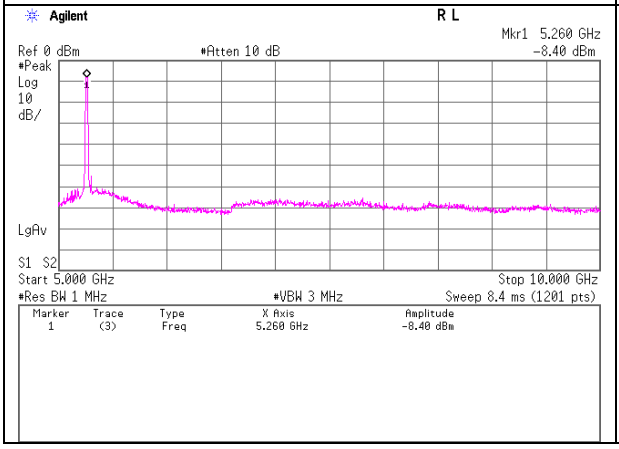

### 30MHz-1GHz



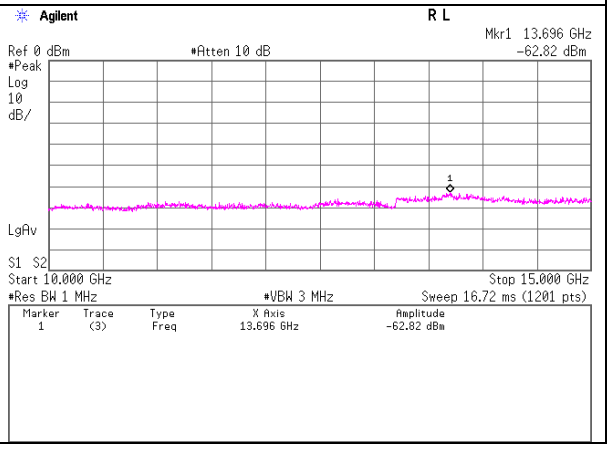

### 1GHz-5GHz




### 5GHz-10GHz



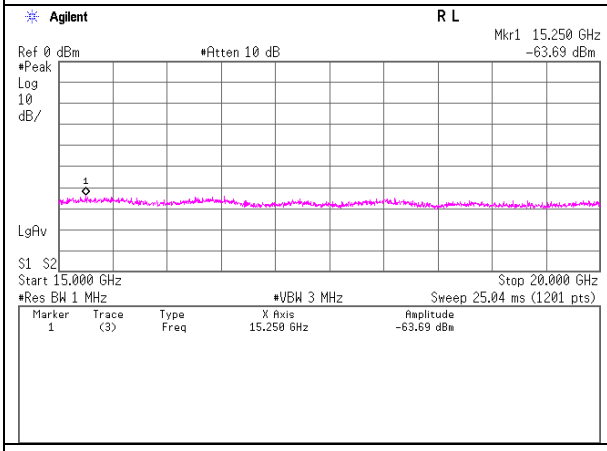

### 10GHz-15GHz



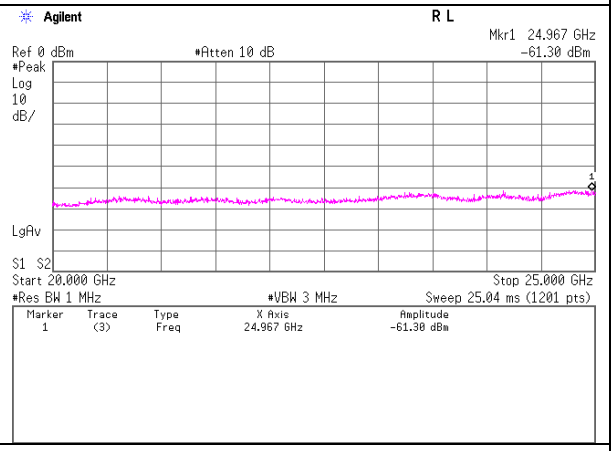
# Conducted Spurious Emission

## 11a Tx 5260MHz

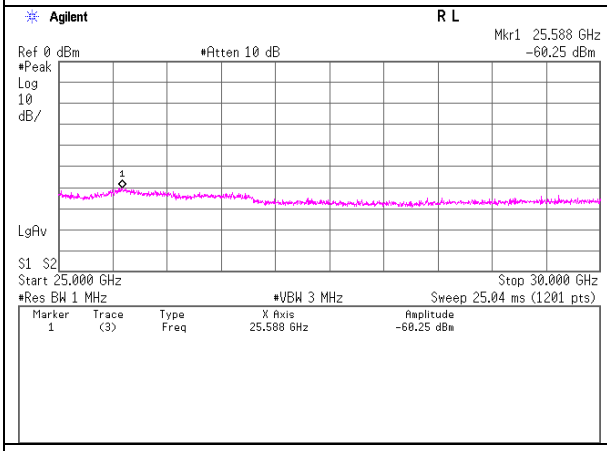
### 15GHz-20GHz



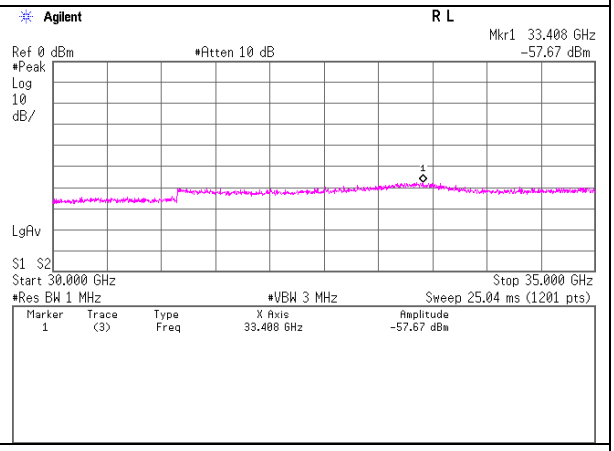

### 20GHz-25GHz



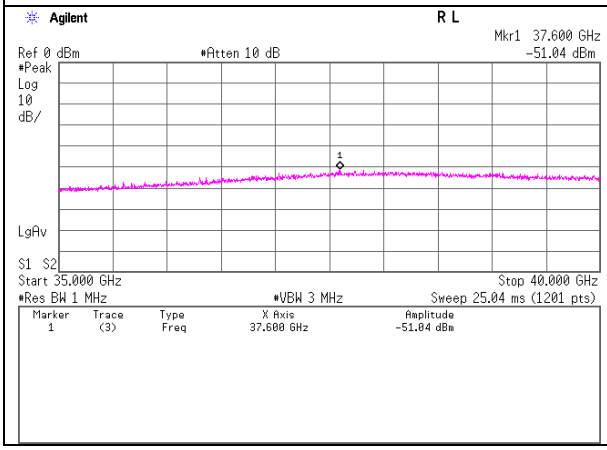

### 25GHz-30GHz




### 30GHz-35GHz



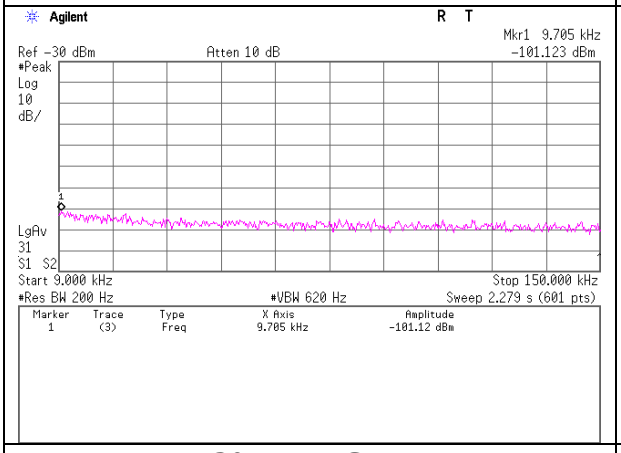

### 35GHz-40GHz



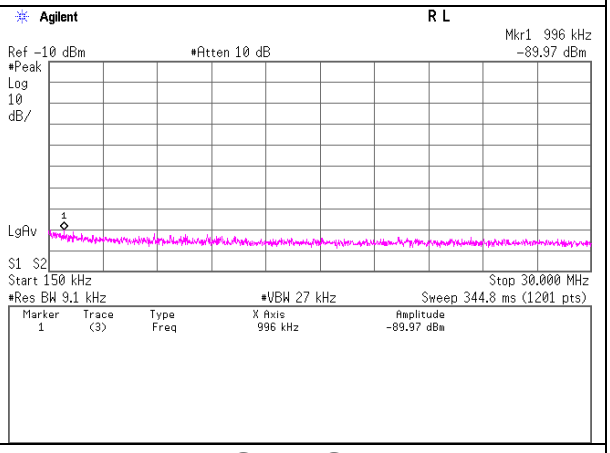
# Conducted Spurious Emission

## 11a Tx 5300MHz

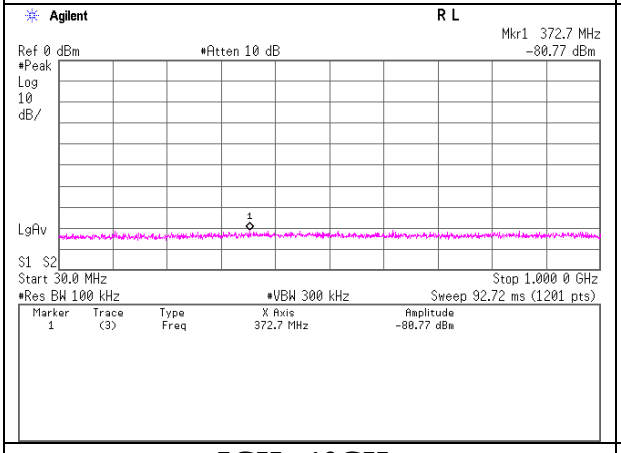
### 9kHz-150kHz



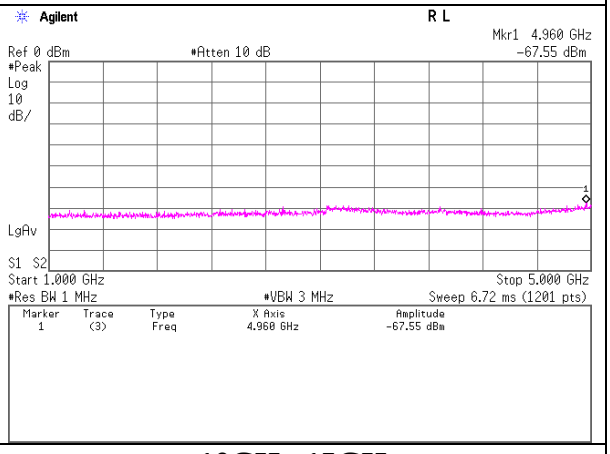

### 150kHz-30MHz



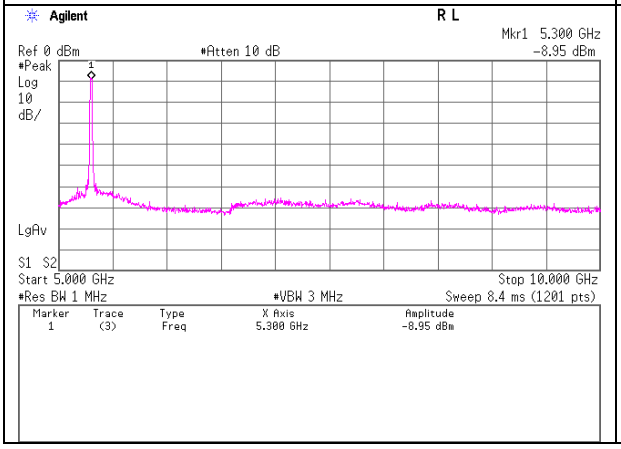

### 30MHz-1GHz



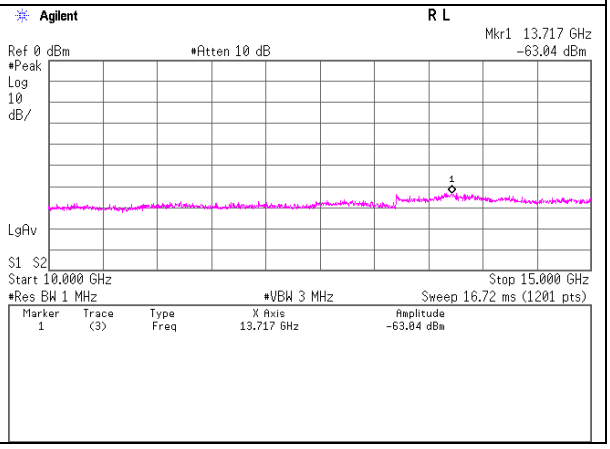

### 1GHz-5GHz




### 5GHz-10GHz




### 10GHz-15GHz





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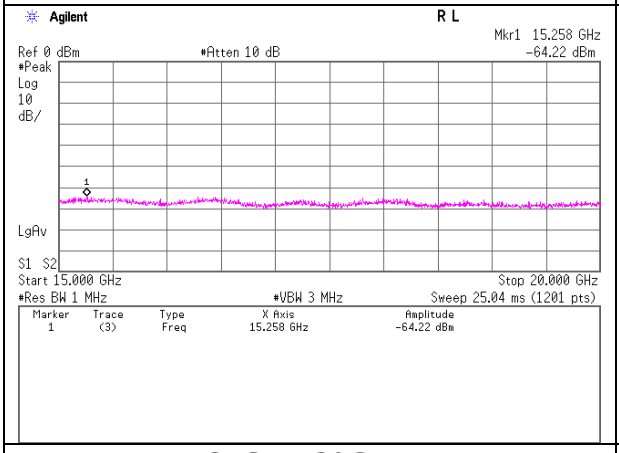
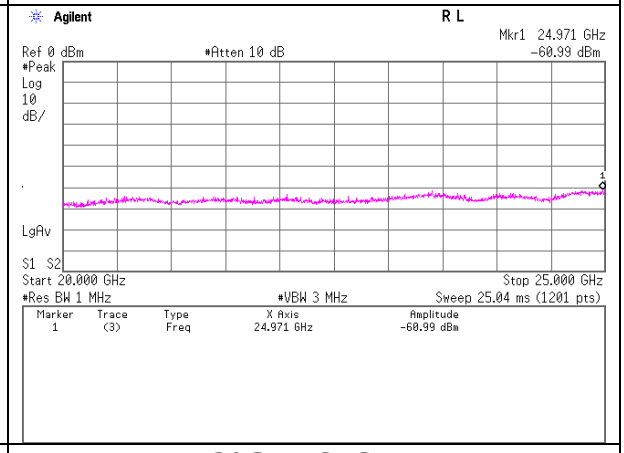
# Conducted Spurious Emission

## 11a Tx 5300MHz

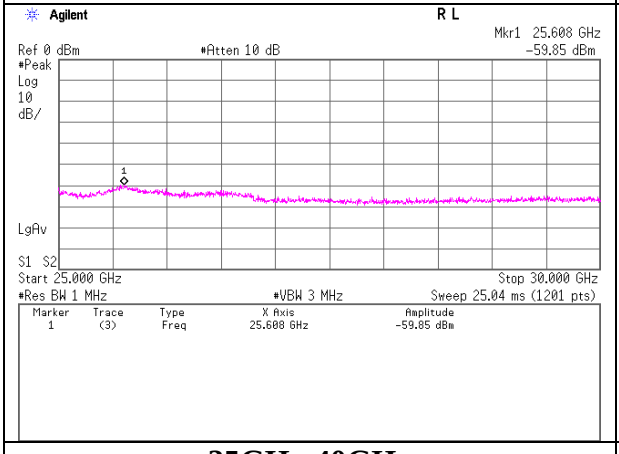
### 15GHz-20GHz



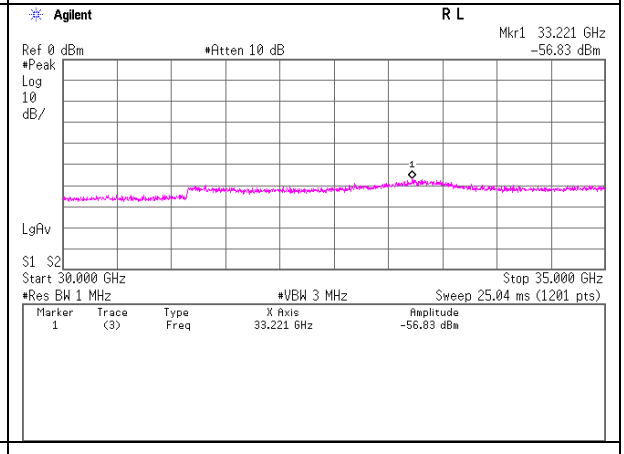

### 20GHz-25GHz



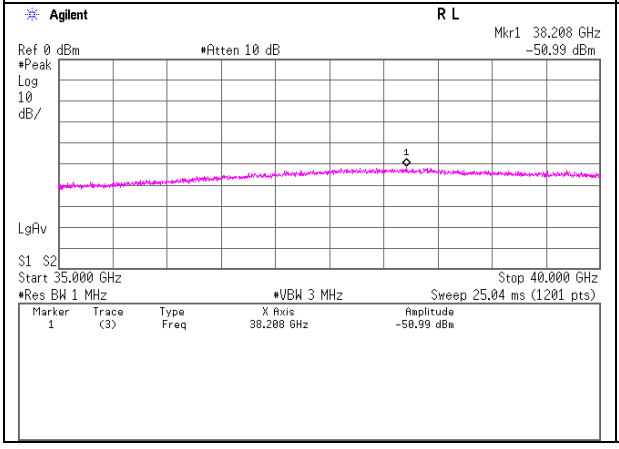

### 25GHz-30GHz




### 30GHz-35GHz



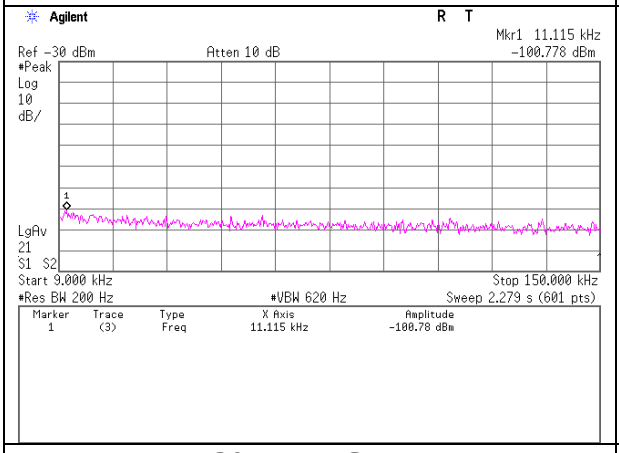

### 35GHz-40GHz



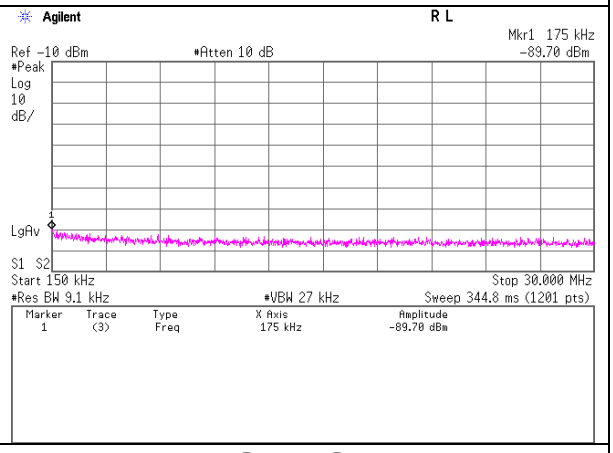
# Conducted Spurious Emission

## 11a Tx 5320MHz

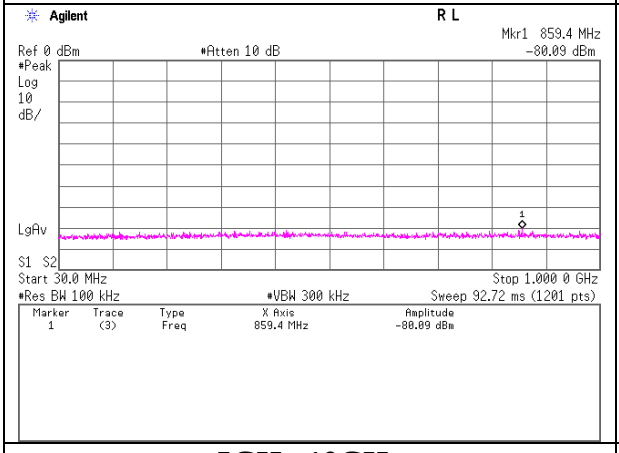
### 9kHz-150kHz



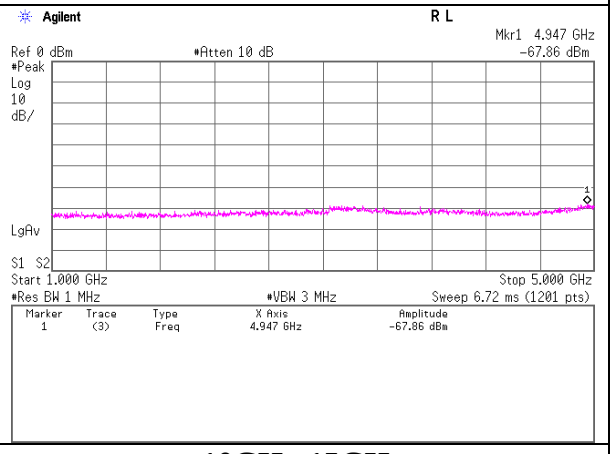

### 150kHz-30MHz



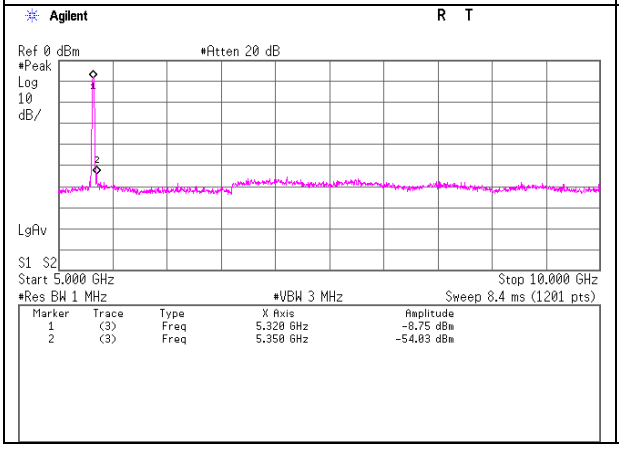

### 30MHz-1GHz



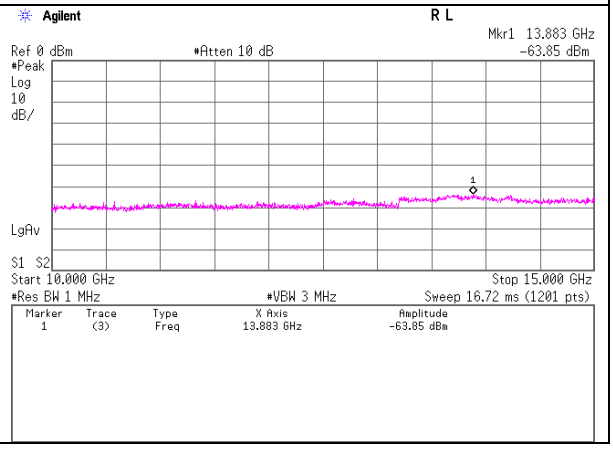

### 1GHz-5GHz




### 5GHz-10GHz




### 10GHz-15GHz

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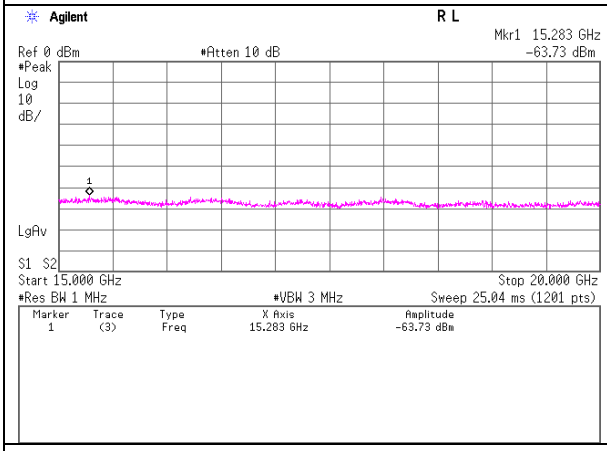
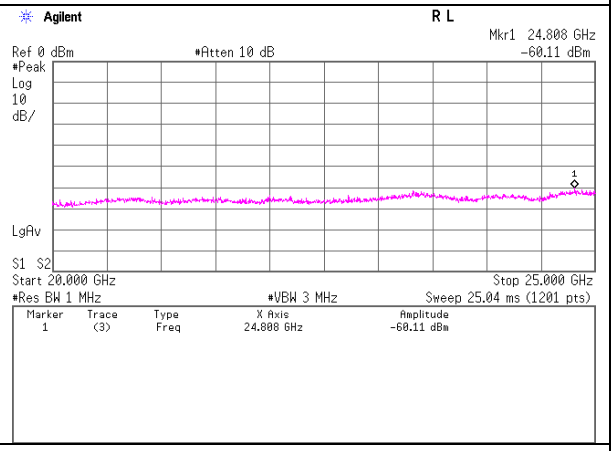
# Conducted Spurious Emission

## 11a Tx 5320MHz

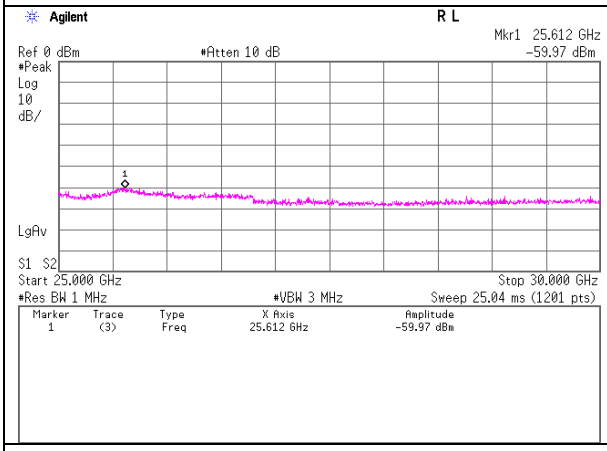
### 15GHz-20GHz



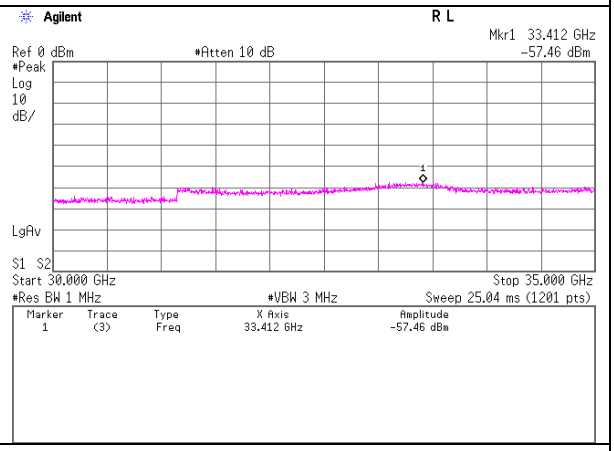

### 20GHz-25GHz



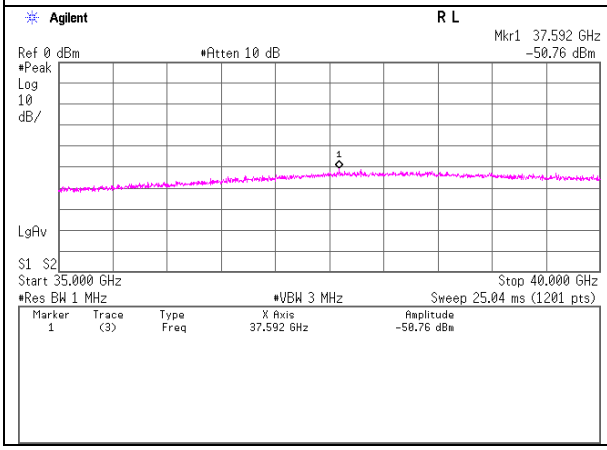

### 25GHz-30GHz




### 30GHz-35GHz



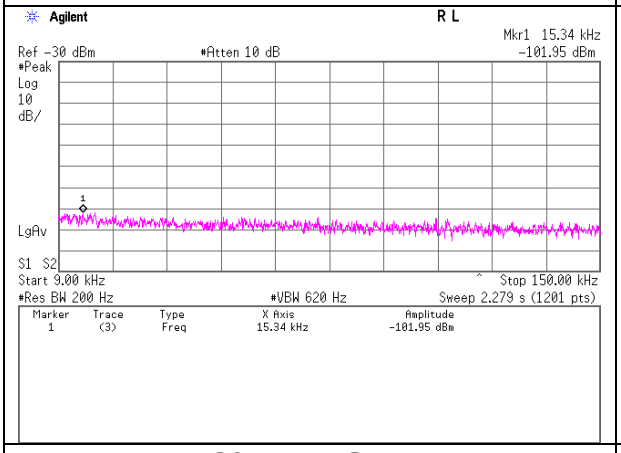

### 35GHz-40GHz



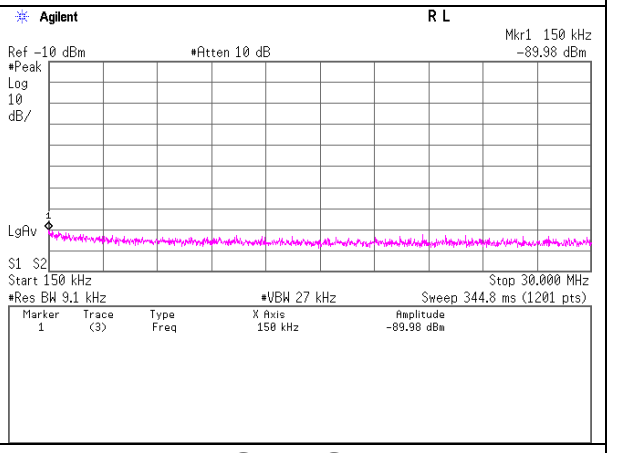
# Conducted Spurious Emission

## 11a Tx 5500MHz

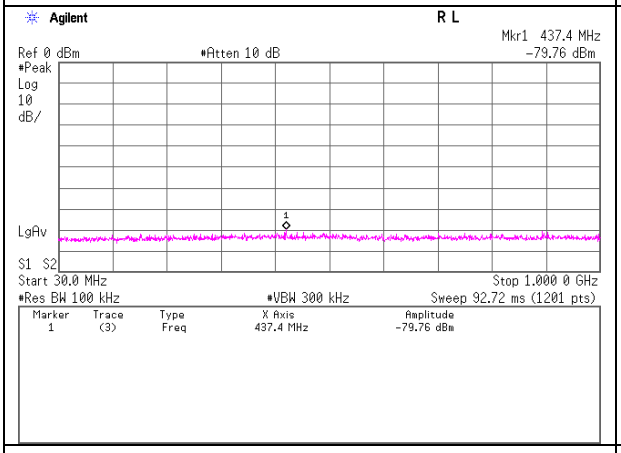
### 9kHz-150kHz



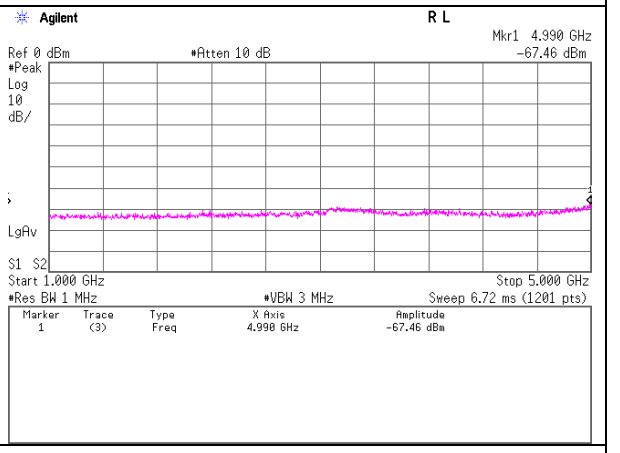

### 150kHz-30MHz



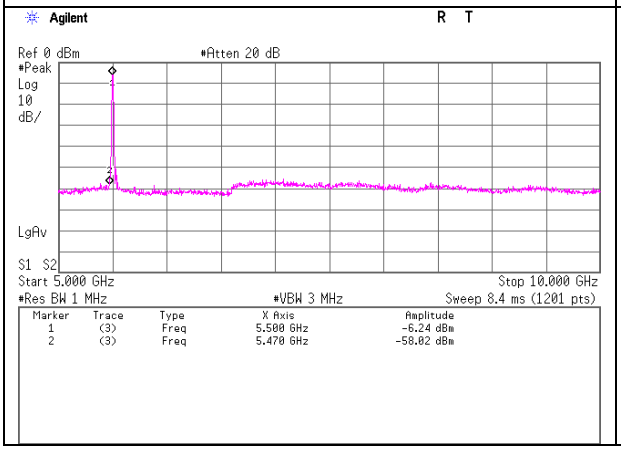

### 30MHz-1GHz



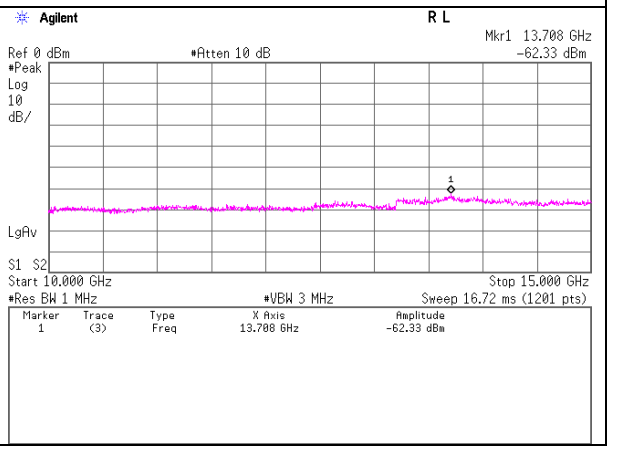

### 1GHz-5GHz




### 5GHz-10GHz




### 10GHz-15GHz





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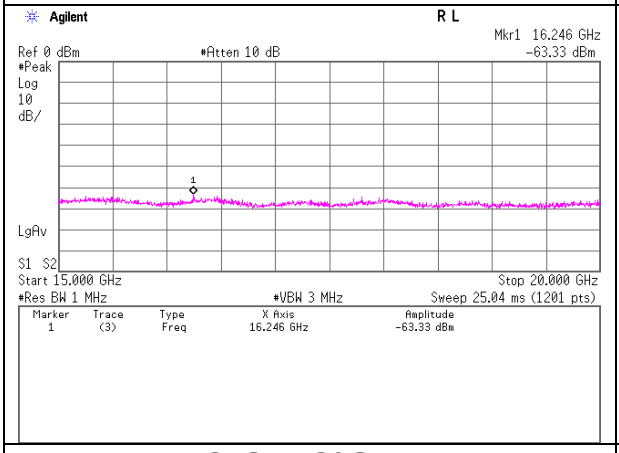
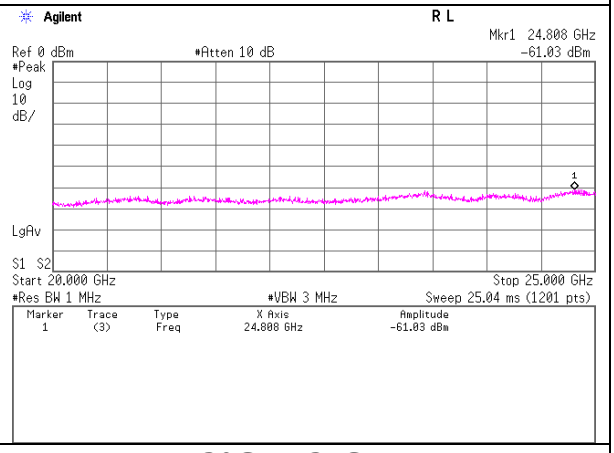
# Conducted Spurious Emission

## 11a Tx 5500MHz

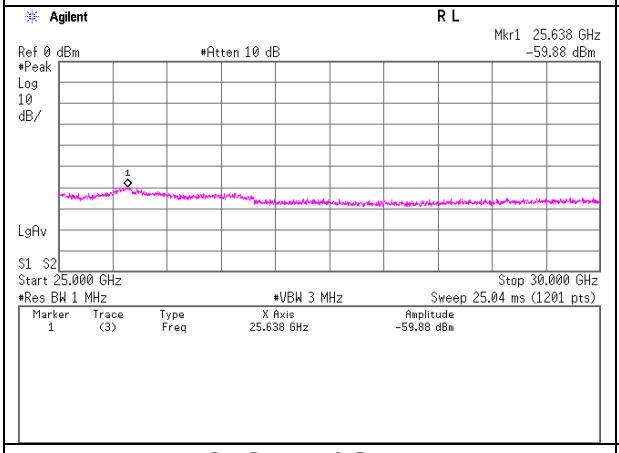
### 15GHz-20GHz



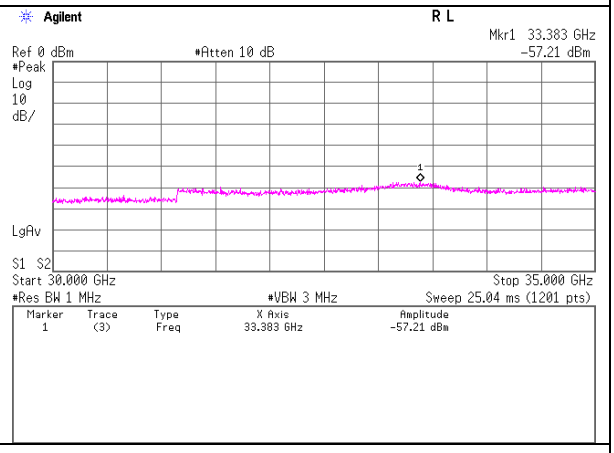

### 20GHz-25GHz



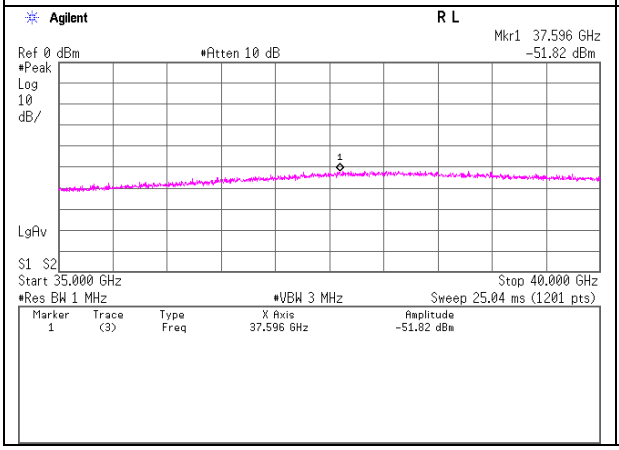

### 25GHz-30GHz




### 30GHz-35GHz



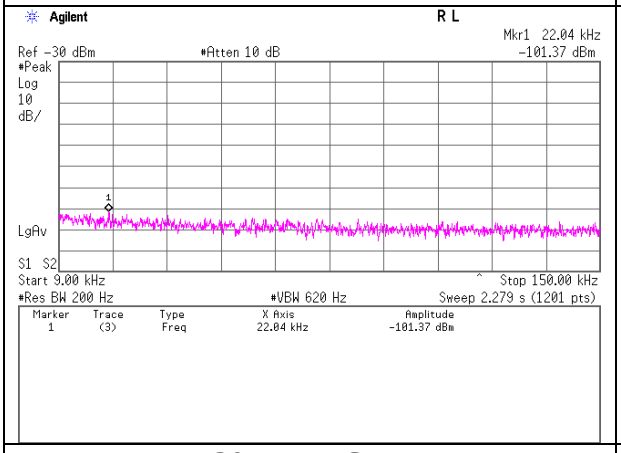

### 35GHz-40GHz



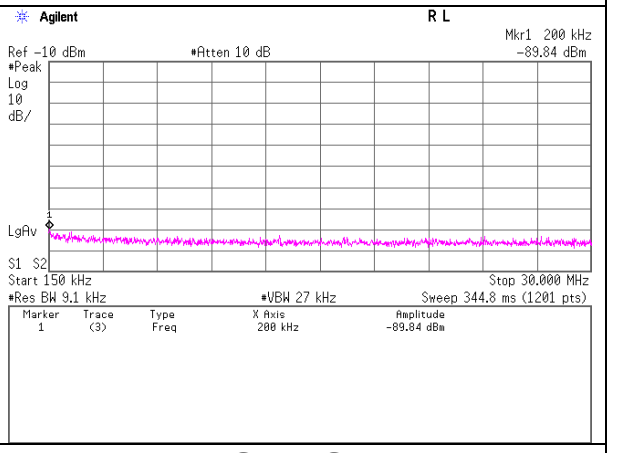
# Conducted Spurious Emission

## 11a Tx 5600MHz

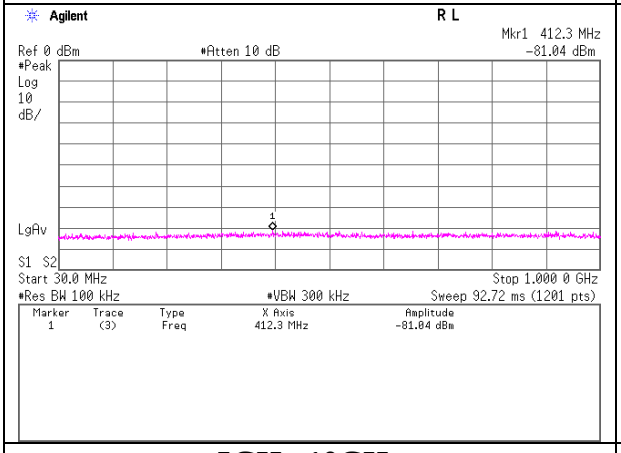
### 9kHz-150kHz



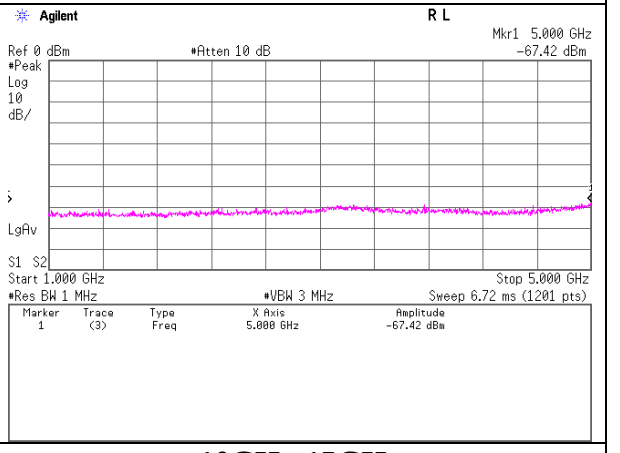

### 150kHz-30MHz



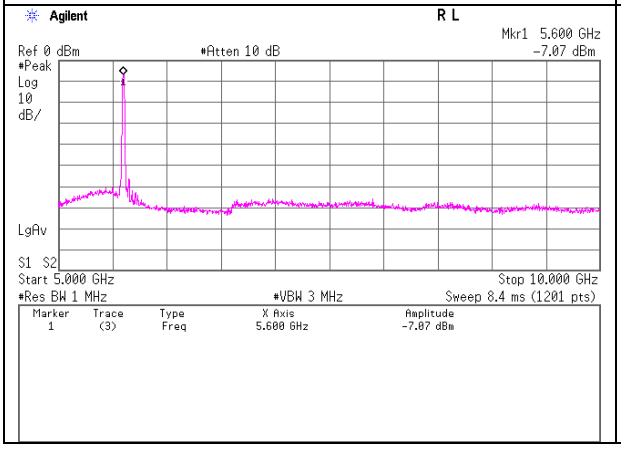

### 30MHz-1GHz



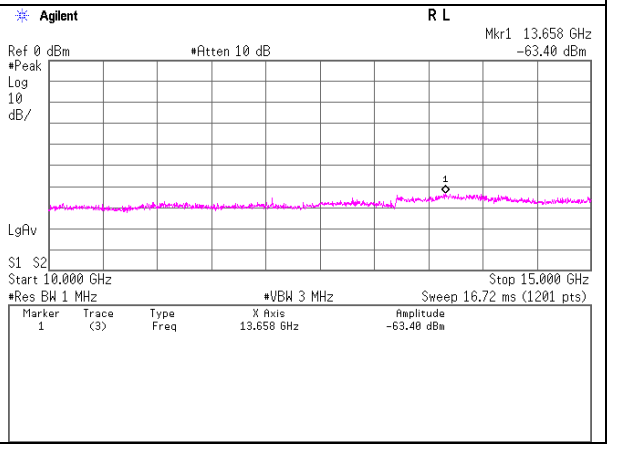

### 1GHz-5GHz




### 5GHz-10GHz



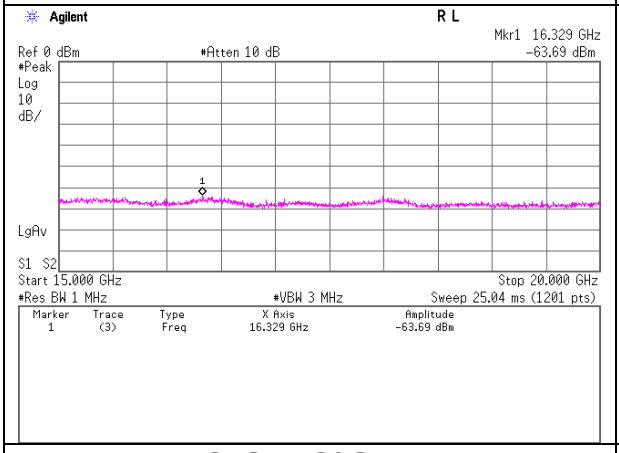

### 10GHz-15GHz



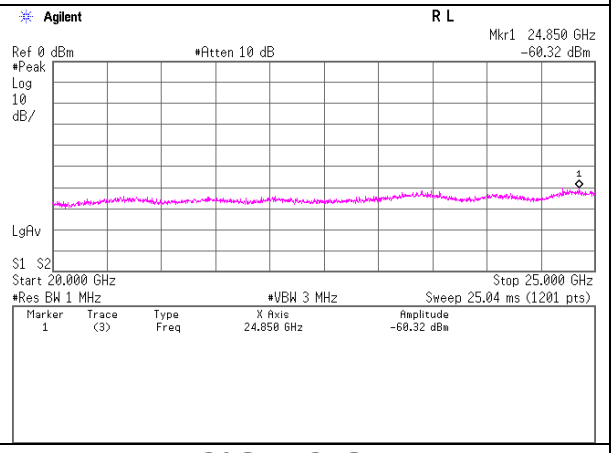
# Conducted Spurious Emission

## 11a Tx 5600MHz

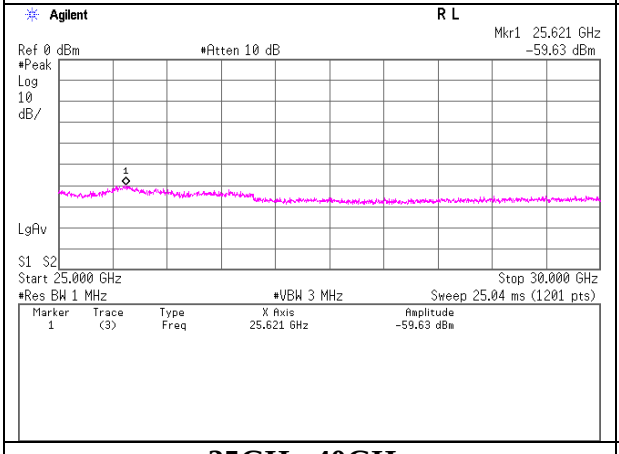
### 15GHz-20GHz



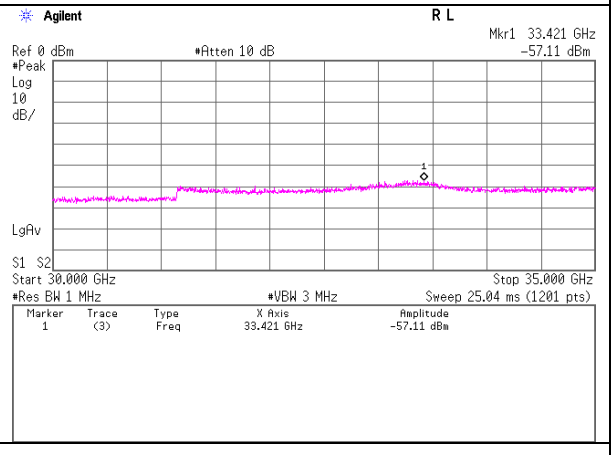

### 20GHz-25GHz



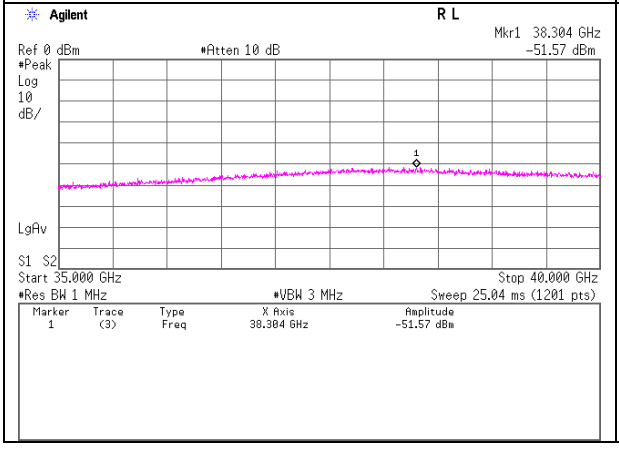

### 25GHz-30GHz




### 30GHz-35GHz



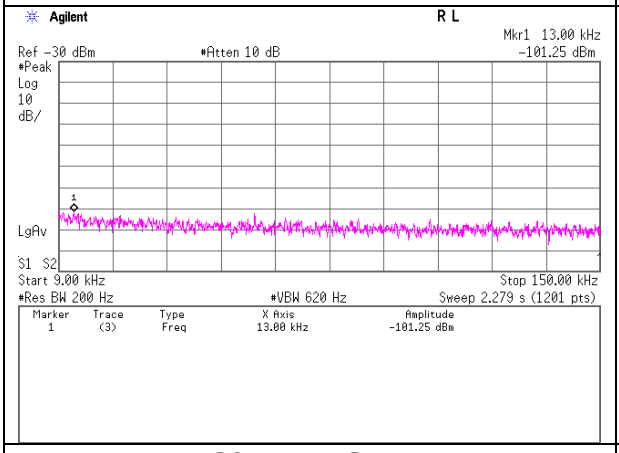

### 35GHz-40GHz



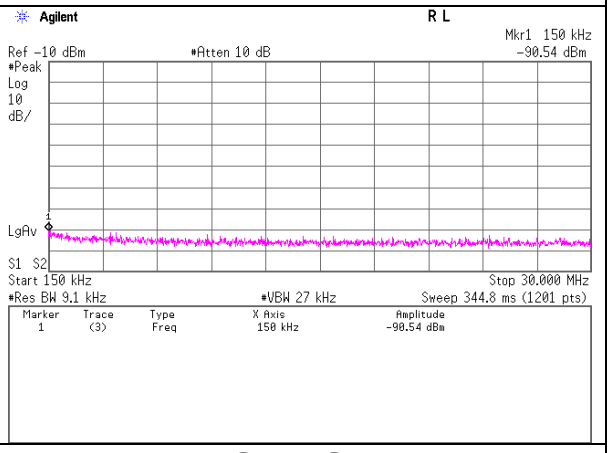
# Conducted Spurious Emission

## 11a Tx 5700MHz

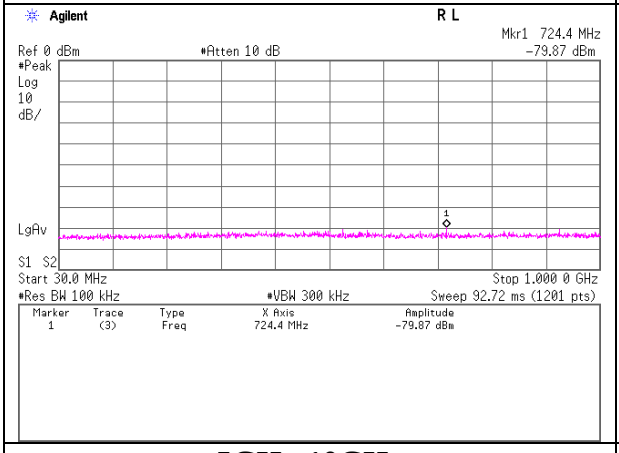
### 9kHz-150kHz



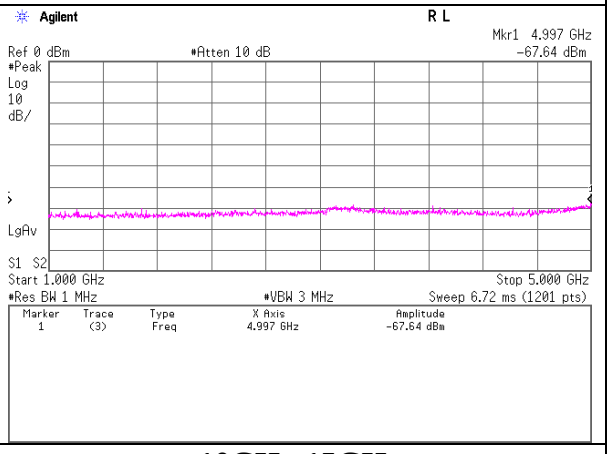

### 150kHz-30MHz



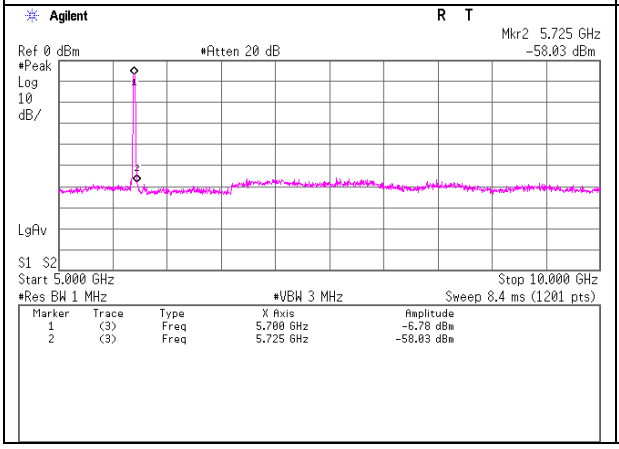

### 30MHz-1GHz



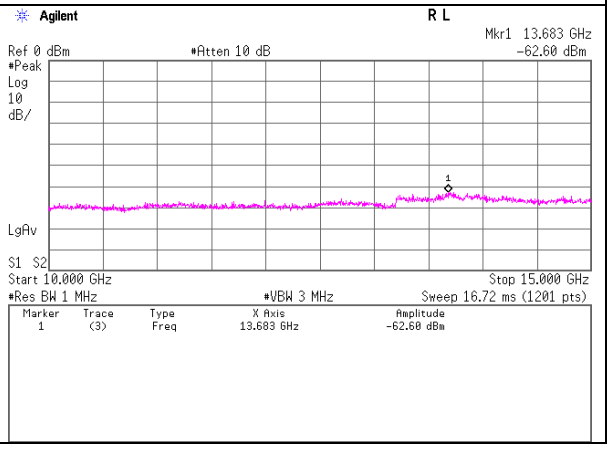

### 1GHz-5GHz




### 5GHz-10GHz




### 10GHz-15GHz

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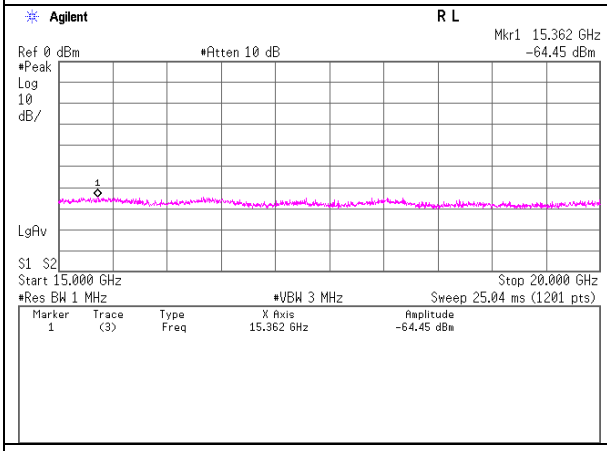
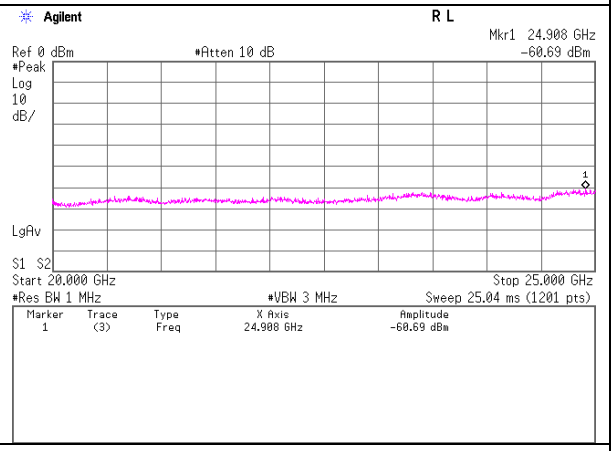
# Conducted Spurious Emission

## 11a Tx 5700MHz

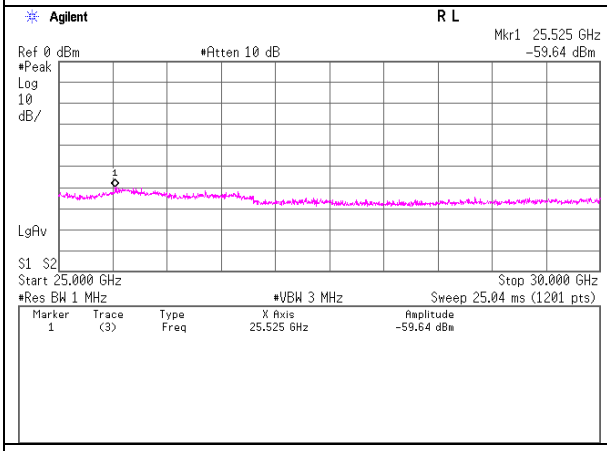
### 15GHz-20GHz



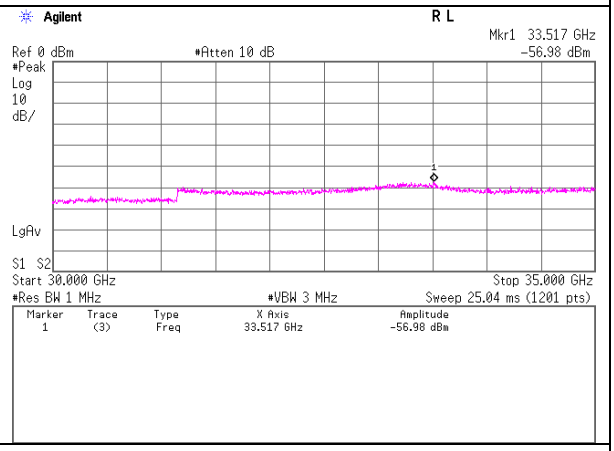

### 20GHz-25GHz



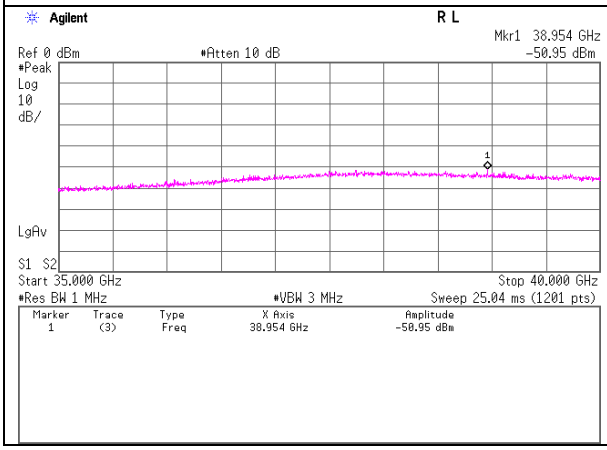

### 25GHz-30GHz




### 30GHz-35GHz



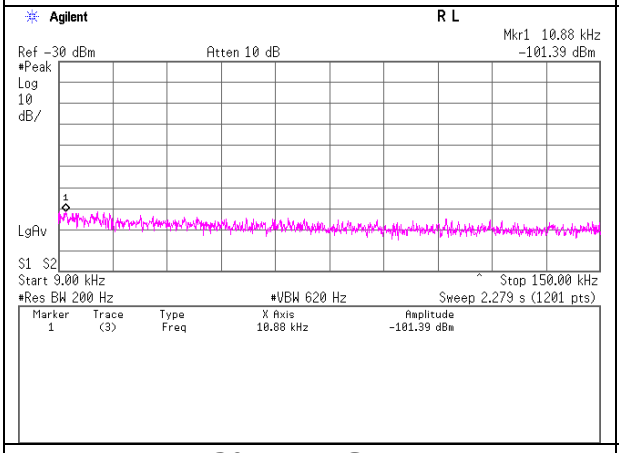

### 35GHz-40GHz



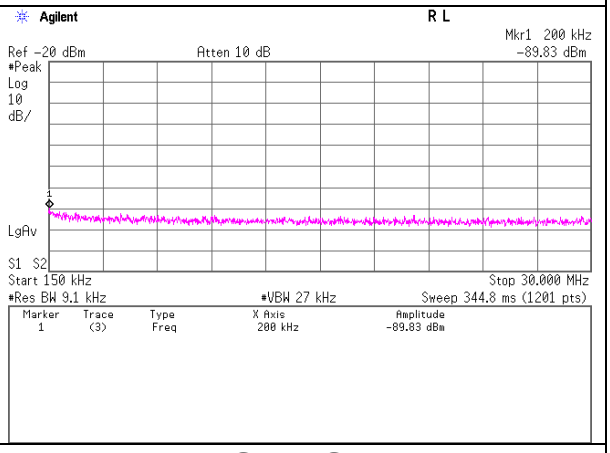
# Conducted Spurious Emission

## 11n-40 Tx 5190MHz

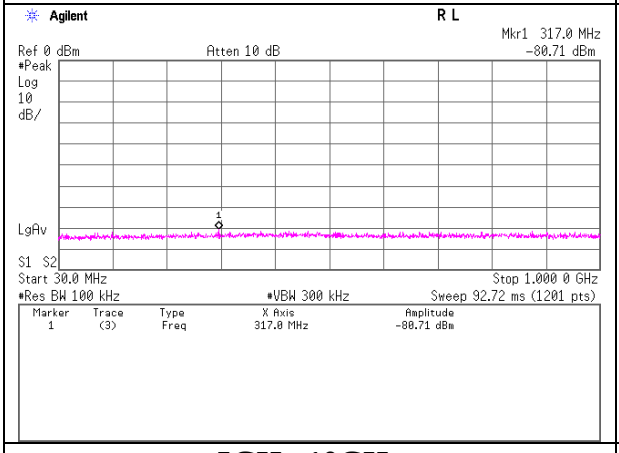
### 9kHz-150kHz



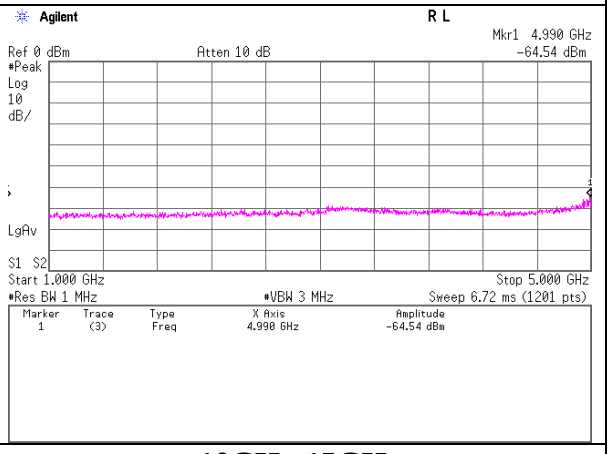

### 150kHz-30MHz



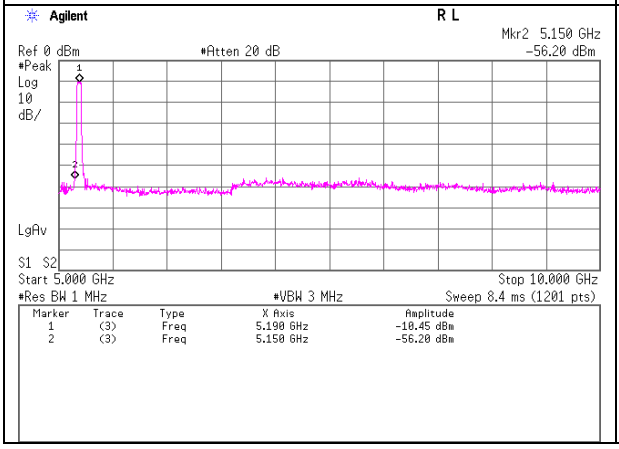

### 30MHz-1GHz



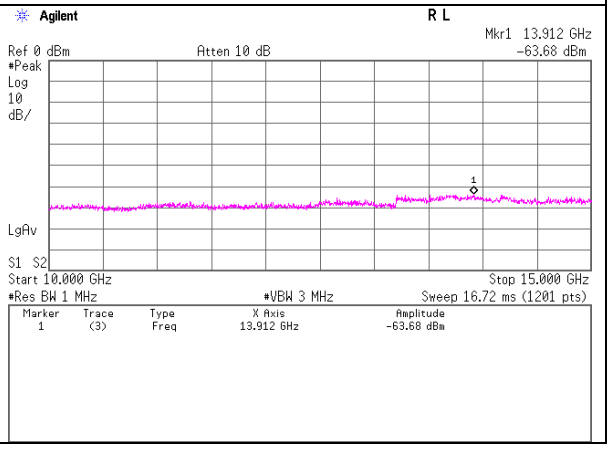

### 1GHz-5GHz




### 5GHz-10GHz




### 10GHz-15GHz

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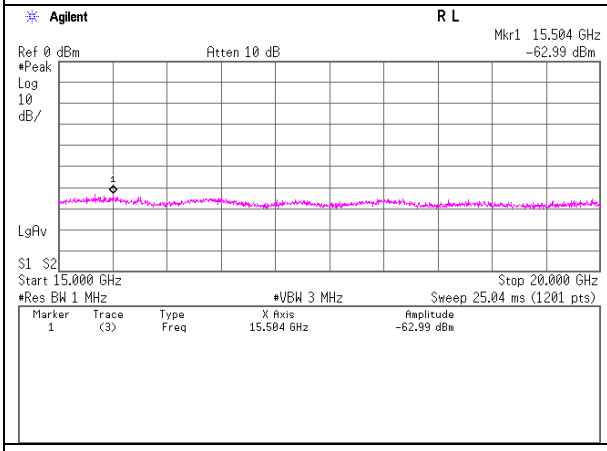
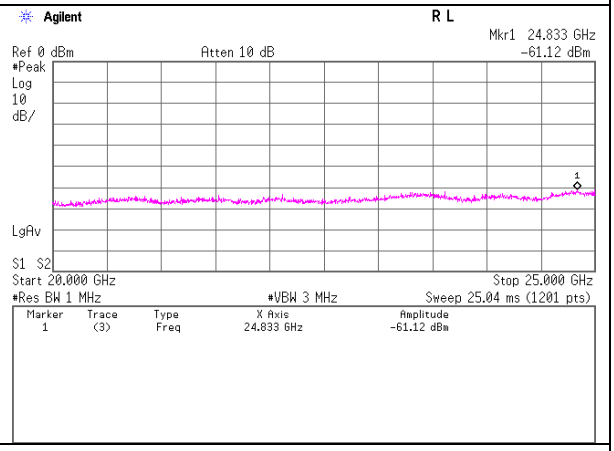
# Conducted Spurious Emission

## 11n-40 Tx 5190MHz

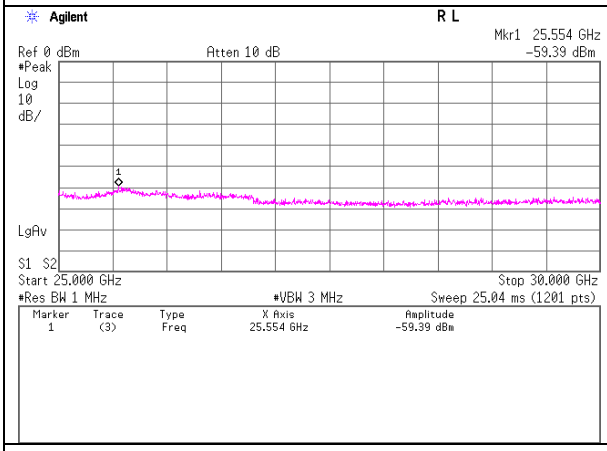
### 15GHz-20GHz



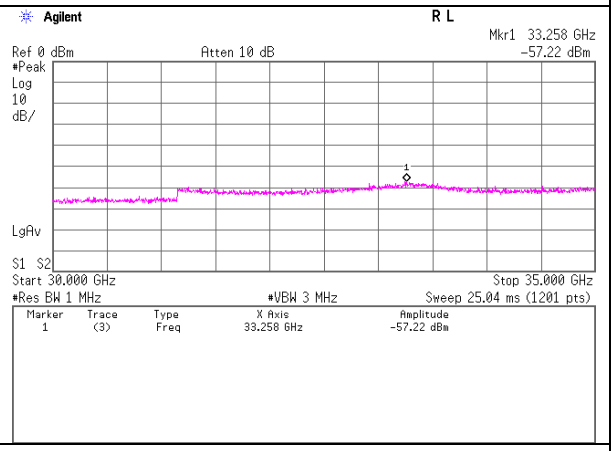

### 20GHz-25GHz



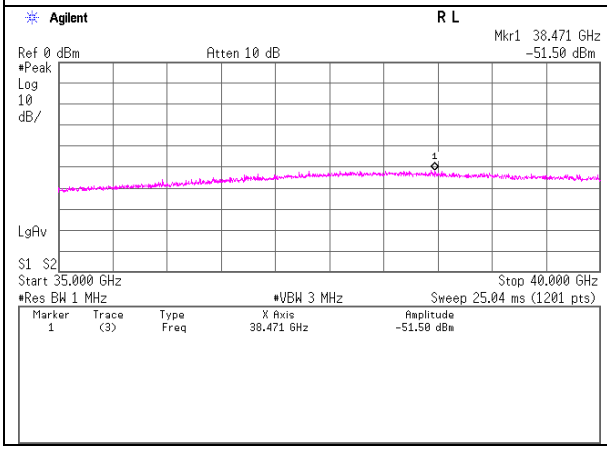

### 25GHz-30GHz




### 30GHz-35GHz



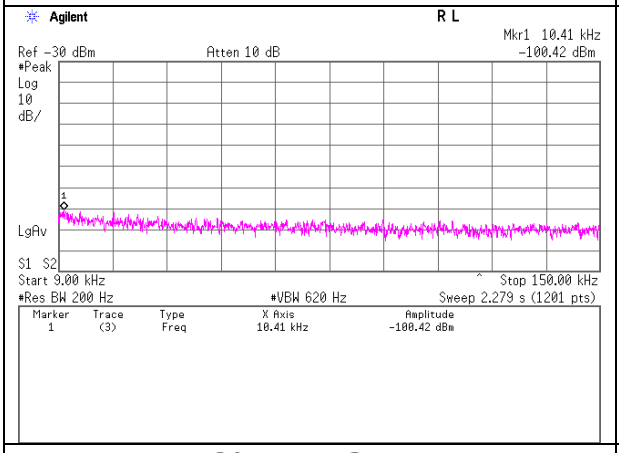

### 35GHz-40GHz



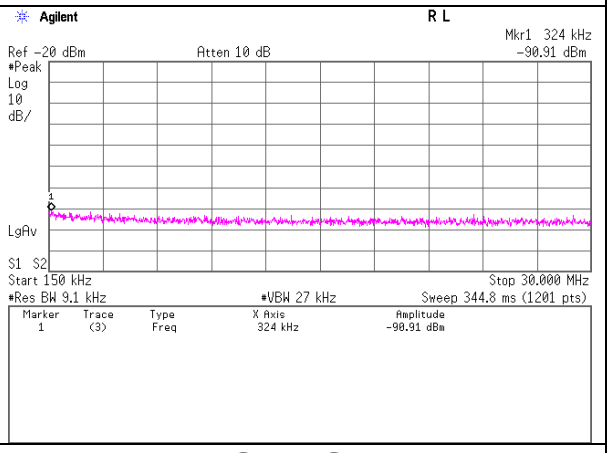
# Conducted Spurious Emission

## 11n-40 Tx 5230MHz

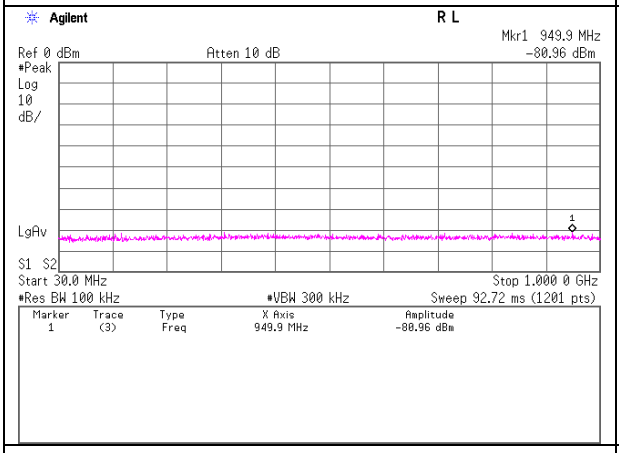
### 9kHz-150kHz



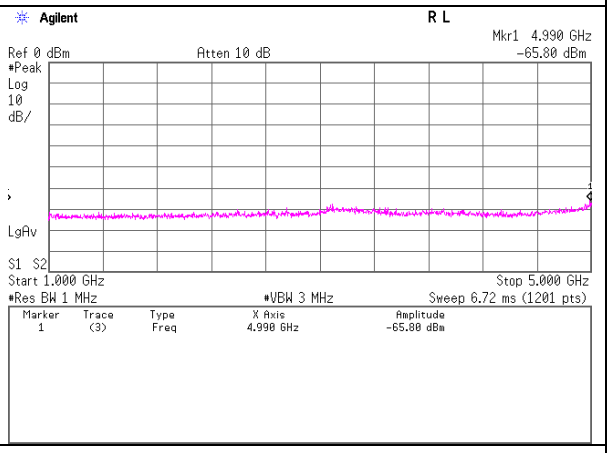

### 150kHz-30MHz



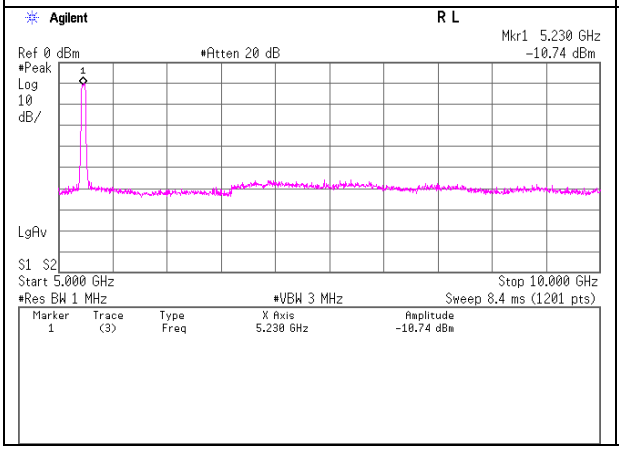

### 30MHz-1GHz



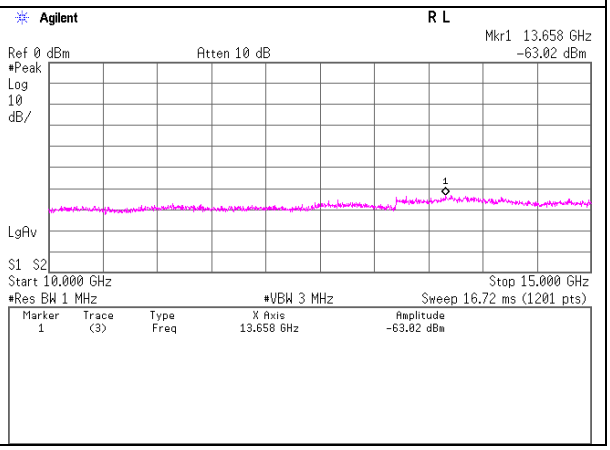

### 1GHz-5GHz




### 5GHz-10GHz



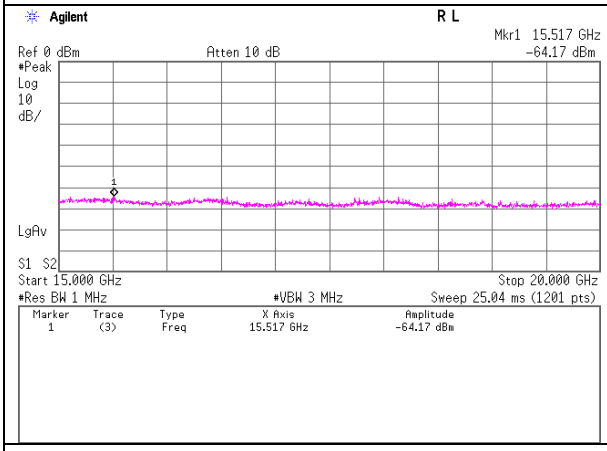

### 10GHz-15GHz



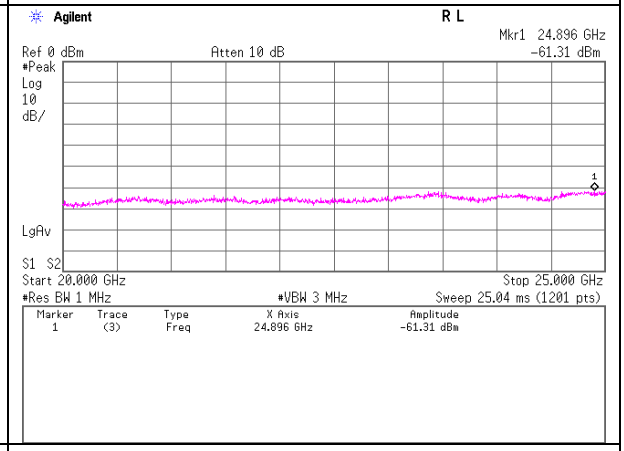
# Conducted Spurious Emission

## 11n-40 Tx 5230MHz

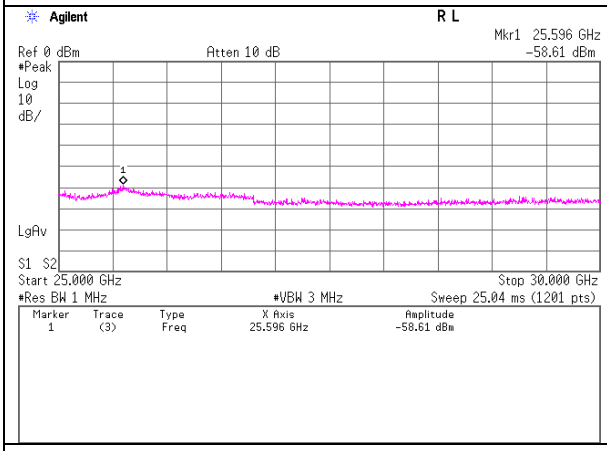
### 15GHz-20GHz



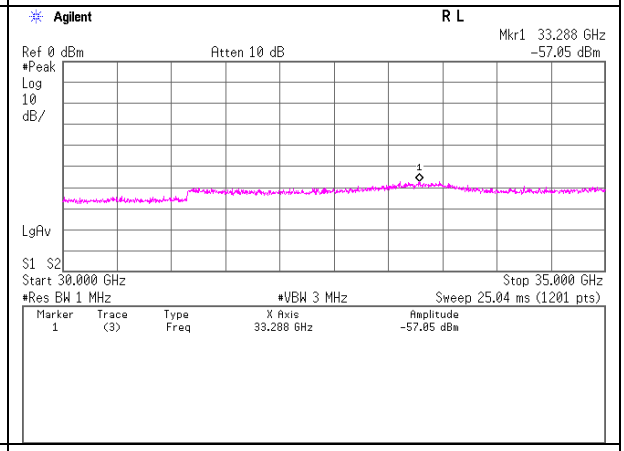

### 20GHz-25GHz



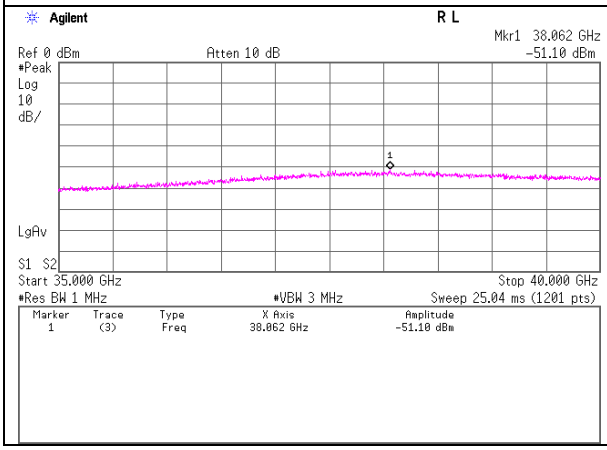

### 25GHz-30GHz




### 30GHz-35GHz



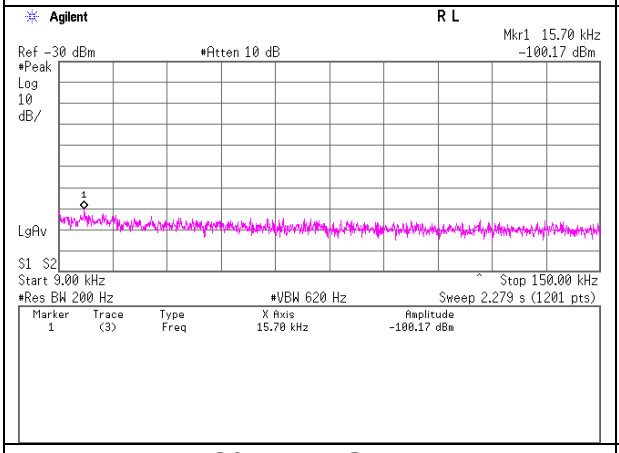

### 35GHz-40GHz



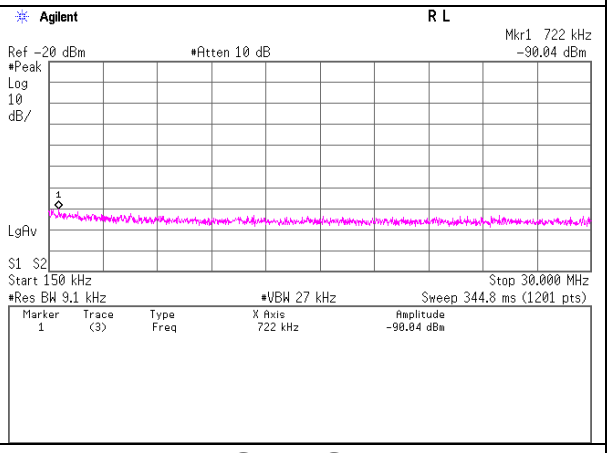
# Conducted Spurious Emission

## 11n-40 Tx 5270MHz

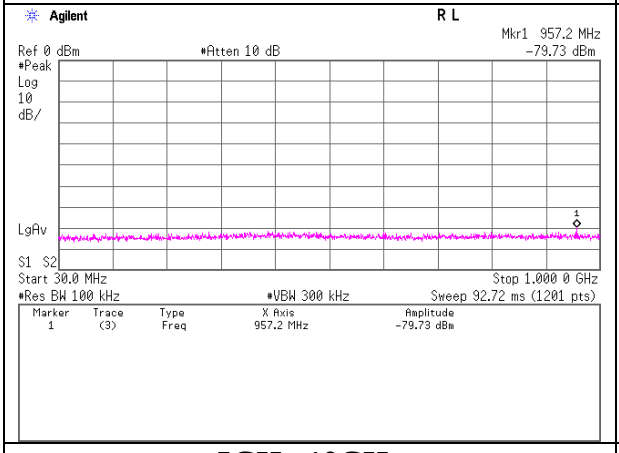
### 9kHz-150kHz



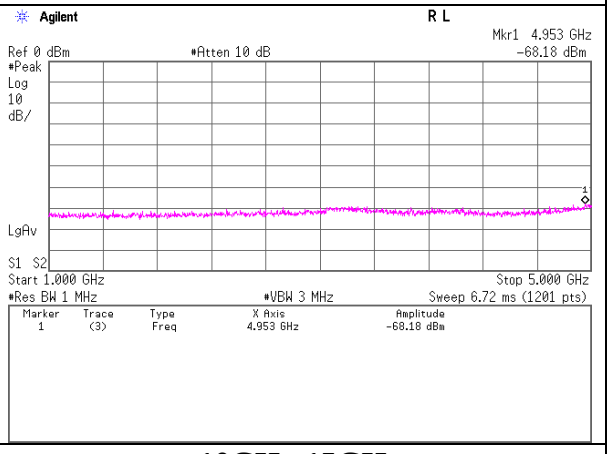

### 150kHz-30MHz



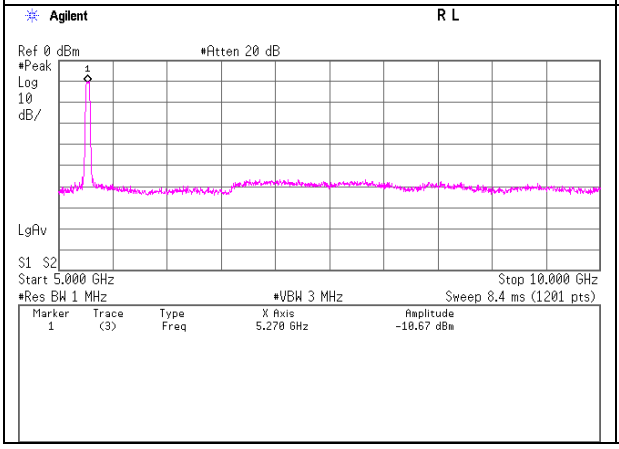

### 30MHz-1GHz



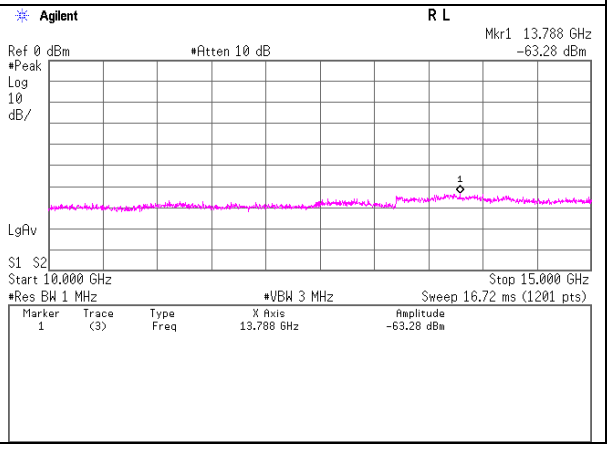

### 1GHz-5GHz




### 5GHz-10GHz




### 10GHz-15GHz





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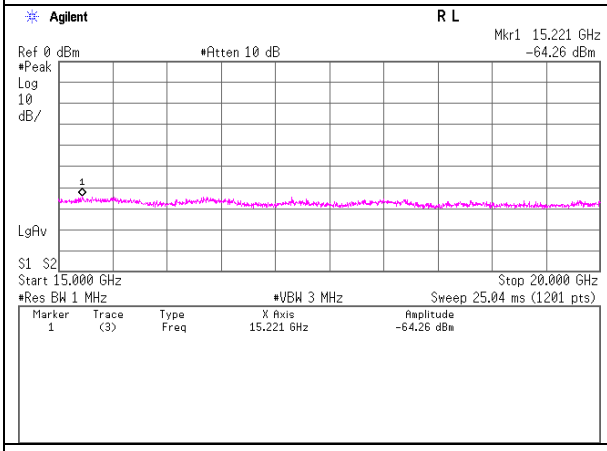
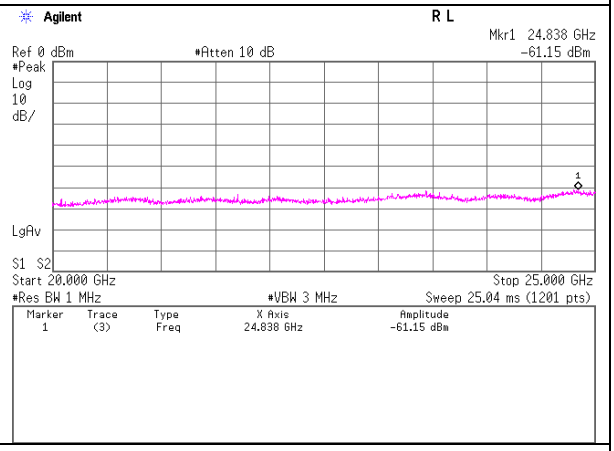
# Conducted Spurious Emission

## 11n-40 Tx 5270MHz

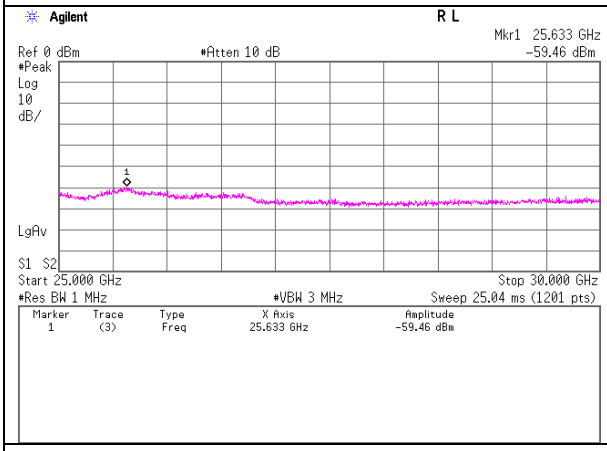
### 15GHz-20GHz



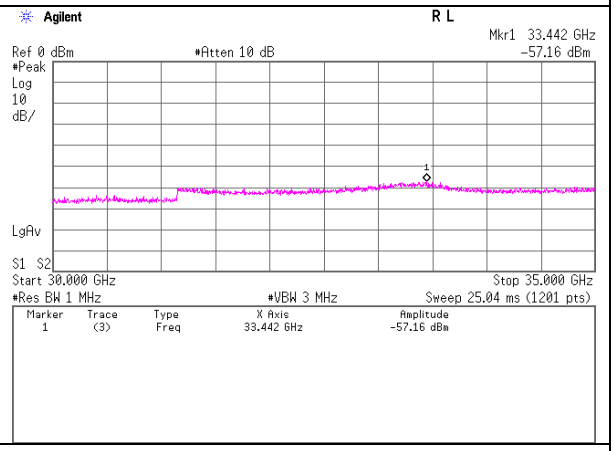

### 20GHz-25GHz



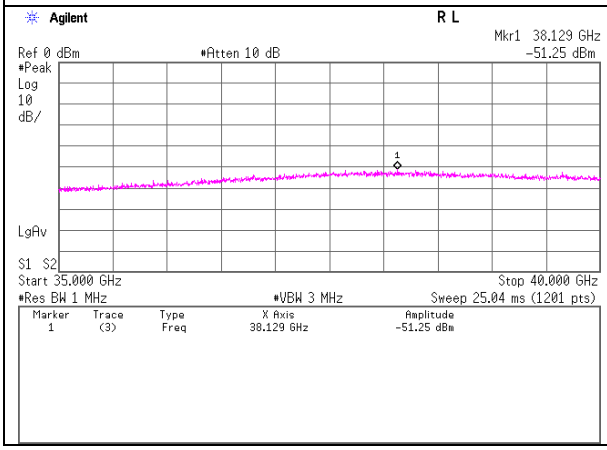

### 25GHz-30GHz




### 30GHz-35GHz



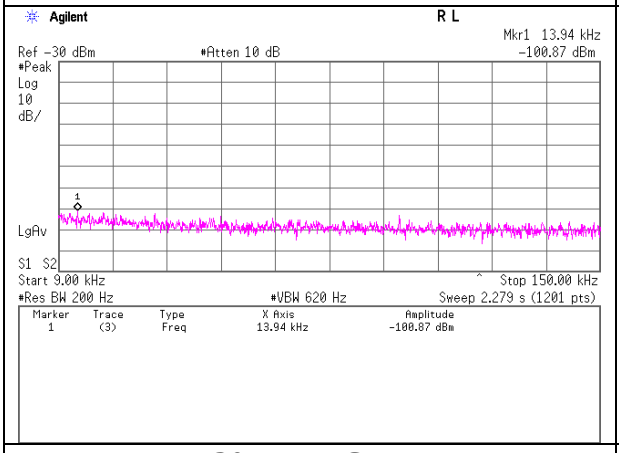

### 35GHz-40GHz



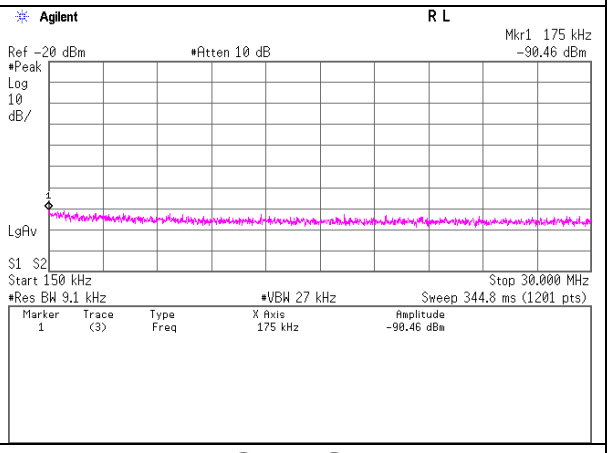
# Conducted Spurious Emission

## 11n-40 Tx 5310MHz

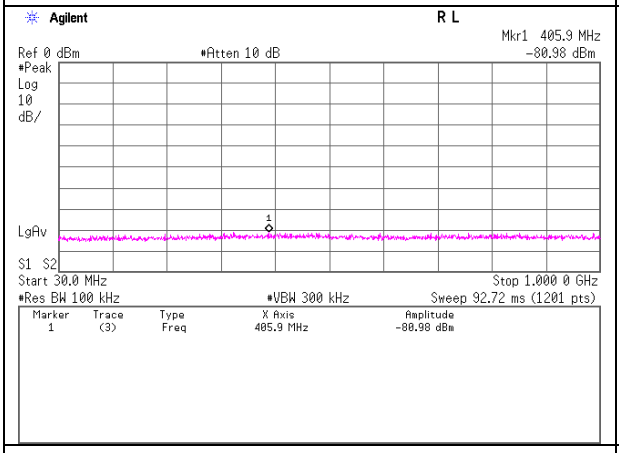
### 9kHz-150kHz



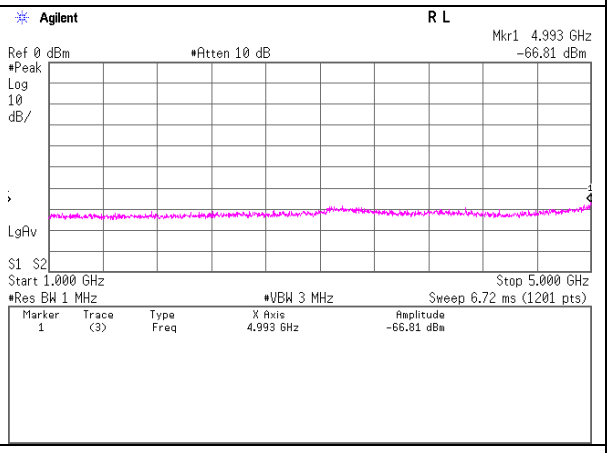

### 150kHz-30MHz



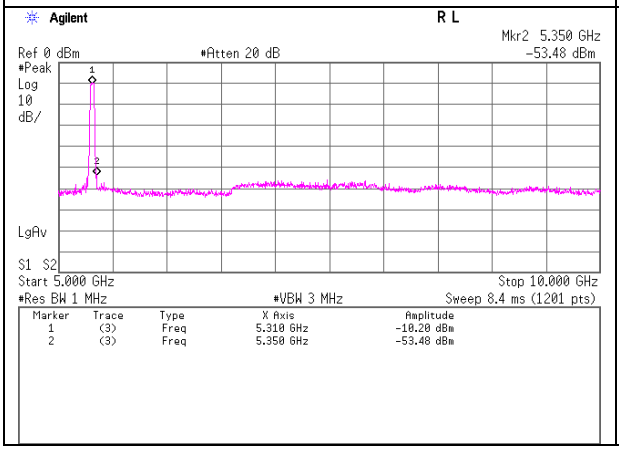

### 30MHz-1GHz



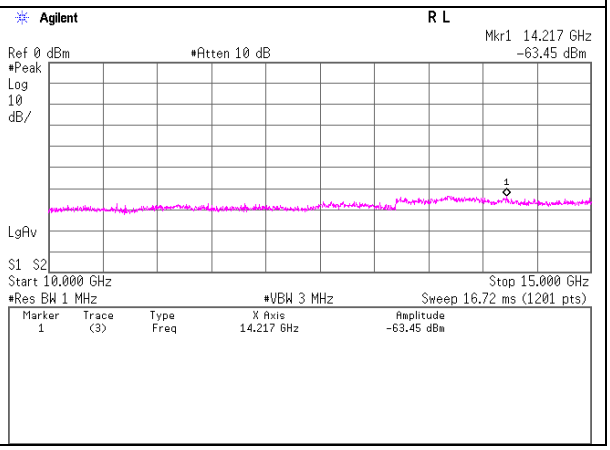

### 1GHz-5GHz




### 5GHz-10GHz




### 10GHz-15GHz

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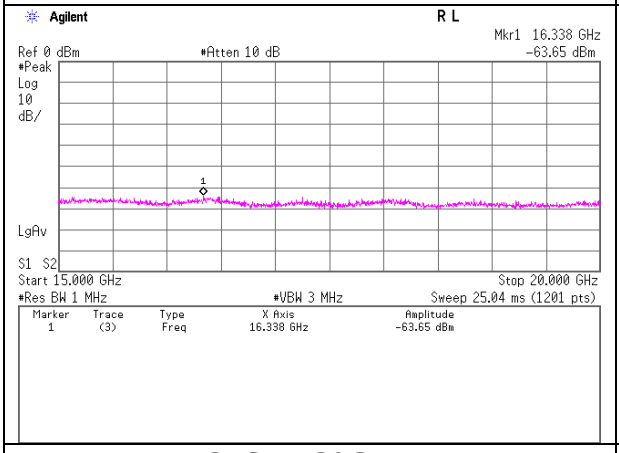
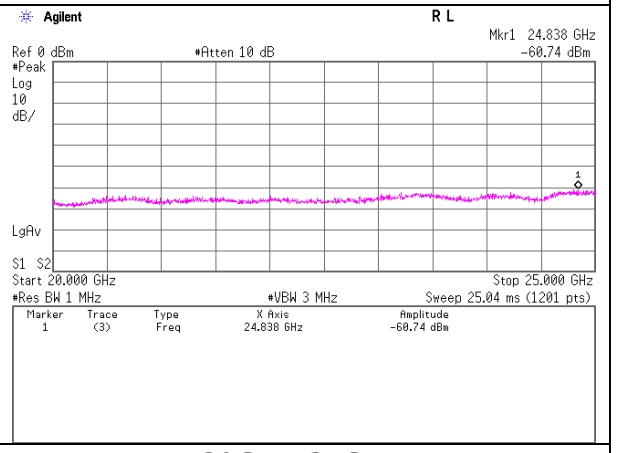
# Conducted Spurious Emission

## 11n-40 Tx 5310MHz

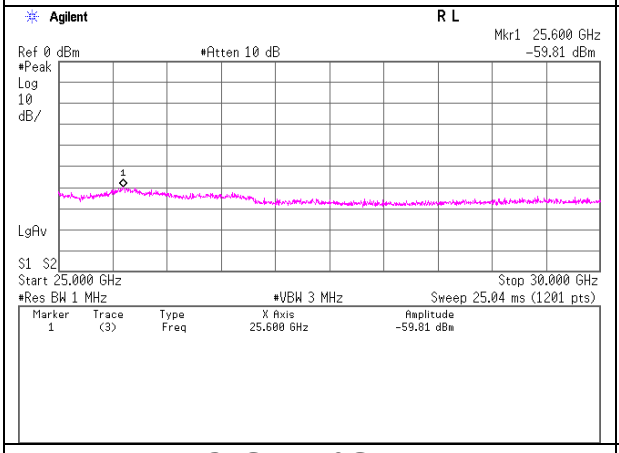
### 15GHz-20GHz



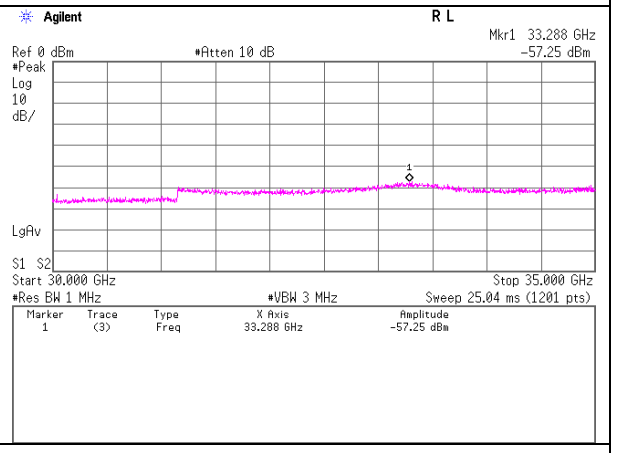

### 20GHz-25GHz



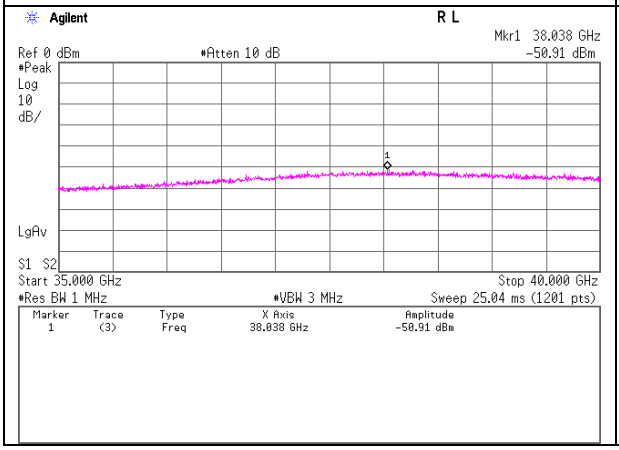

### 25GHz-30GHz




### 30GHz-35GHz



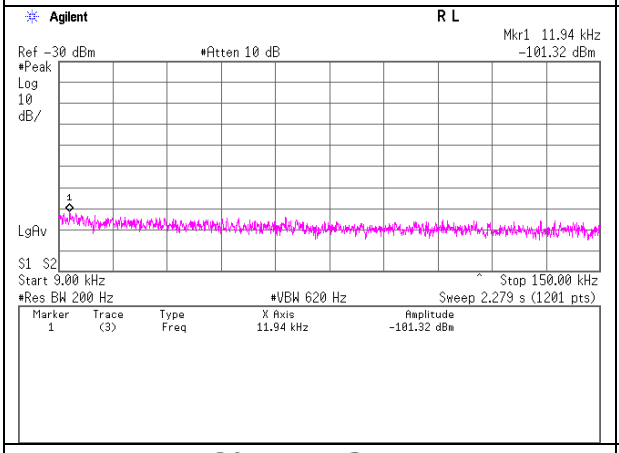

### 35GHz-40GHz



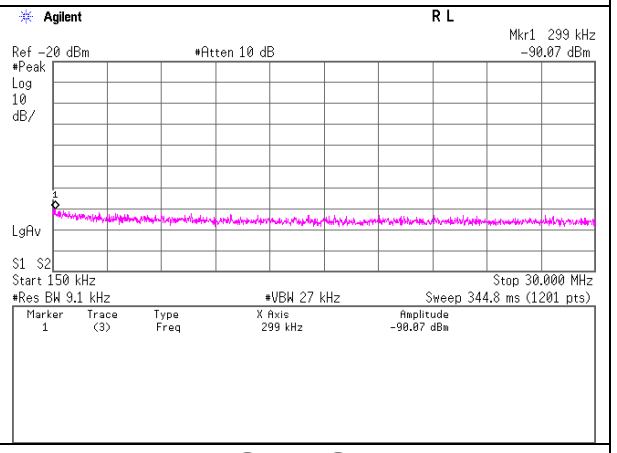
# Conducted Spurious Emission

## 11n-40 Tx 5510MHz

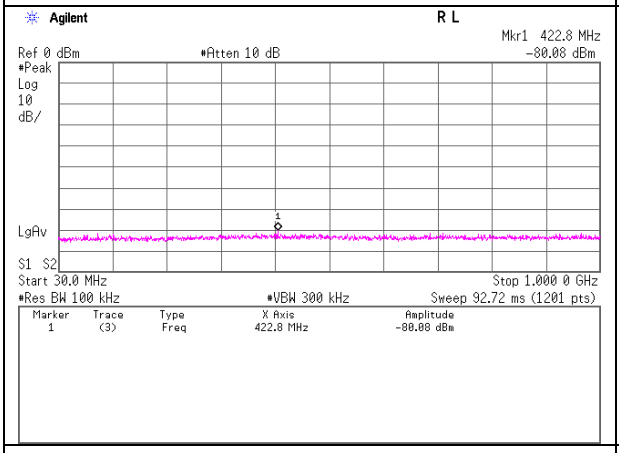
### 9kHz-150kHz



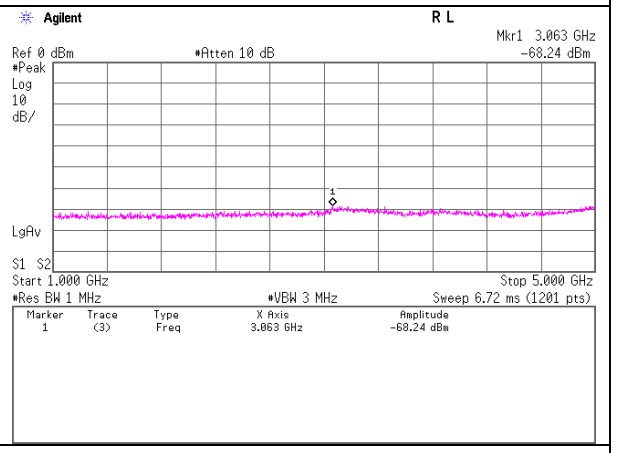

### 150kHz-30MHz



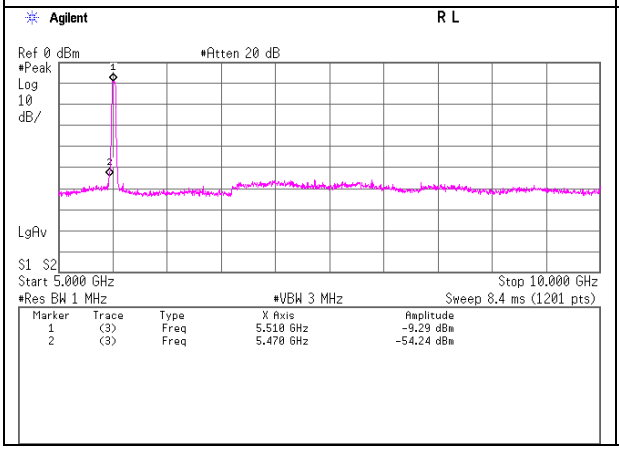

### 30MHz-1GHz



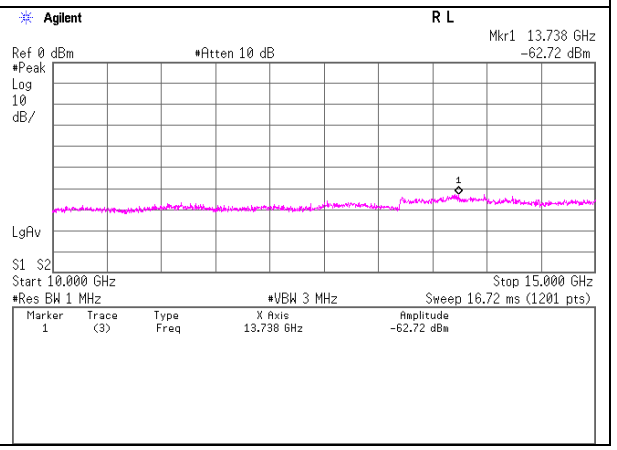

### 1GHz-5GHz




### 5GHz-10GHz



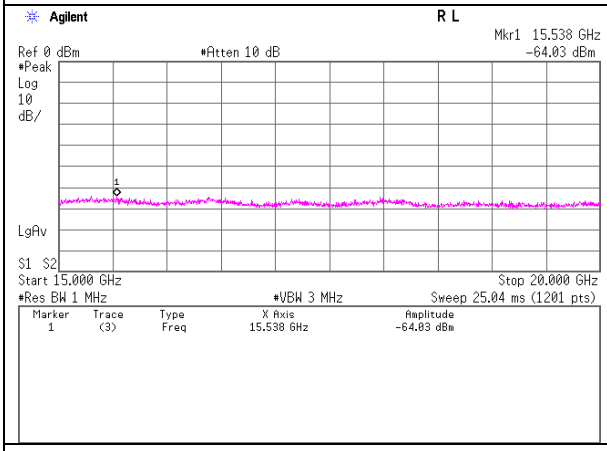

### 10GHz-15GHz



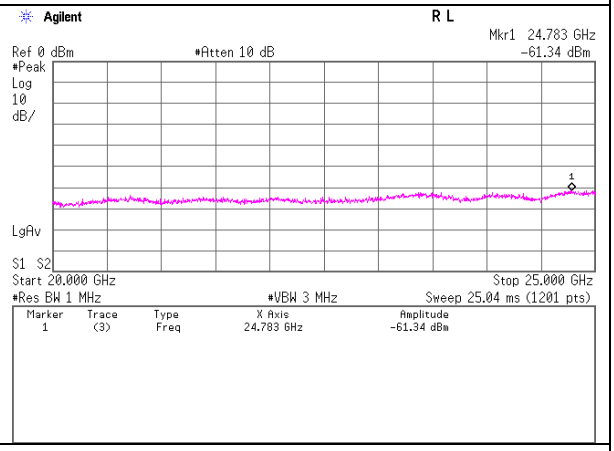
# Conducted Spurious Emission

## 11n-40 Tx 5510MHz

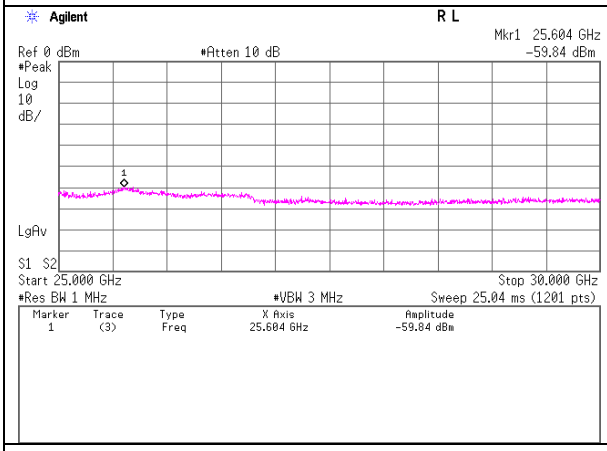
### 15GHz-20GHz



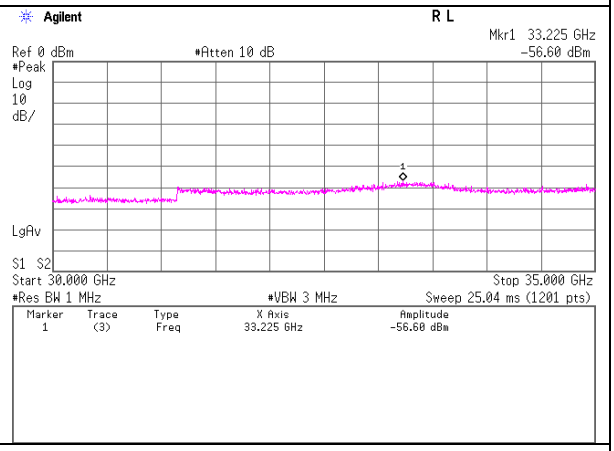

### 20GHz-25GHz



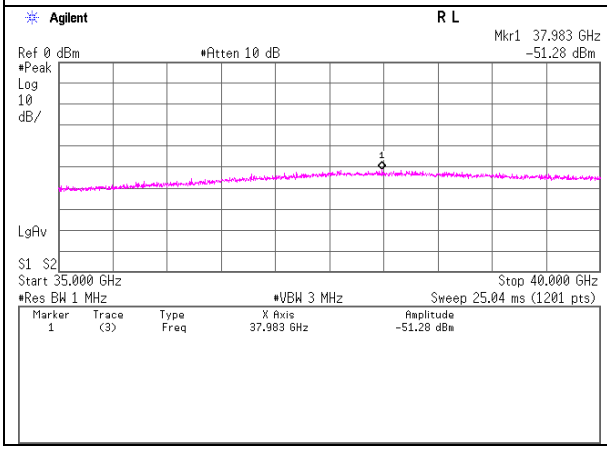

### 25GHz-30GHz




### 30GHz-35GHz



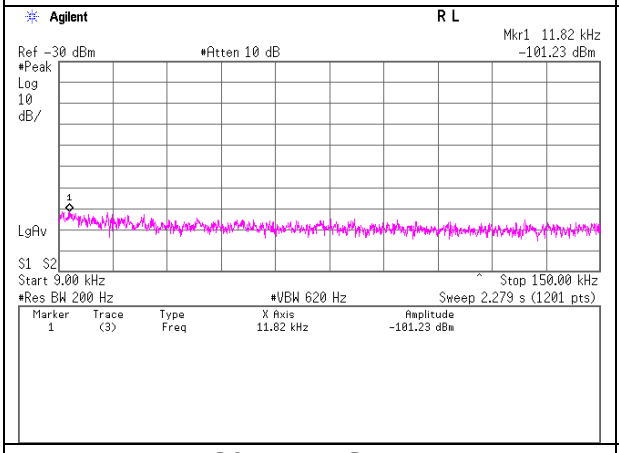

### 35GHz-40GHz



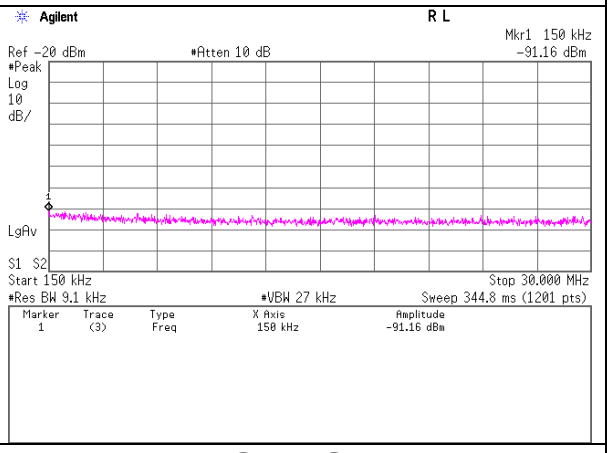
# Conducted Spurious Emission

## 11n-40 Tx 5590MHz

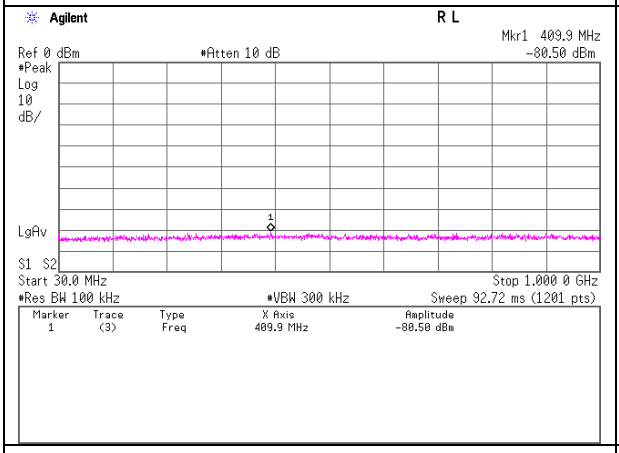
### 9kHz-150kHz



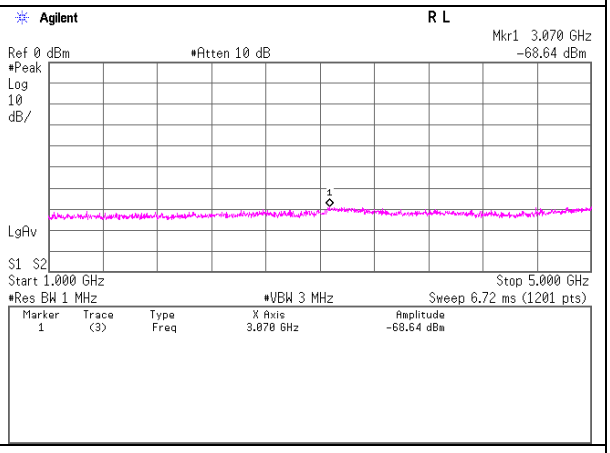

### 150kHz-30MHz



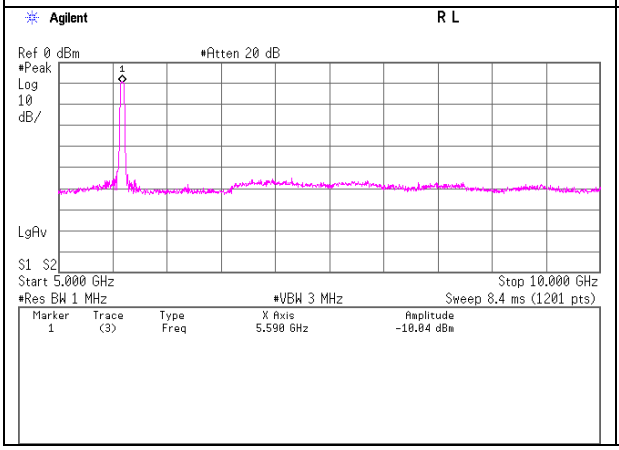

### 30MHz-1GHz



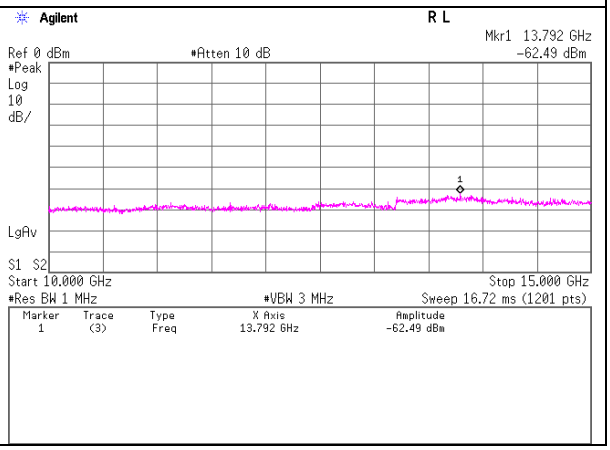

### 1GHz-5GHz




### 5GHz-10GHz




### 10GHz-15GHz

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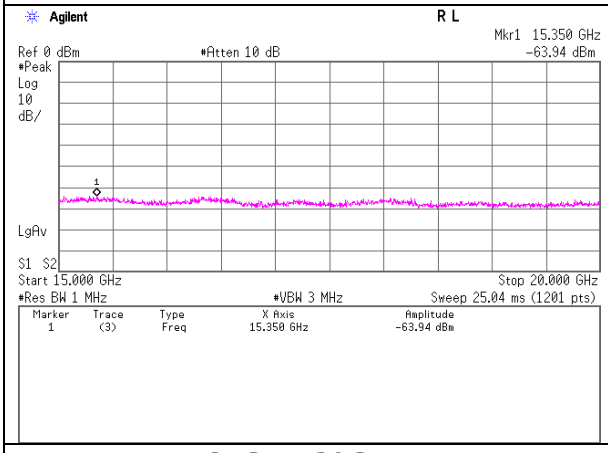
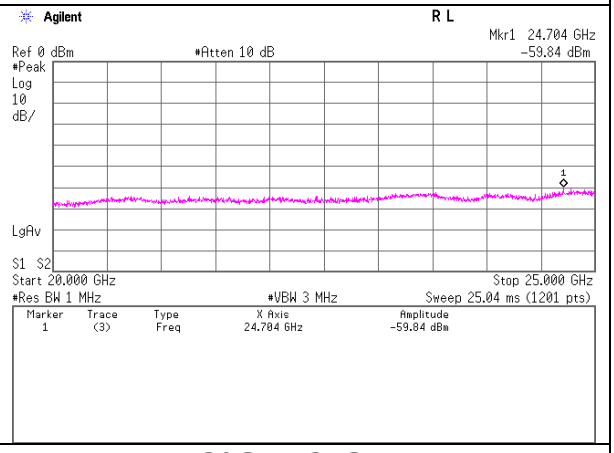
# Conducted Spurious Emission

## 11n-40 Tx 5590MHz

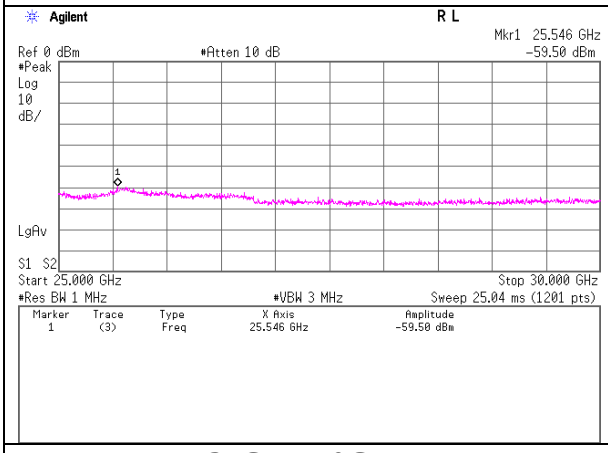
### 15GHz-20GHz



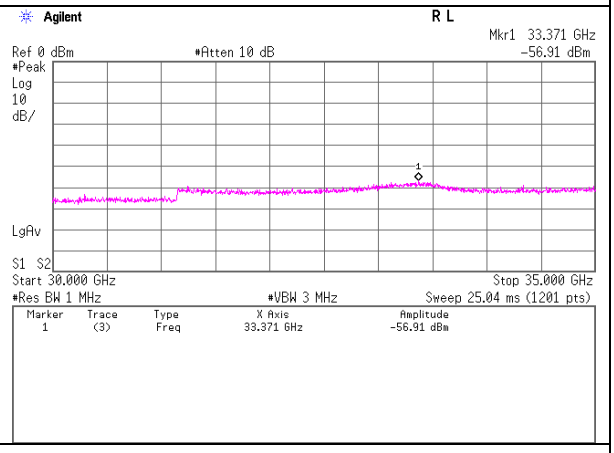

### 20GHz-25GHz



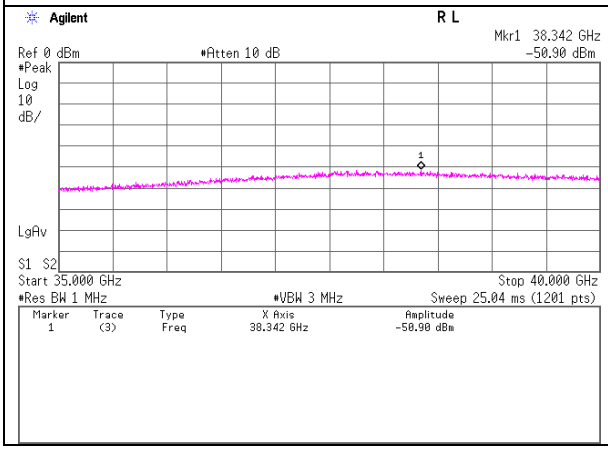

### 25GHz-30GHz




### 30GHz-35GHz



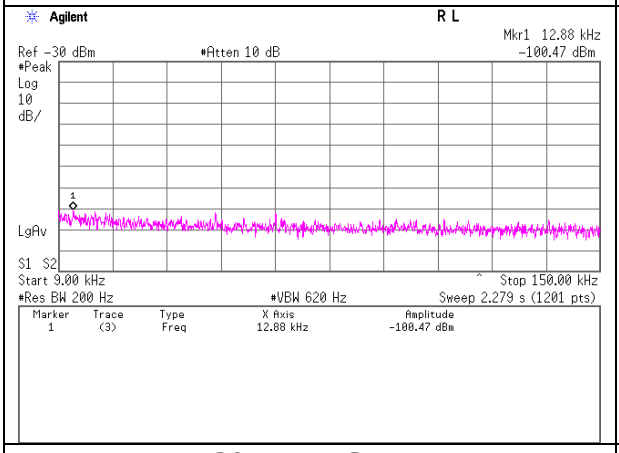

### 35GHz-40GHz



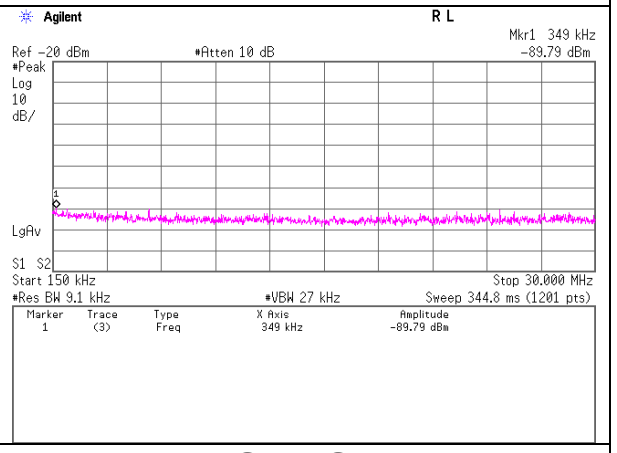
# Conducted Spurious Emission

## 11n-40 Tx 5670MHz

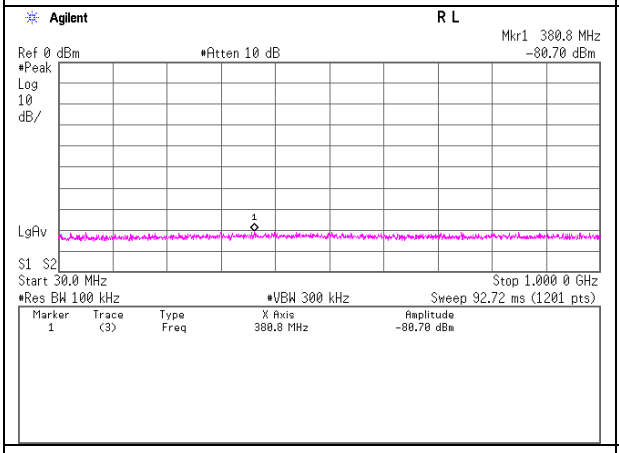
### 9kHz-150kHz



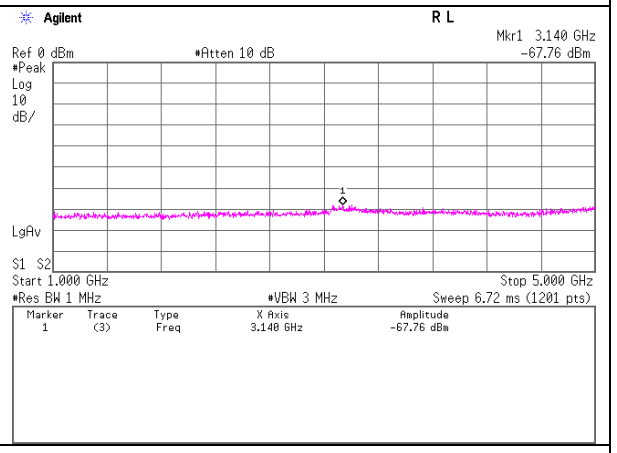

### 150kHz-30MHz



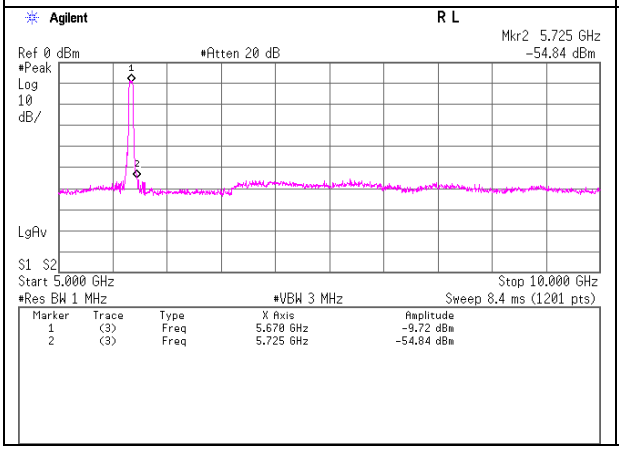

### 30MHz-1GHz



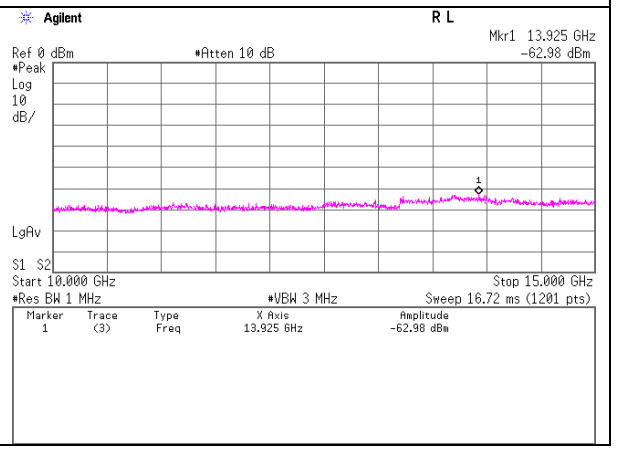

### 1GHz-5GHz




### 5GHz-10GHz




### 10GHz-15GHz





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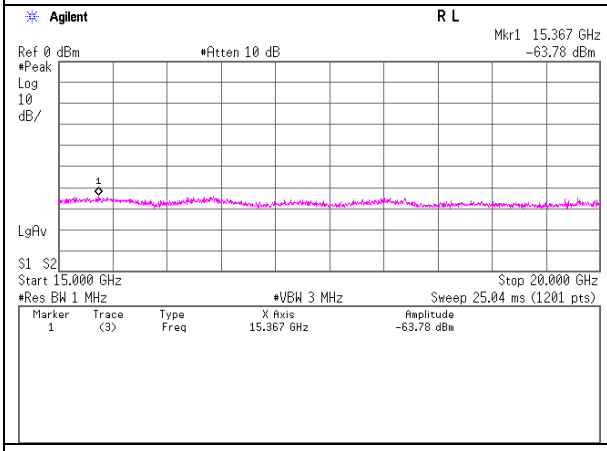
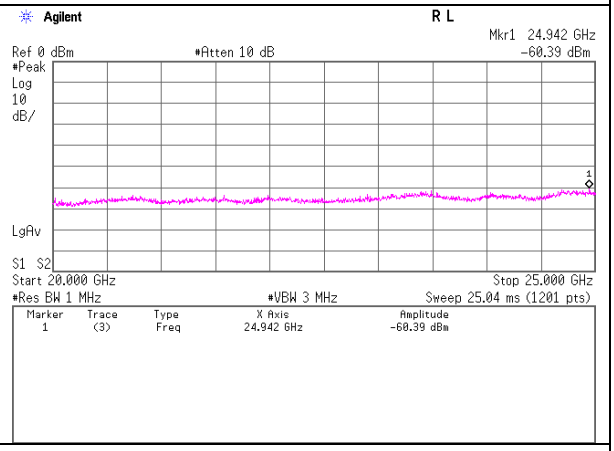
# Conducted Spurious Emission

## 11n-40 Tx 5670MHz

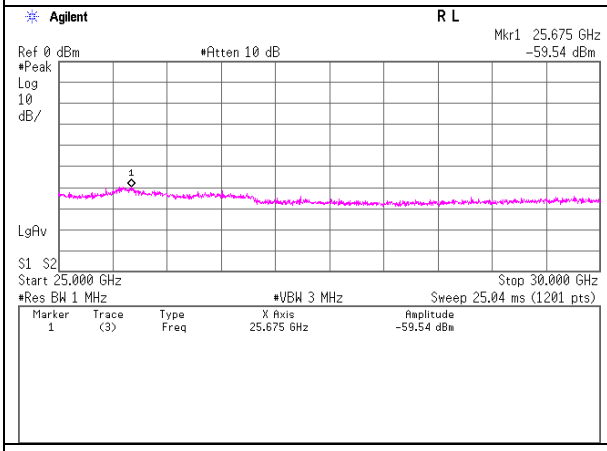
### 15GHz-20GHz



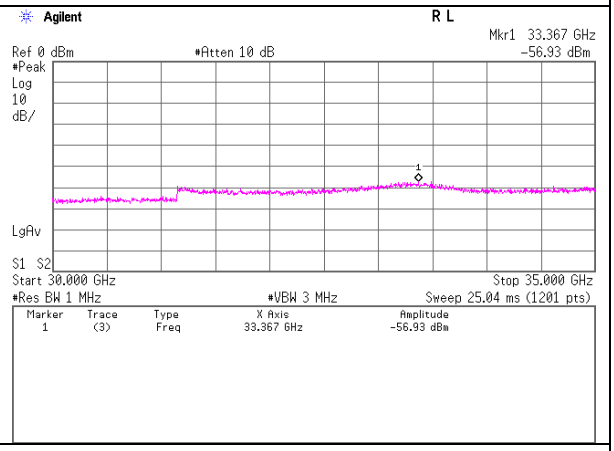

### 20GHz-25GHz



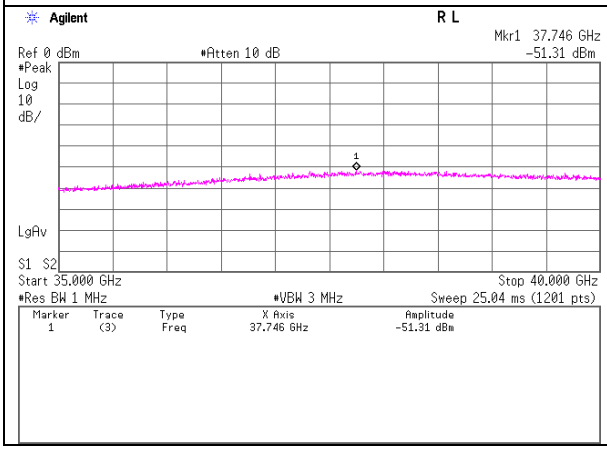

### 25GHz-30GHz




### 30GHz-35GHz



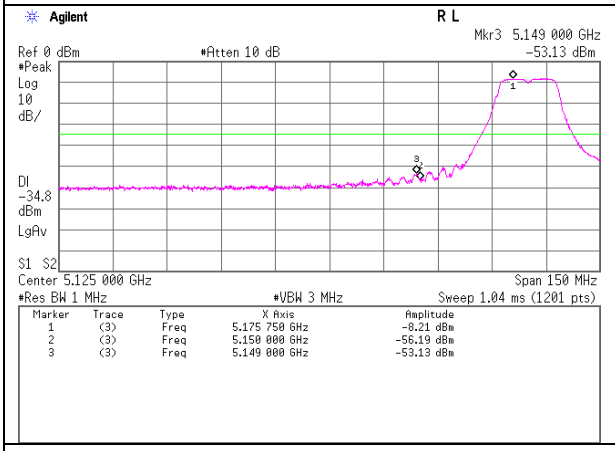

### 35GHz-40GHz



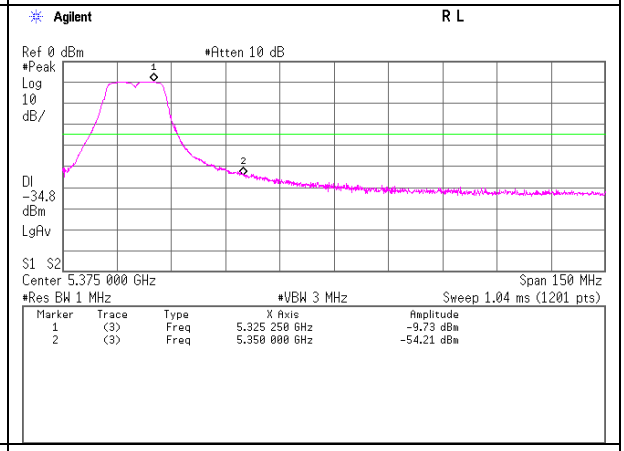
# Conducted emission Band Edge compliance

## 11a

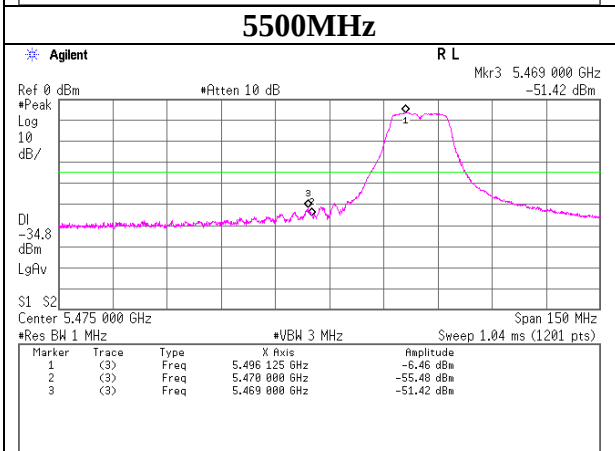
### 5180MHz



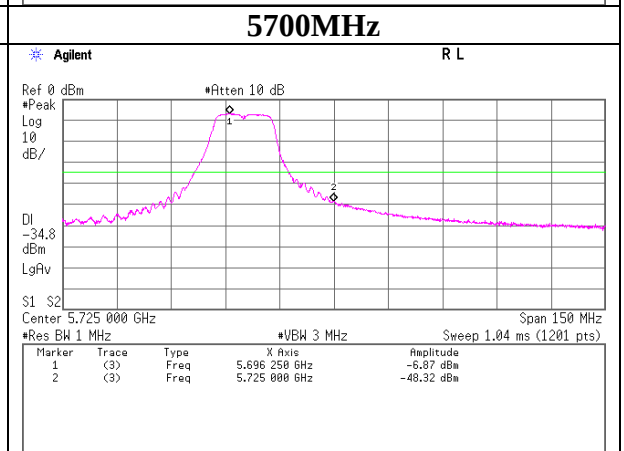

### 5320MHz




### 5500MHz




### 5700MHz

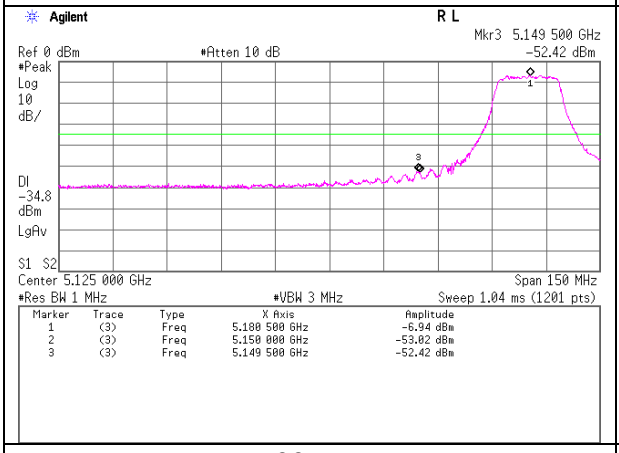



Limit line = -27dBm – Ant Gain – Cable loss – Att. loss

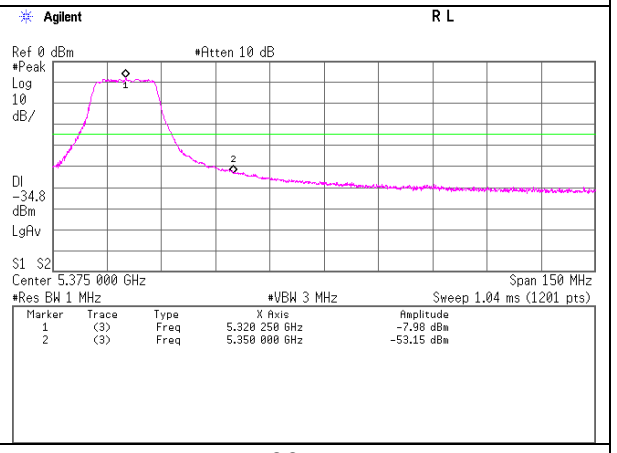
# Conducted emission Band Edge compliance

## 11n-20

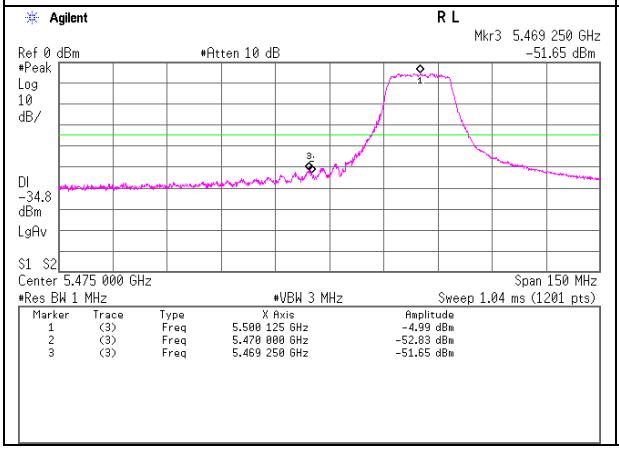
### 5180MHz



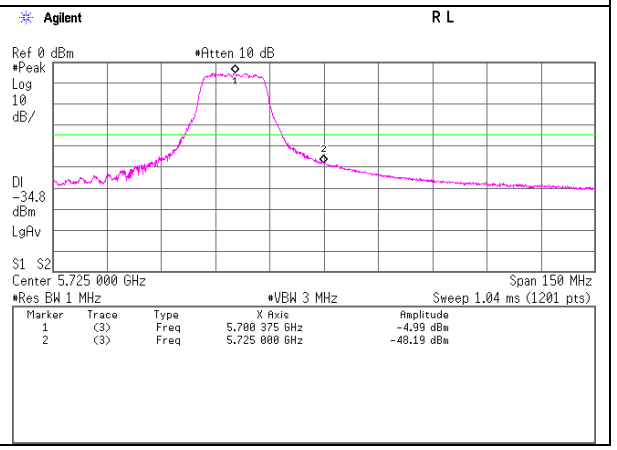

### 5320MHz




### 5500MHz




### 5700MHz

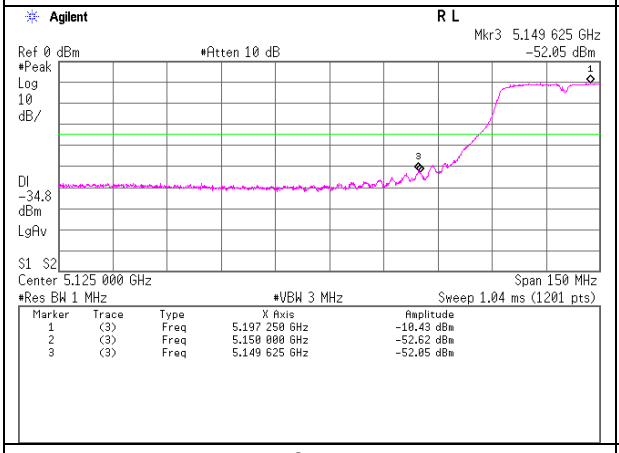



Limit line = -27dBm – Ant Gain – Cable loss – Att. loss

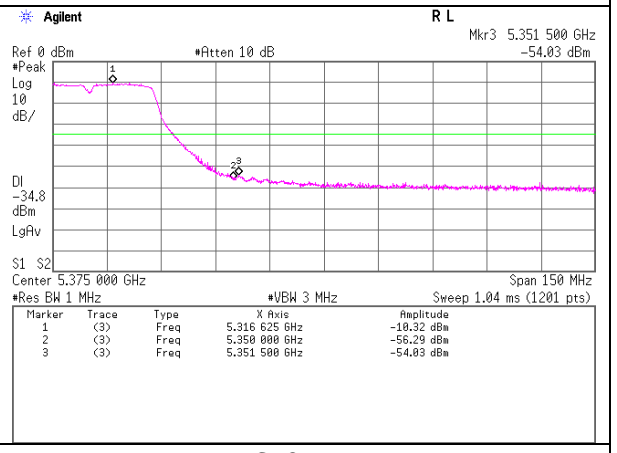
# Conducted emission Band Edge compliance

## 11n-40

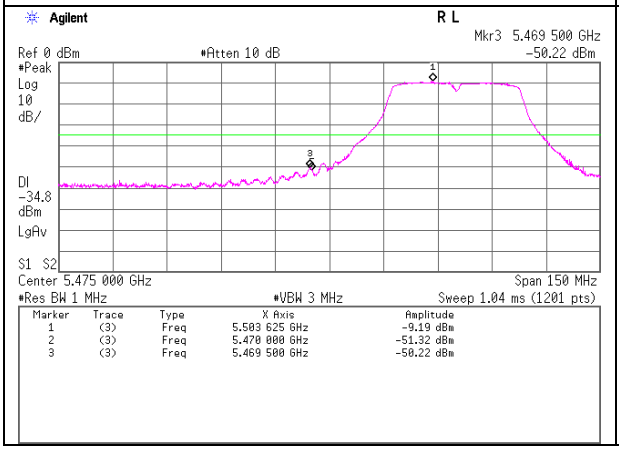
### 5190MHz



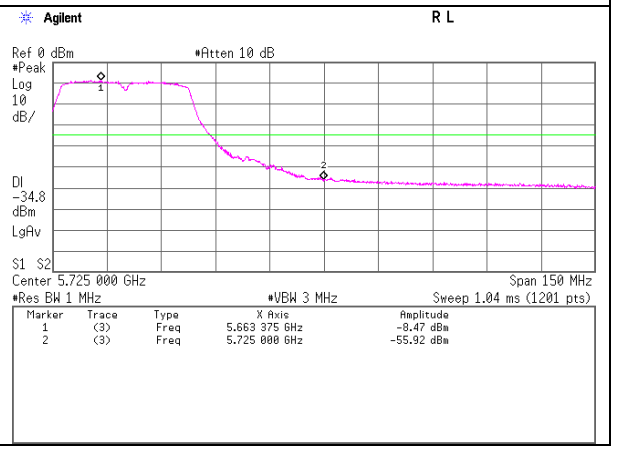

### 5310MHz




### 5510MHz




### 5670MHz




Limit line = -27dBm – Ant Gain – Cable loss – Att. loss

# Peak Excursion Ratio

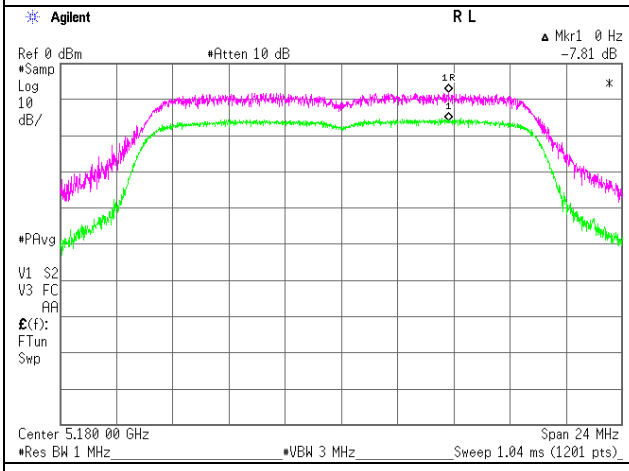
| | |
|---|---|
| Test place | Head Office EMC Lab. No.7 shielded room |
| Report No. | 32BE0278-HO |
| Date | 10/03/2011 |
| Temperature/ Humidity | 24 deg.C./ 47% RH |
| Engineer | Katsunori Okai |
| Mode | 11a Tx |

| Frequency [MHz] | Peak Power Excursion [dB] | Limit [dB] |
|---|---|---|
| 5180 | 7.81 | 13.00 |
| 5220 | 7.60 | 13.00 |
| 5240 | 8.37 | 13.00 |
| 5260 | 8.14 | 13.00 |
| 5300 | 7.64 | 13.00 |
| 5320 | 7.64 | 13.00 |
| 5500 | 7.93 | 13.00 |
| 5600 | 7.68 | 13.00 |
| 5700 | 7.99 | 13.00 |

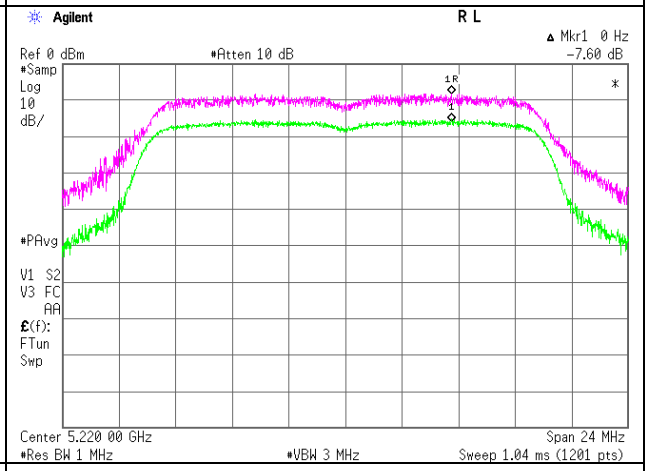
# Peak Excursion Ratio

## 11a

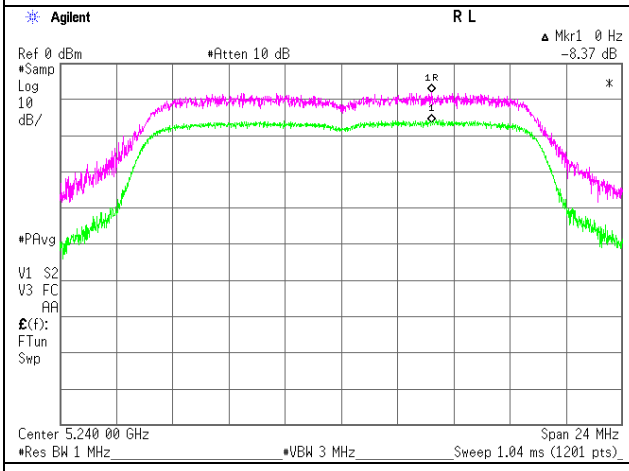
### 5180MHz



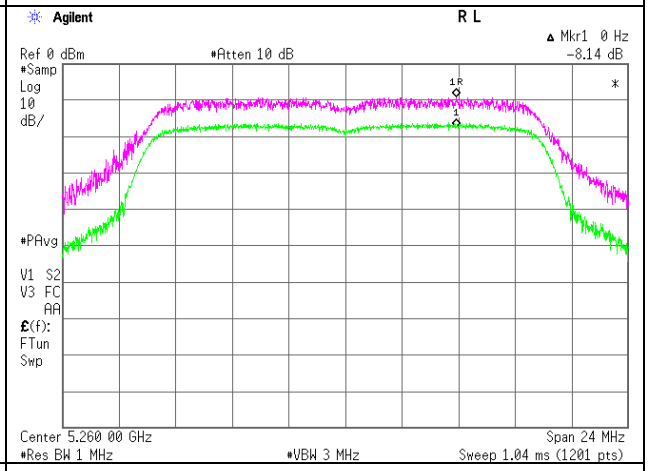

### 5220MHz



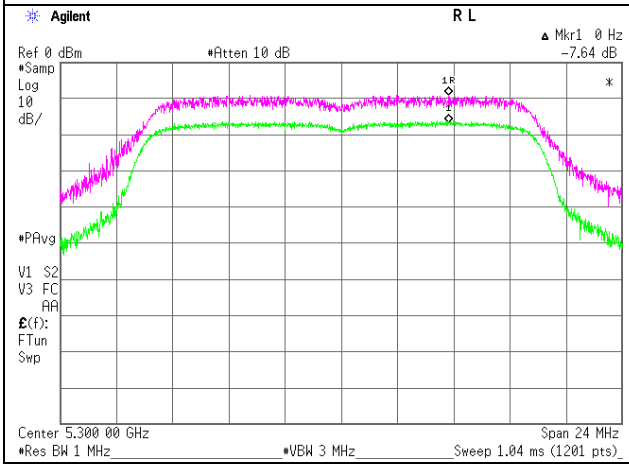

### 5240MHz



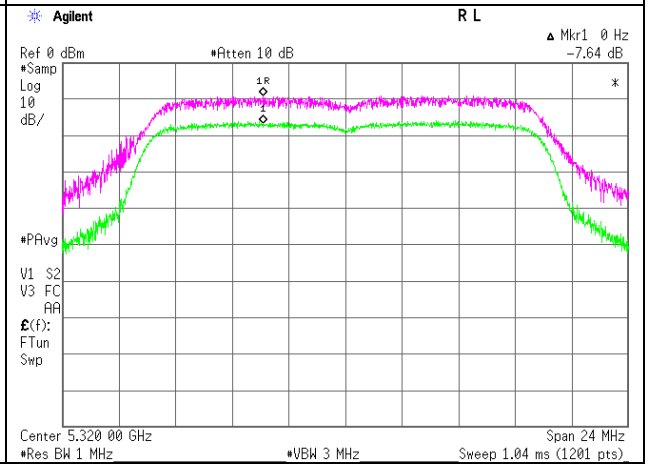

### 5260MHz




### 5300MHz



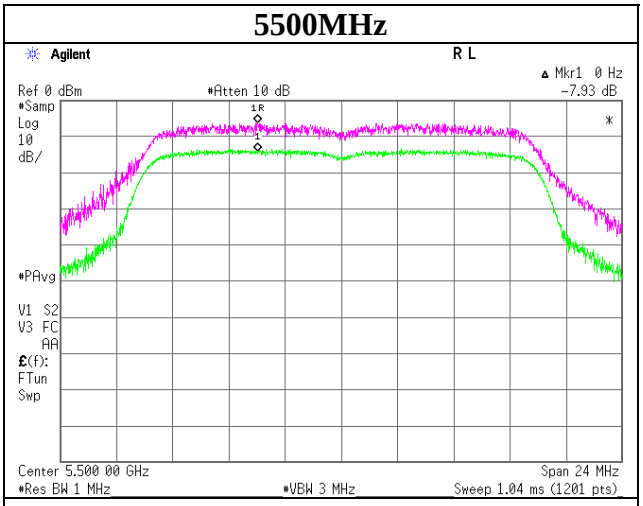

### 5320MHz



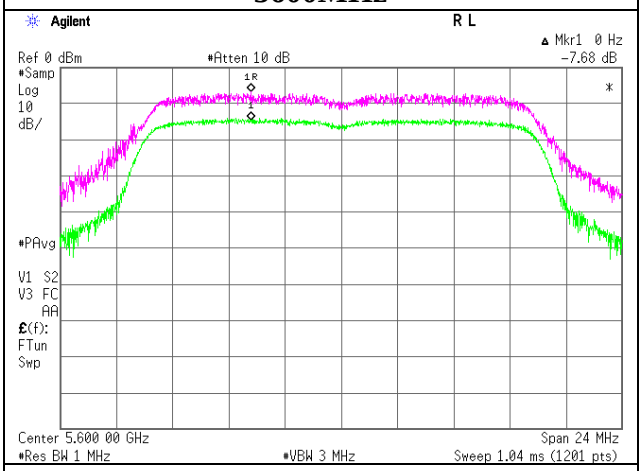
# Peak Excursion Ratio

## 11a

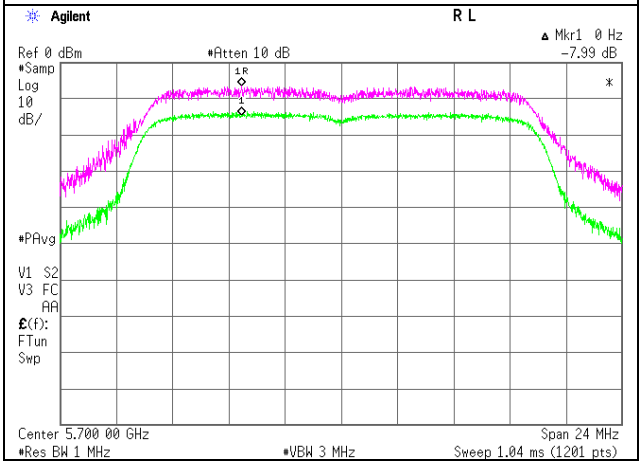
### 5500MHz




### 5600MHz




### 5700MHz



# Peak Excursion Ratio

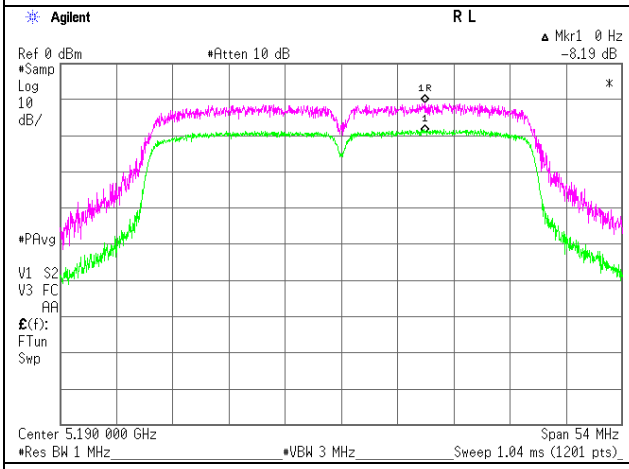
| | |
|---|---|
| Test place | Head Office EMC Lab. No.7 shielded room |
| Report No. | 32BE0278-HO |
| Date | 10/03/2011 |
| Temperature/ Humidity | 24 deg.C / 47% RH |
| Engineer | Katsunori Okai |
| Mode | 11n-40 Tx |

| Frequency [MHz] | Peak Power Excursion [dB] | Limit [dB] |
|---|---|---|
| 5190 | 8.19 | 13.00 |
| 5230 | 8.81 | 13.00 |
| 5270 | 8.13 | 13.00 |
| 5310 | 7.64 | 13.00 |
| 5510 | 8.76 | 13.00 |
| 5590 | 8.06 | 13.00 |
| 5670 | 7.81 | 13.00 |

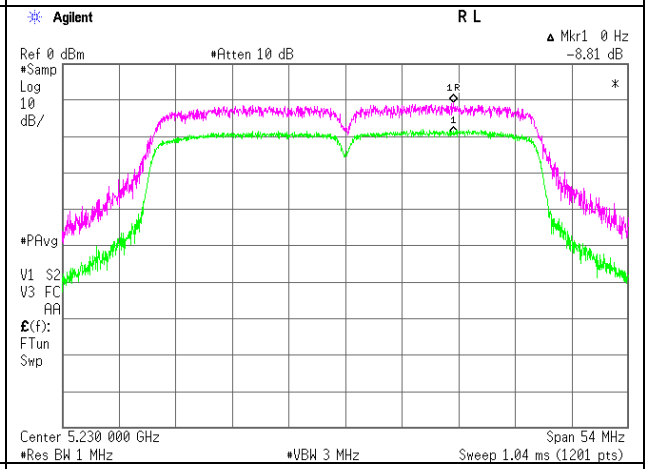
# Peak Excursion Ratio

## 11n-40

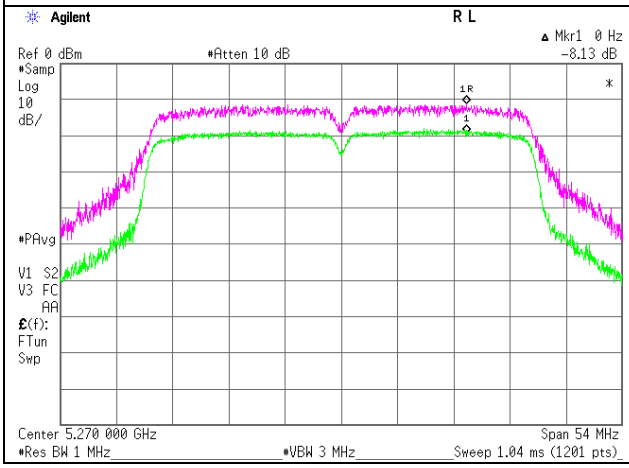
### 5190MHz



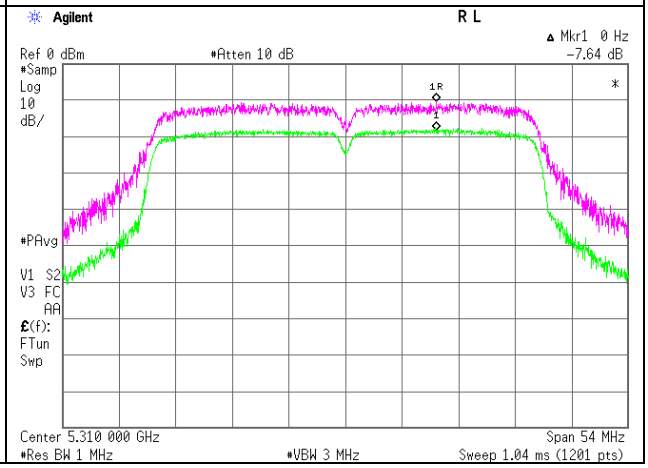

### 5230MHz




### 5270MHz



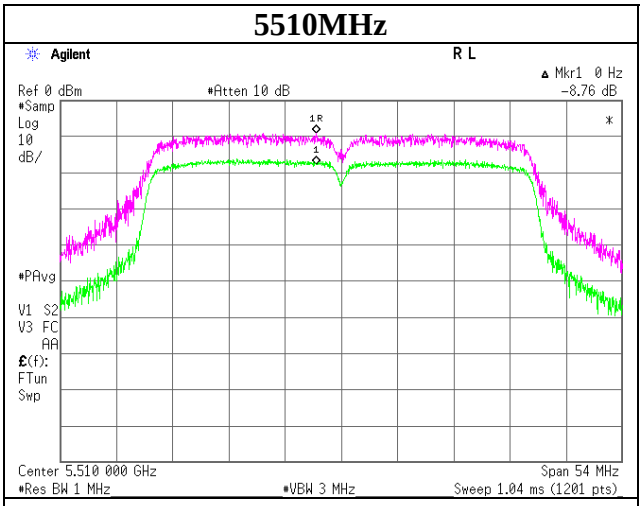

### 5310MHz



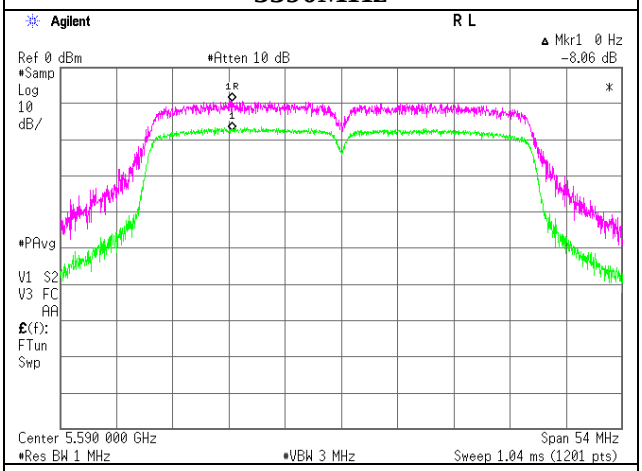
# Peak Excursion Ratio

## 11n-40

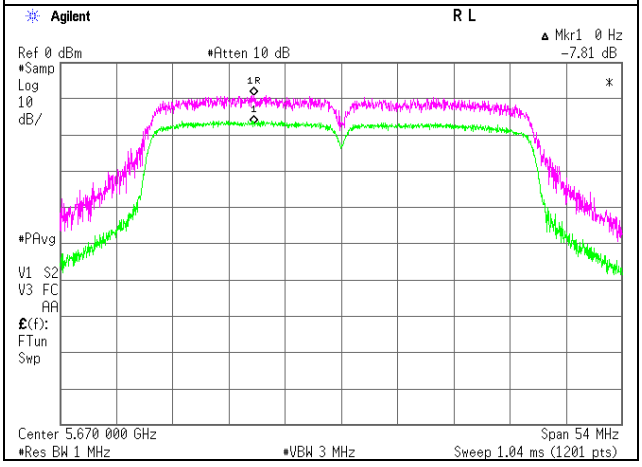
### 5510MHz




### 5590MHz




### 5670MHz



## APPENDIX 2: Test instruments

**EMI test equipment (1/2)**

| Control No. | Instrument | Manufacturer | Model No | Serial No | Test Item | Calibration Date * Interval(month) |
|---|---|---|---|---|---|---|
| MOS-04 | Digital Humidity Indicator | N.T | NT-1800 | MOS04 | AT | 2011/02/23 * 12 |
| MAT-25 | Attenuator(10dB)(above1GHz) | Agilent | 8493C | 71642 | AT | 2011/06/23 * 12 |
| MCC-93 | Microwave Cable 1G-40GHz | Schner | SUCOFLEX102 | 30814/2 | AT | 2011/05/27 * 12 |
| MSA-10 | Spectrum Analyzer | Agilent | E4448A | MY46180655 | AT | 2011/02/15 * 12 |
| MAEC-02 | Semi Anechoic Chamber(NSA) | TDK | Semi Anechoic Chamber 3m | DA-06902 | RE/CE | 2011/06/21 * 12 |
| MOS-22 | Thermo-Hygrometer | Custom | CTH-201 | 0003 | RE/CE | 2011/02/23 * 12 |
| MJM-14 | Measure | KOMELON | KMC-36 | - | RE/CE | - |
| COTS-MEMI | EMI measurement program | TSJ | TEPTO-DV | - | RE/CE | - |
| MSA-05 | Spectrum Analyzer | Advantest | R3273 | 160400285 | CE | 2010/11/18 * 12 |
| MTR-03 | Test Receiver | Rohde & Schwarz | ESCI | 100300 | CE | 2011/04/15 * 12 |
| MLS-06 | LISN(AMN) | Schwarzbeck | NSLK8127 | 8127363 | CE(EUT) | 2011/02/20 * 12 |
| MTA-31 | Terminator | TME | CT-01 | - | CE | 2011/01/05 * 12 |
| MCC-13 | Coaxial Cable | Fujikura | 3D-2W(12m)/5D-2W(5m)/5D-2W(0.8m)/5D-2W(1m) | - | CE | 2011/02/18 * 12 |
| MAT-65 | Attenuator(13dB) | JFW Industries, Inc. | 50FP-013H2 N | - | CE | 2011/02/21 * 12 |
| MAEC-01 | Semi Anechoic Chamber(NSA) | TDK | Semi Anechoic Chamber 10m | DA-06881 | RE | 2011/07/10 * 12 |
| MOS-01 | Digital Humidity Indicator | N.T | NT-1800 | MOS01 | RE | 2011/02/23 * 12 |
| MJM-01 | Measure | KDS | ES19-55 | - | RE | - |
| MSA-10 | Spectrum Analyzer | Agilent | E4448A | MY46180655 | RE | 2011/02/15 * 12 |
| MHA-05 | Horn Antenna 1-18GHz | Schwarzbeck | BBHA9120D | 253 | RE | 2011/06/19 * 12 |
| MCC-134 | Microwave Cable | HUBER+SUHNER | SUCOFLEX104 | 336167/4(1m) / 340641(5m) | RE | 2011/09/07 * 12 |
| MPA-01 | Pre Amplifier | Agilent | 8449B | 3008A01671 | RE | 2011/02/24 * 12 |
| MCC-77 | Microwave Cable 1G-26.5GHz | Suhner | SUCOFLEX104 | 278942/4 | RE | 2010/12/02 * 12 |
| MHF-17 | High Pass Filter 3.5-18.0GHz | TOKIMEC | TF323DCA | 7001 | RE | 2011/09/08 * 12 |
| MHF-21 | High Pass Filter 7-20GHz | TOKIMEC | TF37NCCA | 601 | RE | 2011/01/06 * 12 |

**EMI test equipment (2/2)**

| Control No. | Instrument | Manufacturer | Model No | Serial No | Test Item | Calibration Date * Interval(month) |
|---|---|---|---|---|---|---|
| MHA-16 | Horn Antenna 15-40GHz | Schwarzbeck | BBHA9170 | BBHA9170306 | RE | 2011/05/23 * 12 |
| MCC-54 | Microwave Cable | Suhner | SUCOFLEX101 | 2873(1m) / 2876(5m) | RE | 2011/03/02 * 12 |
| MPA-03 | Microwave System Power Amplifier | Agilent | 83050A | 3950M00205 | RE | 2011/06/15 * 12 |
| MTR-03 | Test Receiver | Rohde & Schwarz | ESCI | 100300 | RE | 2011/04/15 * 12 |
| MBA-05 | Biconical Antenna | Schwarzbeck | BBA9106 | 1302 | RE | 2011/08/17 * 12 |
| MLA-08 | Logperiodic Antenna | Schwarzbeck | UKLP9140-A | N/A | RE | 2011/08/17 * 12 |
| MCC-12 | Coaxial Cable | Fujikura/Agilent | - | - | RE | 2011/02/18 * 12 |
| MAT-07 | Attenuator(6dB) | Weinschel Corp | 2 | BK7970 | RE | 2010/11/05 * 12 |
| MPA-09 | Pre Amplifier | Agilent | 8447D | 2944A10845 | RE | 2011/09/26 * 12 |

**The expiration date of the calibration is the end of the expired month.**
**All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.**

**As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.**

**Test Item: CE: Conducted Emission**
**RE: Radiated Emission**
**AT: Antenna Terminal Conducted test**