

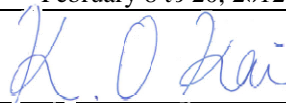
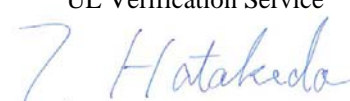


RADIO TEST REPORT

Test Report No. : 32FE0253-HO-B

Applicant : SAMSUNG ELECTRONICS CO., LTD.
Type of Equipment : GPRS850/1900, EDGE850/1900, WCDMA2,
WCDMA5 Tablet with 802.11bgn, BT3.0+EDR
Model No. : GT-P5100
FCC ID : A3LGTP5100
Test regulation : FCC Part 15 Subpart C: 2012
Test Result : Complied

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the 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.

Date of test: February 8 to 20, 2012
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 : GPRS850/1900, EDGE850/1900, WCDMA2, WCDMA5 Tablet with
802.11bgn, BT3.0+EDR
Model No. : GT-P5100
Serial No. : Refer to Section 4, Clause 4.2
Rating : DC5.0V
Receipt Date of Sample : February 6, 2012
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 | -0.31 dBi (MAX) |

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

| | |
|-----------------------------|-----------------|
| Equipment Type | Transceiver |
| Frequency of Operation | 2412-2462MHz |
| Type of Modulation | DSSS, OFDM |
| Bandwidth & Channel spacing | 20MHz & 5MHz |
| Antenna Type | PIFA |
| Antenna Gain | -0.31 dBi (MAX) |

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GSM

| | |
|------------------------|--|
| Equipment Type | Transceiver |
| Frequency of Operation | [Up Link] GSM850: 824 – 849MHz PCS: 1850 – 1910MHz [Down Link] GSM850: 869 – 894MHz PCS: 1930 – 1990MHz |
| Type of Modulation | GMSK , 8PSK |
| Antenna Type | PIFA |
| Antenna Gain | GSM850: 824-849MHz: -4.63dBi (MAX) 869-894MHz: -2.35dBi (MAX) PCS: 1850-1910MHz: -5.1dBi (MAX) 1930-1990MHz: -5.55dBi (MAX) |

W-CDMA

| | |
|------------------------|--|
| Equipment Type | Transceiver |
| Frequency of Operation | [Up Link] Band V: 824 – 849MHz Band II: 1850 – 1910MHz [Down Link] Band V: 869 – 894MHz Band II: 1930 – 1990MHz |
| Type of Modulation | QPSK |
| Antenna Type | PIFA |
| Antenna Gain | Band V: 824-849MHz: -4.63dBi (MAX) 869-894MHz: -2.35dBi (MAX) Band II: 1850-1910MHz: -5.1dBi (MAX) 1930-1900MHz: -5.55dBi (MAX) |

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C: 2012, final revised on February 1, 2012

Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.247 Operation within the bands 902-928MHz,
2400-2483.5MHz, and 5725-5850MHz

3.2 Procedures and results

| Item | Test Procedure | Specification | Worst Margin | Results | Remarks | |
|--|--|--|---|-------------------------------|-----------|------------------------|
| Conducted Emission | FCC: ANSI C63.4:2003 7. AC powerline conducted emission measurements IC: RSS-Gen 7.2.4 | FCC: Section 15.207 IC: RSS-Gen 7.2.4 | QP 18.6dB, 0.51989MHz, N AV 23.0dB, 7.99164MHz, N 8.18024MHz, L | Complied | - | |
| Carrier Frequency Separation | FCC: FCC Public Notice DA 00-705 IC: - | FCC: Section15.247(a)(1) IC: RSS-210 A8.1 (b) | See data. | Complied | Conducted | |
| 20dB Bandwidth | FCC: FCC Public Notice DA 00-705 IC: - | FCC: Section15.247(a)(1) IC: RSS-210 A8.1 (a) | | - | Conducted | |
| Number of Hopping Frequency | FCC: FCC Public Notice DA 00-705 IC: - | FCC: Section15.247(a)(1)(iii) IC: RSS-210 A8.1 (d) | | Complied | Conducted | |
| Dwell time | FCC: FCC Public Notice DA 00-705 IC: - | FCC: Section15.247(a)(1)(iii) IC: RSS-210 A8.1 (d) | | Complied | Conducted | |
| Maximum Peak Output Power | FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 4.8 | FCC: Section15.247(a)(b)(1) IC: RSS-210 A8.4 (2) | | Complied | Conducted | |
| Spurious Emission & Band Edge Compliance | FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 4.9 | FCC: Section15.247(d) IC: RSS-210 A8.5 RSS-Gen 6 and 7.2.3 | | 4.1dB 30.000MHz, QP, Vert. | Complied | Conducted/ Radiated |

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.

* In case any questions arise about test procedure, ANSI C63.4: 2003 is also referred.

3.3 Addition to standard

| Item | Test Procedure | Specification | Worst margin | Results | Remarks |
|------------------------|-------------------|-------------------|--------------|---------|-----------|
| 99% Occupied Bandwidth | IC: RSS-Gen 4.6.1 | IC: RSS-Gen 4.6.1 | 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 | 4.7dB | 5.7dB | 4.4dB | 4.3dB |
| No.2 | 4.1dB | 5.2dB | 5.1dB | 4.8dB | 5.6dB | 4.3dB | 4.2dB |
| No.3 | 4.5dB | 5.0dB | 5.2dB | 4.8dB | 5.6dB | 4.5dB | 4.2dB |
| No.4 | 4.7dB | 5.2dB | 5.2dB | 4.8dB | 5.6dB | 5.1dB | 4.2dB |

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

| Power meter (+dB) | |
|-------------------|------------|
| Below 1GHz | Above 1GHz |
| 1.0dB | 1.0dB |

| 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.

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3.5 Test Location

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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 Mode(s)

Bluetooth (BT): Transmitting (Tx), Payload: PRBS9
Inquiry

Details of Operating Mode(s)

| Test Item | Mode | Tested frequency |
|---|--|-------------------------------|
| Conducted Emission, Spurious Emission (Conducted/Radiated) | Tx (Hopping off) DH5, 3DH5 | 2402MHz 2441MHz 2480MHz |
| Carrier Frequency Separation 20dB Bandwidth | Tx (Hopping on) DH5, 3DH5 Inquiry | 2402MHz 2441MHz 2480MHz |
| Number of Hopping Frequency | Tx (Hopping on) DH5, 3DH5 Inquiry | - |
| Dwell time | Tx (Hopping on), -DH1, DH3, DH5 -3DH1, 3DH3, 3DH5 Inquiry | - |
| Maximum Peak Output Power | Tx (Hopping off) DH5, 3DH5 Inquiry | 2402MHz 2441MHz 2480MHz |
| Band Edge Compliance (Conducted) | Tx DH5, 3DH5 -Hopping on -Hopping off | 2402MHz 2480MHz |
| 99% Occupied Bandwidth | Tx DH5, 3DH5 -Hopping on -Hopping off Inquiry | 2402MHz 2441MHz 2480MHz |
| <p>*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload length (except Dwell time test) *The EUT support AFH with a minimum of 20 channels, following the Bluetooth protocol to ensure compliance with the pseudo-hopping sequence and dwell time requirements of FCC 15.247.</p> | | |

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

Power settings: Maximum power of the EUT was transmitted on Bluetooth testing mode.

H/W version: Rev 1.0

S/W version: P5100.001

This setting of 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.

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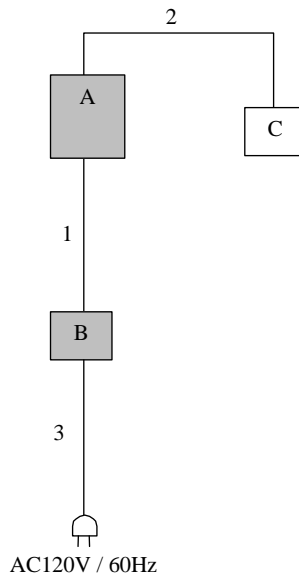
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4.2 Configuration and peripherals



* 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 | GPRS850/1900, EDGE850/1900, WCDMA2, WCDMA5 Tablet with 802.11bgn, BT3.0+EDR | GT-P5100 | R32C200S11T *1) R31C10LKEYR *2) | SAMSUNG | EUT |
| B | AC Adapter | ETA-P11X | - | SAMSUNG | EUT |
| C | Ear phone | - | - | SAMSUNG | - |

*1) Used for Antenna Terminal conducted test

*2) Used for Conducted Emission and 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 | - |
| 3 | AC Cable | 0.9 | Unshielded | Unshielded | - |

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SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a urethane platform of nominal size, 1.0m by 0.5m, 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 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.

The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

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

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

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SECTION 6: Radiated Spurious Emission

Test Procedure

EUT was placed on a urethane platform of nominal size, 1.0m by 0.5m, 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 performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.

The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).

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.

Test Antennas are used as below;

| | | | |
|--------------|-----------------|----------------|------------|
| Frequency | 30MHz to 300MHz | 300MHz to 1GHz | Above 1GHz |
| Antenna Type | 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 VBW: 3MHz | RBW: 1MHz VBW: 10Hz |
| Test Distance | 3m | 3m (below 10GHz), 1m*1) (above 10GHz) | |

*1) Distance Factor: $20 \times \log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

- 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-25GHz
Test data : APPENDIX
Test result : Pass

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SECTION 7: Antenna Terminal Conducted Tests

Test Procedure

The tests were made with below setting connected to the antenna port.

| Test | Span | RBW | VBW | Sweep time | Detector | Trace | Instrument used |
|--|--|-----------------|--------------------|--|-----------------|--------------|--------------------------------|
| 20dB Bandwidth | 3MHz 2.5MHz (Inquiry mode) | 30kHz | 100kHz | Auto | Peak | Max Hold | Spectrum Analyzer |
| 99% Occupied Bandwidth | Enough width to display 20dB Bandwidth | 1 to 3% of Span | Three times of RBW | Auto | Peak | Max Hold | Spectrum Analyzer |
| Maximum Peak Output Power | - | - | - | Auto | Peak | - | Power Meter (Sensor: 50MHz BW) |
| Carrier Frequency Separation | 3MHz | 30kHz | 100kHz | Auto | Peak | Max Hold | Spectrum Analyzer |
| Number of Hopping Frequency | 30MHz | 300kHz | 1MHz | Auto | Peak | Max Hold | Spectrum Analyzer |
| Dwell Time | Zero Span | 100kHz, 1MHz | 300kHz, 3MHz | As necessary capture the entire dwell time per hopping channel | Peak | Max Hold | Spectrum Analyzer |
| Conducted Spurious Emission *1) | 9kHz to 150kHz | 200Hz | 620Hz | Auto | Peak | Max Hold | Spectrum Analyzer |
| | 150kHz to 30MHz | 9.1kHz | 27kHz | | | | |
| | 30MHz to 25GHz (Less or equal to 5GHz) | 100kHz | 300kHz | | | | |
| Conducted Spurious Emission Band Edge compliance | 20MHz | 300kHz | 1MHz | Auto | Peak | Max Hold | Spectrum Analyzer |

*1) 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.(9kHz-150kHz:RBW=200Hz, 150kHz-30MHz:RBW=9.1kHz)

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

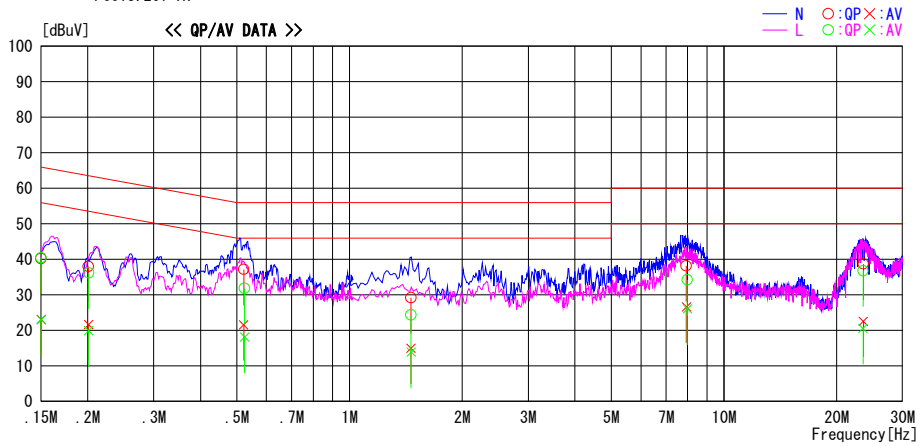
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2012/02/09

Report No. : 32FE0253-HO
Temp./Humi. : 23 deg. C / 33% RH
Engineer : Katsunori Okai

Mode / Remarks : BT Tx DH5 2441MHz

LIMIT : FCC15.207 QP
FCC15.207 AV

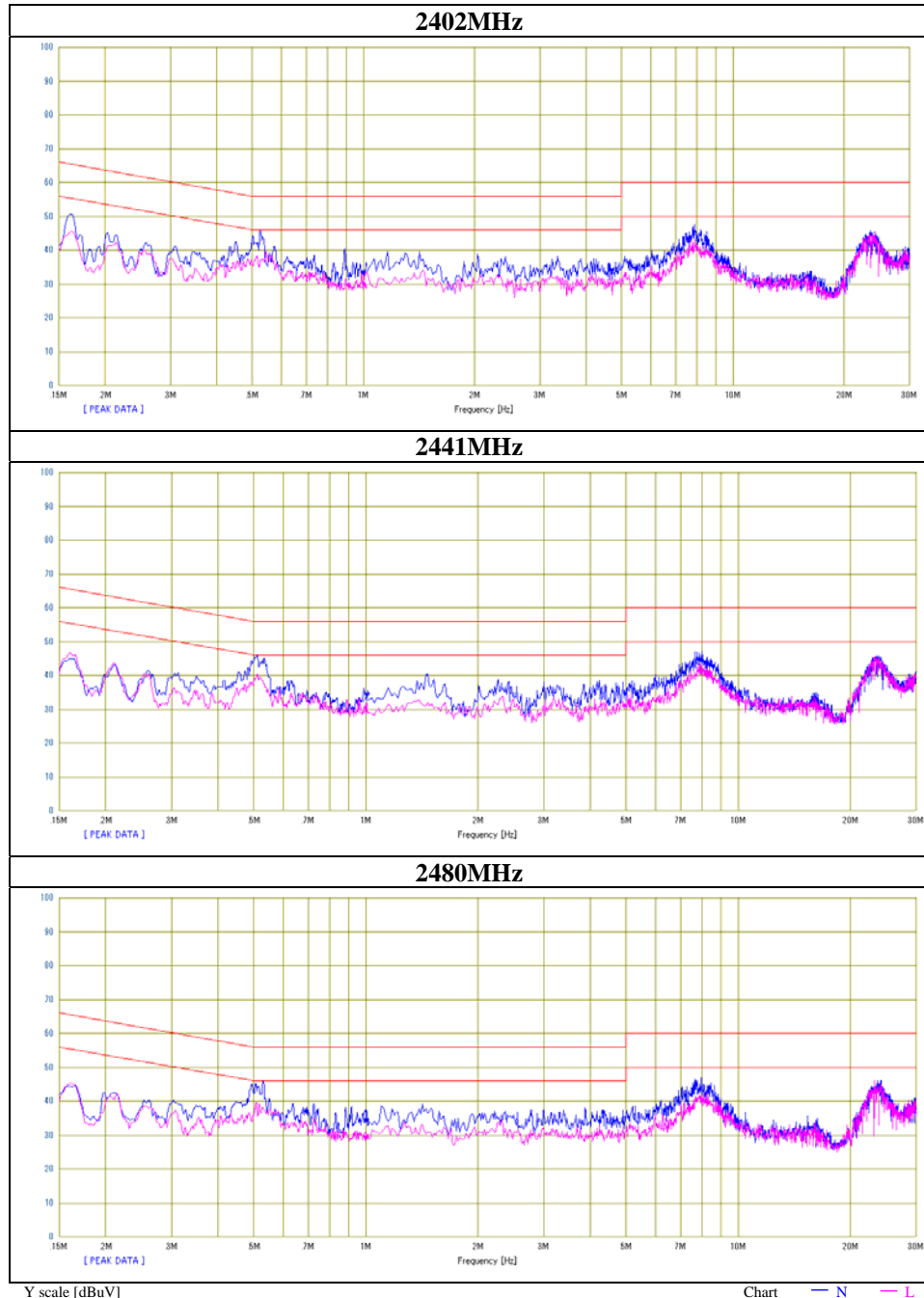


| Frequency [MHz] | Reading Level | | Corr. Factor | Results | | Limit | | Margin | | Phase | Comment |
|--------------------|---------------|--------------|-----------------|--------------|--------------|--------------|--------------|------------|------------|-------|---------|
| | QP [dBuV] | AV [dBuV] | | QP [dBuV] | AV [dBuV] | QP [dBuV] | AV [dBuV] | QP [dB] | AV [dB] | | |
| 0.15000 | 27.0 | 9.9 | 13.2 | 40.2 | 23.1 | 66.0 | 56.0 | 25.8 | 32.9 | N | |
| 0.20081 | 24.8 | 8.5 | 13.2 | 38.0 | 21.7 | 63.6 | 53.6 | 25.6 | 31.9 | N | |
| 0.52125 | 24.0 | 8.4 | 13.2 | 37.2 | 21.6 | 56.0 | 46.0 | 18.8 | 24.4 | N | |
| 1.45803 | 15.8 | 1.6 | 13.4 | 29.2 | 15.0 | 56.0 | 46.0 | 26.8 | 31.0 | N | |
| 7.92873 | 24.1 | 12.5 | 14.1 | 38.2 | 26.6 | 60.0 | 50.0 | 21.8 | 23.4 | N | |
| 23.56484 | 23.3 | 7.2 | 15.4 | 38.7 | 22.6 | 60.0 | 50.0 | 21.3 | 27.4 | N | |
| 0.15000 | 27.2 | 9.8 | 13.2 | 40.4 | 23.0 | 66.0 | 56.0 | 25.6 | 33.0 | L | |
| 0.20095 | 23.0 | 6.8 | 13.2 | 36.2 | 20.0 | 63.6 | 53.6 | 27.4 | 33.6 | L | |
| 0.52413 | 18.6 | 4.9 | 13.2 | 31.8 | 18.1 | 56.0 | 46.0 | 24.2 | 27.9 | L | |
| 1.46033 | 11.0 | 0.5 | 13.4 | 24.4 | 13.9 | 56.0 | 46.0 | 31.6 | 32.1 | L | |
| 7.98430 | 20.2 | 11.9 | 14.1 | 34.3 | 26.0 | 60.0 | 50.0 | 25.7 | 24.0 | L | |
| 23.50506 | 21.5 | 5.3 | 15.3 | 36.8 | 20.6 | 60.0 | 50.0 | 23.2 | 29.4 | L | |

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

Conducted Emission

| | |
|-----------------------|---|
| Test place | Head Office EMC Lab. No.2 Semi Anechoic Chamber |
| Report No. | 32FE0253-HO |
| Date | 02/09/2012 |
| Temperature/ Humidity | 23 deg.C/ 33% RH |
| Engineer | Katsunori Okai |
| Mode | Tx DH5 |



Conducted Emission

DATA OF CONDUCTED EMISSION TEST

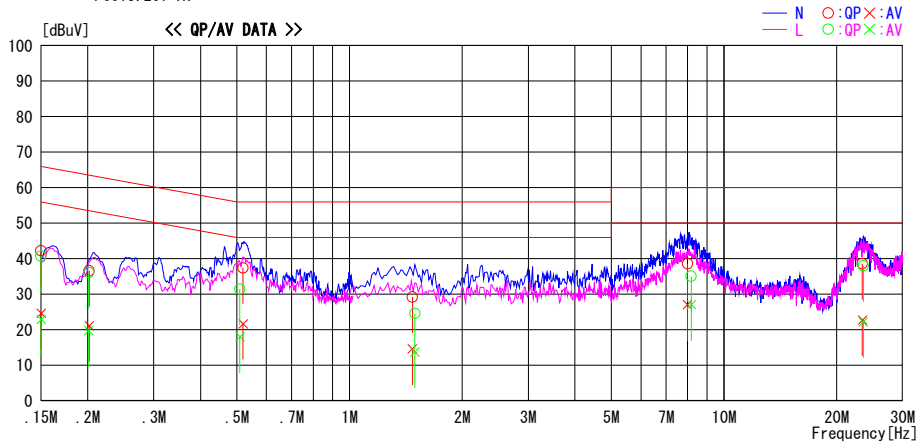
UL Japan, Inc. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
Date : 2012/02/09

Report No. : 32FE0253-H0

Temp./Humi. : 23 deg. C / 33% RH
Engineer : Katsunori Okai

Mode / Remarks : BT Tx 3DH5 2441MHz

LIMIT : FCC15.207 QP
FCC15.207 AV

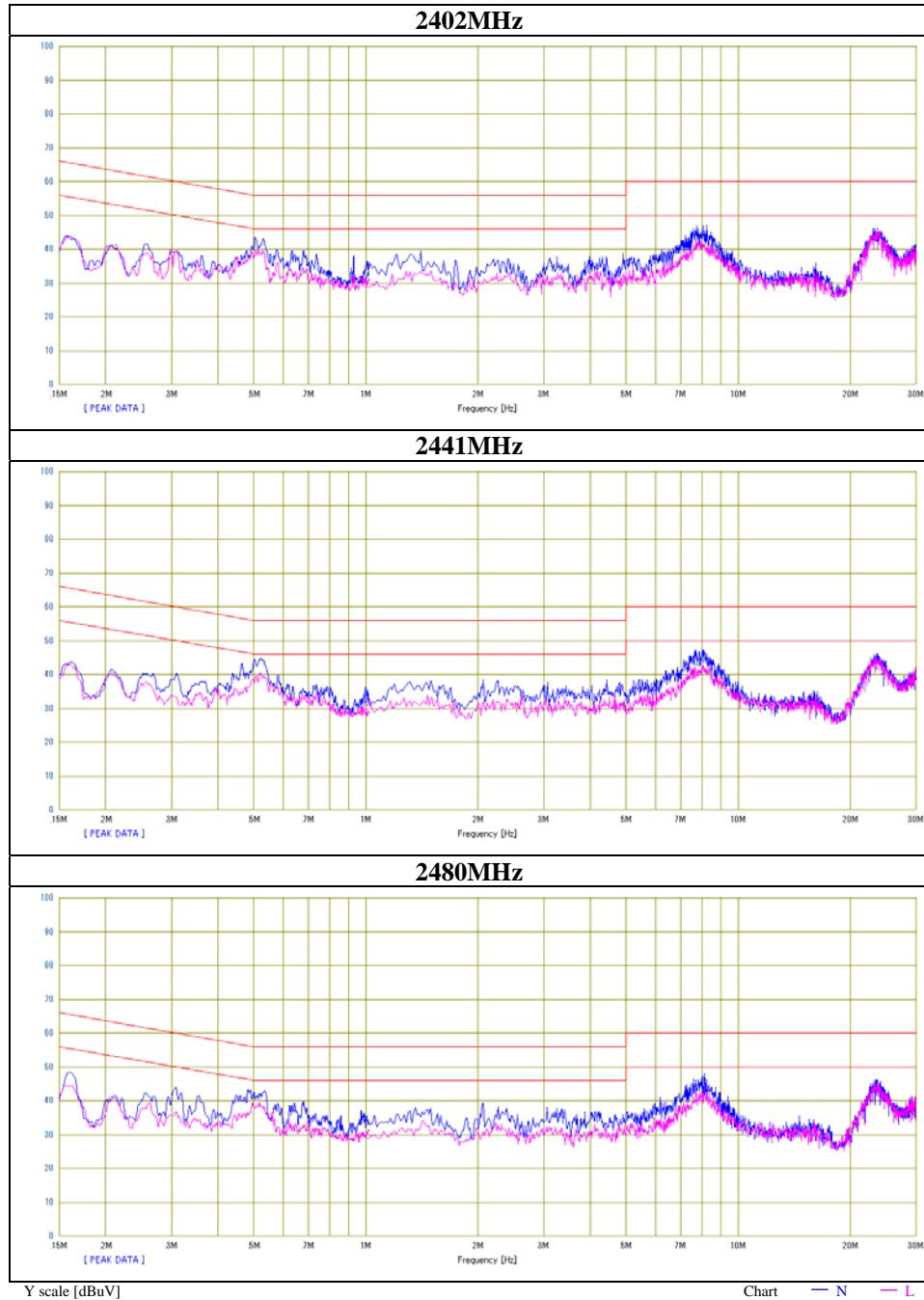


| Frequency [MHz] | Reading Level | | Corr. Factor | Results | | Limit | | Margin | | Phase | Comment |
|--------------------|---------------|--------------|-----------------|--------------|--------------|--------------|--------------|------------|------------|-------|---------|
| | QP [dBuV] | AV [dBuV] | | QP [dBuV] | AV [dBuV] | QP [dBuV] | AV [dBuV] | QP [dB] | AV [dB] | | |
| 0.15000 | 29.0 | 11.4 | 13.2 | 42.2 | 24.6 | 66.0 | 56.0 | 23.8 | 31.4 | N | |
| 0.20166 | 23.4 | 7.9 | 13.2 | 36.6 | 21.1 | 63.5 | 53.5 | 26.9 | 32.4 | N | |
| 0.51989 | 24.2 | 8.5 | 13.2 | 37.4 | 21.7 | 56.0 | 46.0 | 18.6 | 24.3 | N | |
| 1.47034 | 15.8 | 1.2 | 13.4 | 29.2 | 14.6 | 56.0 | 46.0 | 26.8 | 31.4 | N | |
| 7.99164 | 24.5 | 12.9 | 14.1 | 38.6 | 27.0 | 60.0 | 50.0 | 21.4 | 23.0 | N | |
| 23.44551 | 23.3 | 7.4 | 15.3 | 38.6 | 22.7 | 60.0 | 50.0 | 21.4 | 27.3 | N | |
| 0.15000 | 27.5 | 9.7 | 13.2 | 40.7 | 22.9 | 66.0 | 56.0 | 25.3 | 33.1 | L | |
| 0.20108 | 22.9 | 6.6 | 13.2 | 36.1 | 19.8 | 63.6 | 53.6 | 27.5 | 33.8 | L | |
| 0.50962 | 18.2 | 4.8 | 13.2 | 31.4 | 18.0 | 56.0 | 46.0 | 24.6 | 28.0 | L | |
| 1.49335 | 11.2 | 0.3 | 13.4 | 24.6 | 13.7 | 56.0 | 46.0 | 31.4 | 32.3 | L | |
| 8.18024 | 21.0 | 12.9 | 14.1 | 35.1 | 27.0 | 60.0 | 50.0 | 24.9 | 23.0 | L | |
| 23.55468 | 22.6 | 6.8 | 15.4 | 38.0 | 22.2 | 60.0 | 50.0 | 22.0 | 27.8 | L | |

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT[dBuV]=READING[dBuV]+C.F[dB] (L1SN LOSS+CABLE LOSS+ATTEN LOSS)
Except for the above table : adequate margin data below the limits.

Conducted Emission

| | |
|-----------------------|---|
| Test place | Head Office EMC Lab. No.2 Semi Anechoic Chamber |
| Report No. | 32FE0253-HO |
| Date | 02/09/2012 |
| Temperature/ Humidity | 23 deg.C/ 33% RH |
| Engineer | Katsunori Okai |
| Mode | Tx 3DH5 |

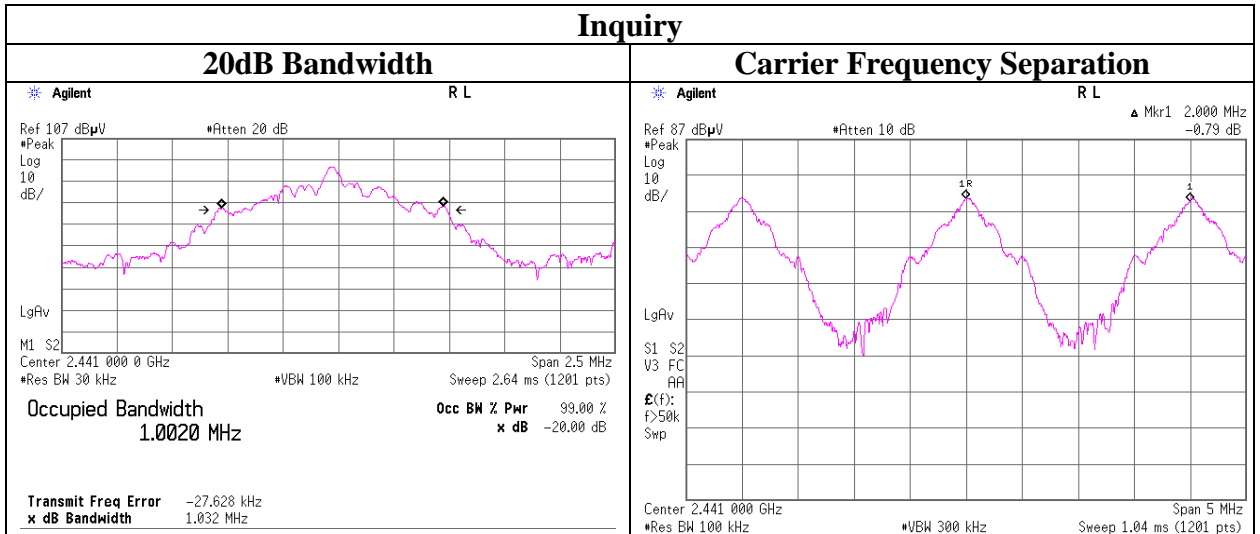


20dB Bandwidth and Carrier Frequency Separation

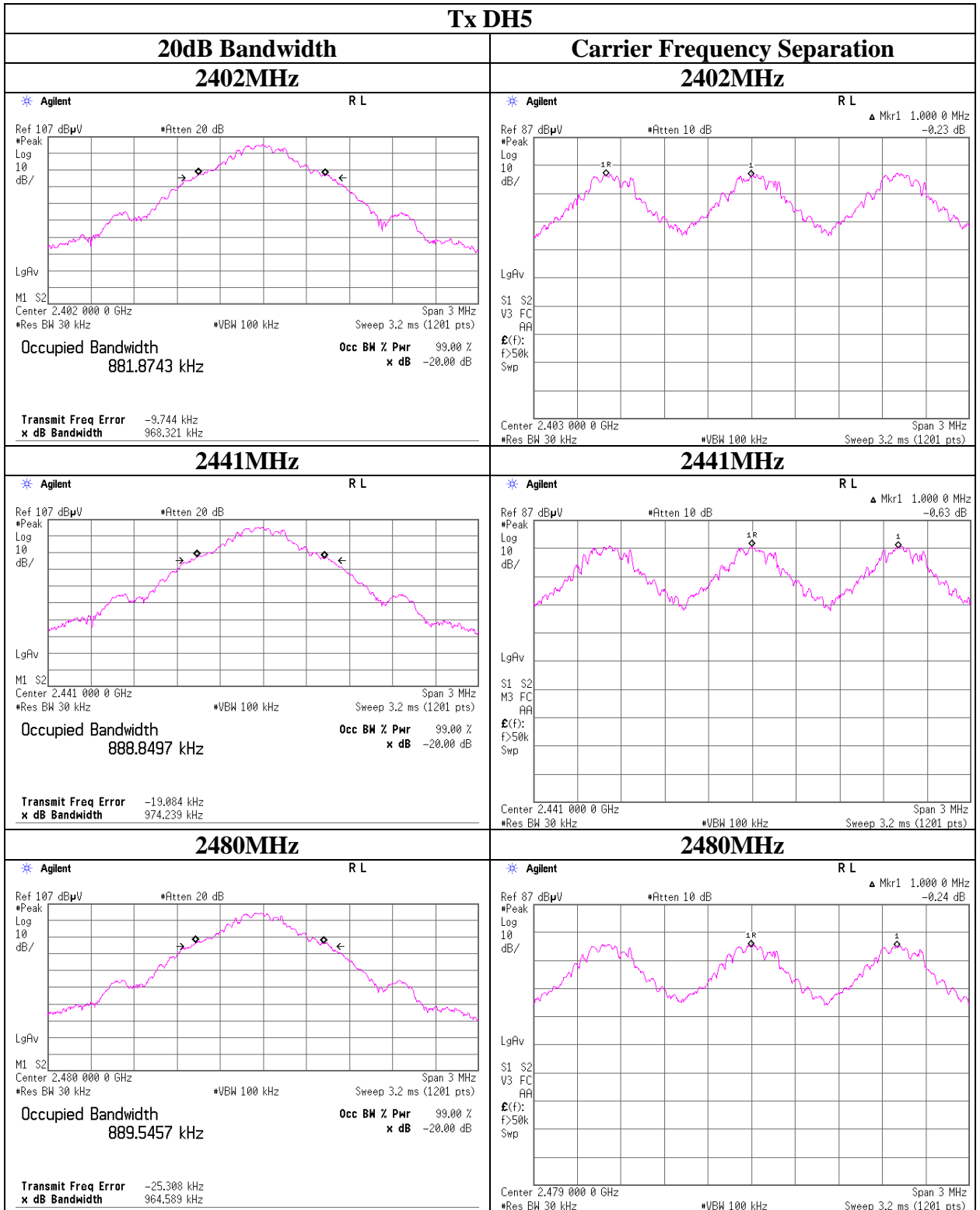
| | | |
|-----------------------|---|-----------------|
| Test place | Head Office EMC Lab. No.6 Shielded Room and No.11 measurement room | |
| Report No. | 32FE0253-HO | |
| Date | 02/15/2012 | 02/20/2012 |
| Temperature/ Humidity | 22 deg.C/ 42% RH | 21deg.C/ 35% RH |
| Engineer | Yutaka Yoshida | Katsunori Okai |
| Mode | Tx (Hopping on) DH5/3DH5/Inquiry | |

| Mode | Freq. [MHz] | 20dB Bandwidth [MHz] | Carrier Frequency Separation [MHz] | Limit for Carrier Frequency separation [MHz] |
|---------|----------------|-------------------------|--|--|
| DH5 | 2402.0 | 0.968 | 1.000 | ≥ 0.646 |
| DH5 | 2441.0 | 0.974 | 1.000 | ≥ 0.649 |
| DH5 | 2480.0 | 0.965 | 1.000 | ≥ 0.643 |
| 3DH5 | 2402.0 | 1.330 | 1.000 | ≥ 0.887 |
| 3DH5 | 2441.0 | 1.344 | 1.000 | ≥ 0.896 |
| 3DH5 | 2480.0 | 1.333 | 1.000 | ≥ 0.889 |
| Inquiry | 2441.0 | 1.032 | 2.000 | ≥ 0.688 |

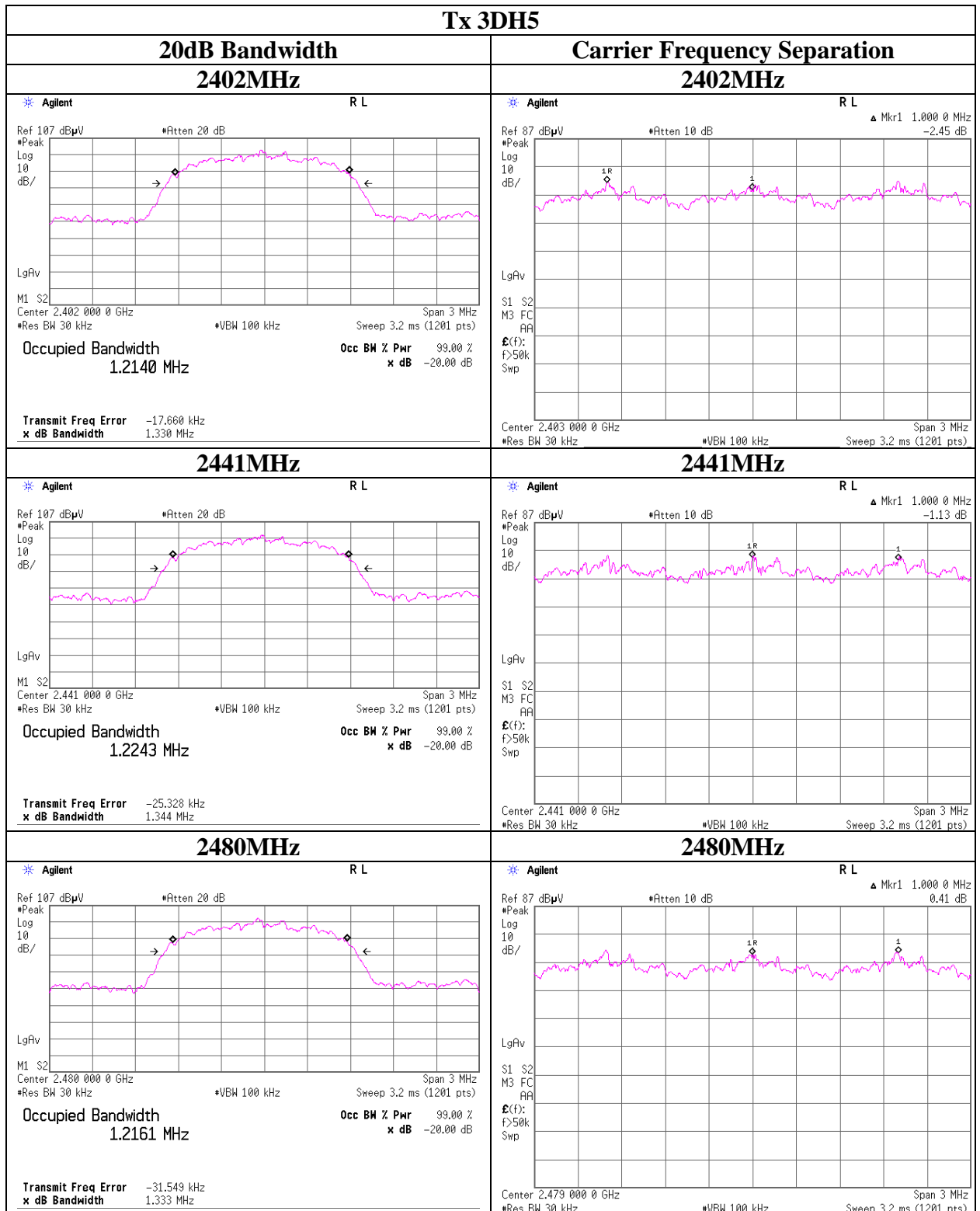
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).
No limit applies to 20dB Bandwidth.



20dB Bandwidth and Carrier Frequency Separation



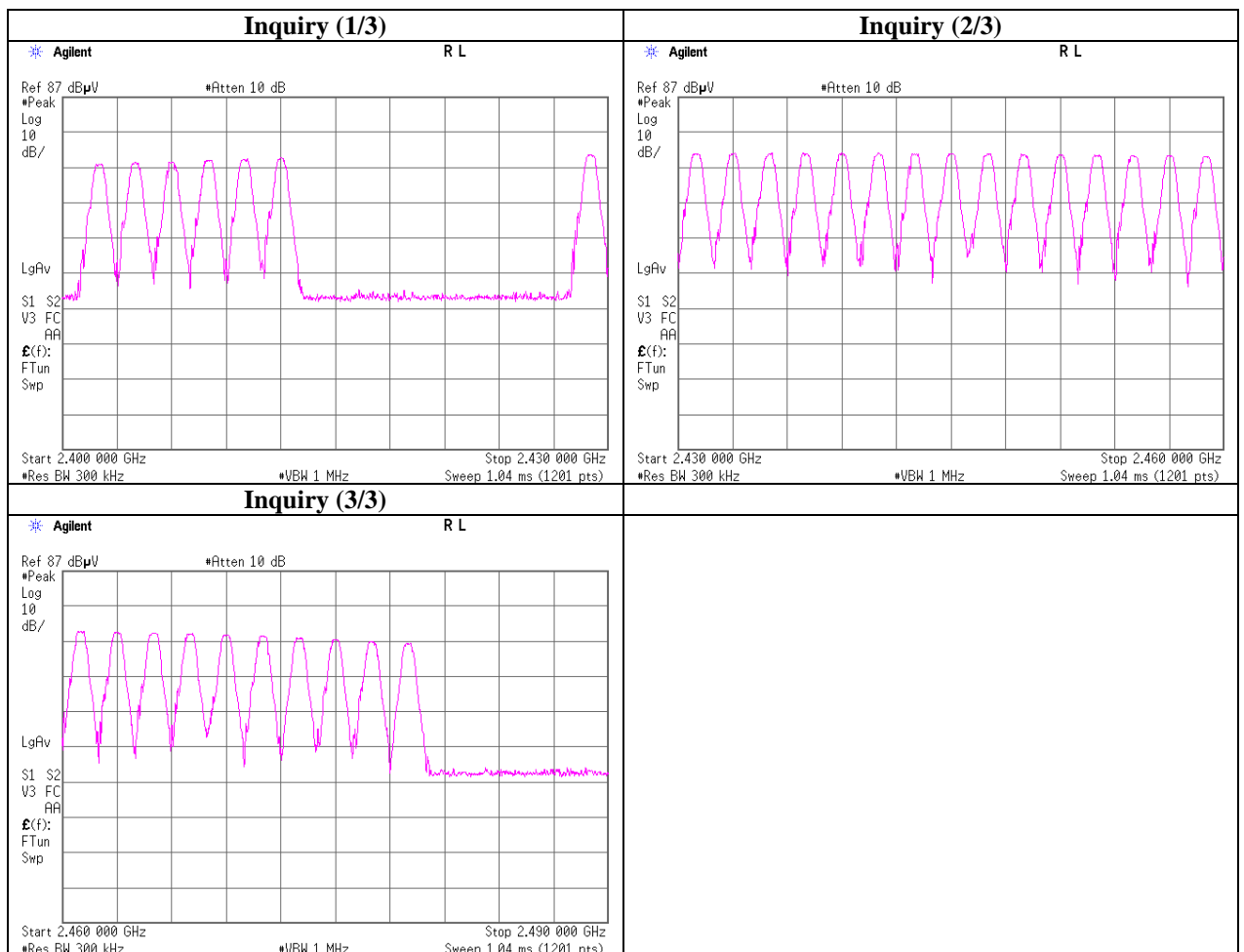
20dB Bandwidth and Carrier Frequency Separation



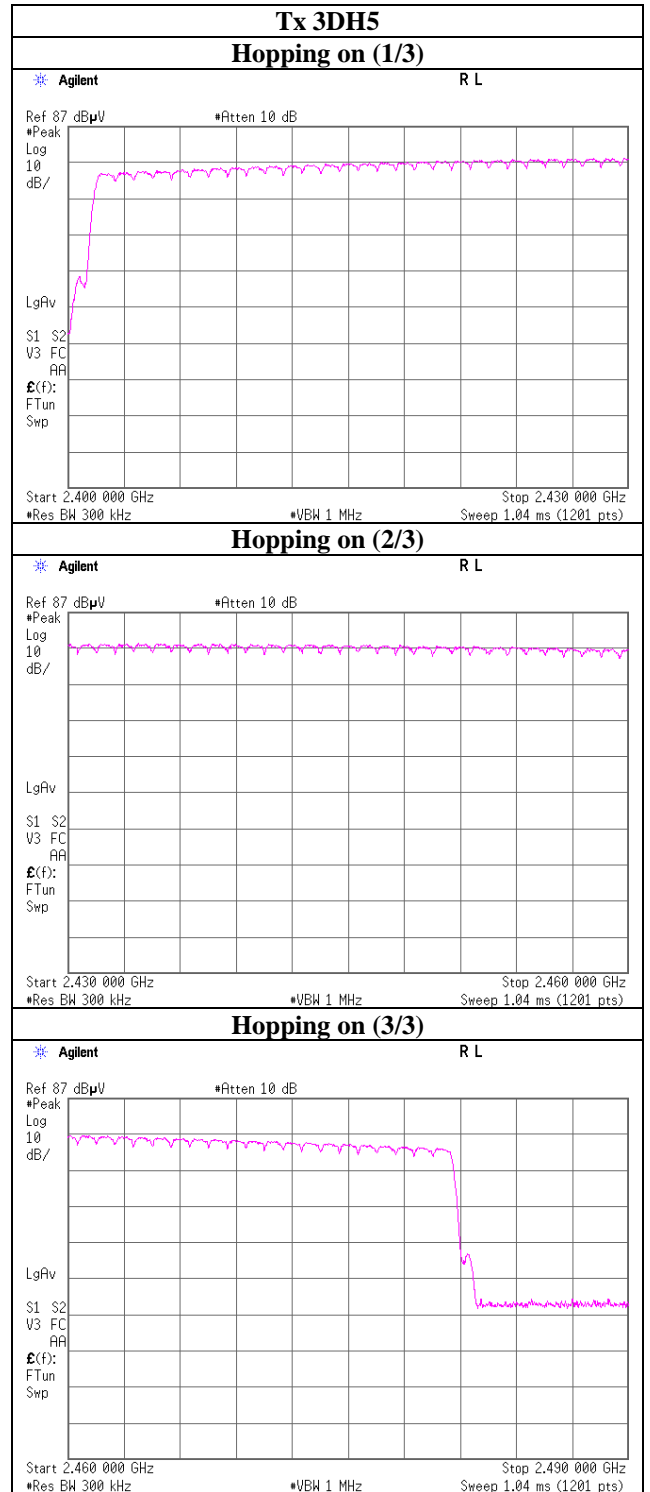
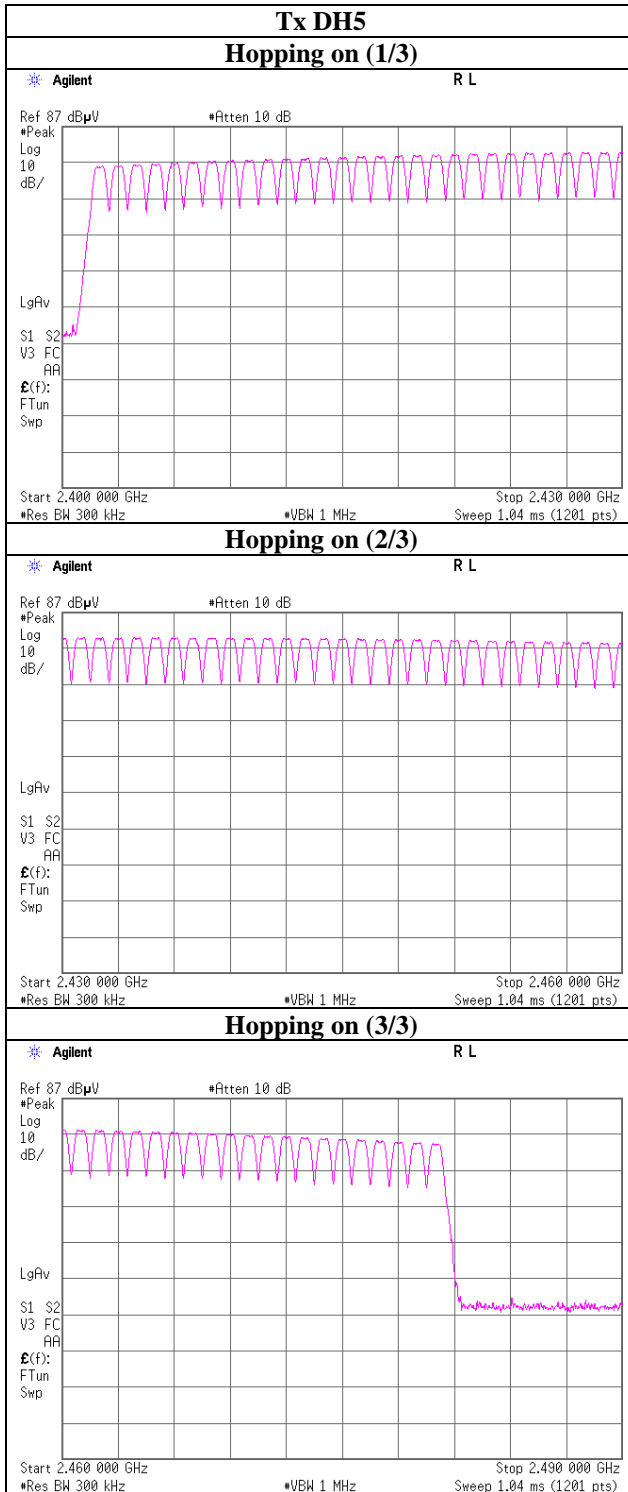
Number of Hopping Frequency

| | |
|-----------------------|---|
| Test place | Head Office EMC Lab. No.6 Shielded Room |
| Report No. | 32FE0253-HO |
| Date | 02/15/2012 |
| Temperature/ Humidity | 22 deg.C/ 42% RH |
| Engineer | Yutaka Yoshida |
| Mode | Tx (Hopping on) DH5/3DH5/Inquiry |

| Mode | Number of channel [times] | Limit [times] |
|---------|------------------------------|------------------|
| DH5 | 79 | >= 15 |
| 3DH5 | 79 | >= 15 |
| Inquiry | 32 | >= 15 |



Number of Hopping Frequency



Dwell time

| | |
|-----------------------|---|
| Test place | Head Office EMC Lab. No.6 Shielded Room |
| Report No. | 32FE0253-HO |
| Date | 02/15/2012 |
| Temperature/ Humidity | 22deg.C/ 42% RH |
| Engineer | Yutaka Yoshida |
| Mode | Tx (Hopping on) DH5/3DH5/Inquiry |

| Mode | Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period | Length of transmission time [msec] | Result [msec] | Limit [msec] |
|---------|--|--|------------------|-----------------|
| DH1 | 49.2 times / 5 sec. x 31.6 sec. = 311 times | 0.394 | 123 | 400 |
| DH3 | 26.4 times / 5 sec. x 31.6 sec. = 167 times | 1.650 | 276 | 400 |
| DH5 | 15.0 times / 5 sec. x 31.6 sec. = 95 times | 2.906 | 276 | 400 |
| 3DH1 | 48.6 times / 5 sec. x 31.6 sec. = 308 times | 0.399 | 123 | 400 |
| 3DH3 | 26.2 times / 5 sec. x 31.6 sec. = 166 times | 1.653 | 274 | 400 |
| 3DH5 | 19.6 times / 5 sec. x 31.6 sec. = 124 times | 2.918 | 362 | 400 |
| Inquiry | 100.0 times / 1 sec. x 12.8 sec. = 1280 times | 0.093 | 119 | 400 |

Sample Calculation

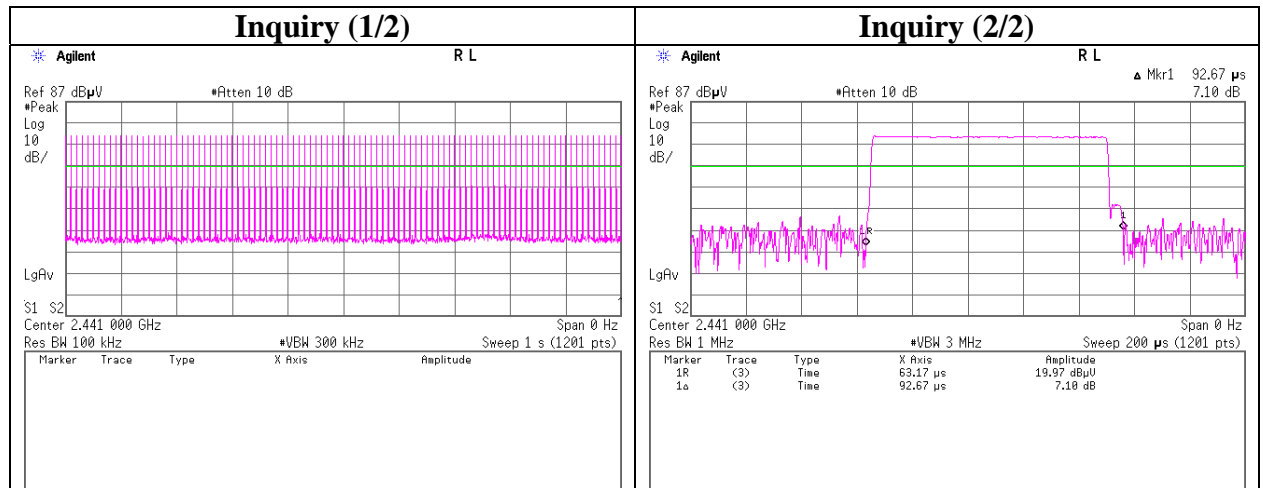
Result = Number of transmission x Length of transmission time

*Average data of 5 tests.(except Inquiry)

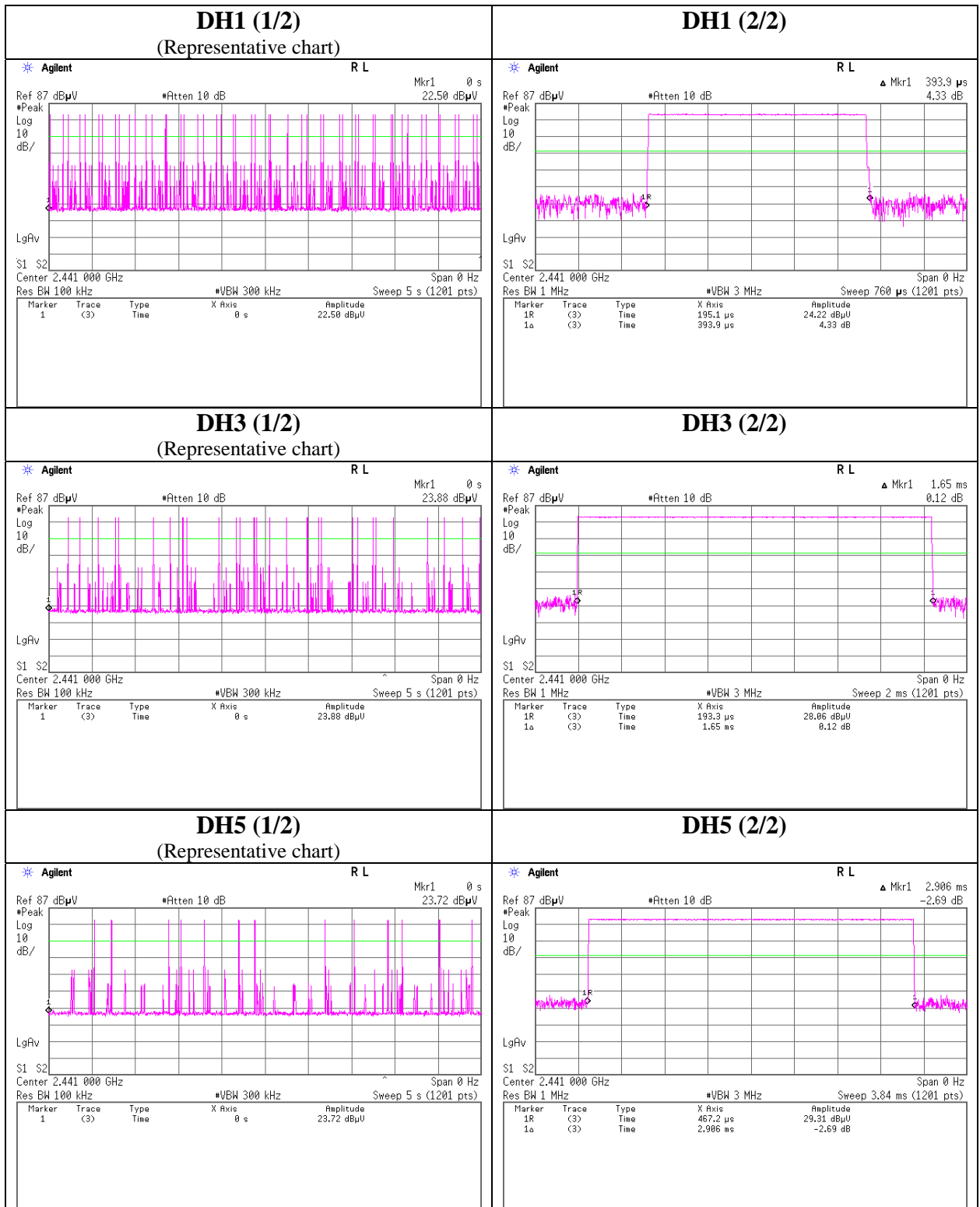
| Mode | Sampling [times] | | | | | Average [times] |
|------|------------------|----|----|----|----|--------------------|
| | 1 | 2 | 3 | 4 | 5 | |
| DH1 | 49 | 48 | 50 | 50 | 49 | 49.2 |
| DH3 | 28 | 26 | 27 | 25 | 26 | 26.4 |
| DH5 | 17 | 13 | 16 | 15 | 14 | 15 |
| 3DH1 | 49 | 49 | 48 | 48 | 49 | 48.6 |
| 3DH3 | 27 | 29 | 28 | 22 | 25 | 26.2 |
| 3DH5 | 22 | 18 | 19 | 21 | 18 | 19.6 |

Sample Calculation

Average= Summation(Sampling 1 to 5) / 5



Dwell time



Dwell time



Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 32FE0253-HO
Date 02/08/2012 02/09/2012
Temperature/ Humidity 22 deg.C/ 32% RH 23 deg.C/ 33% RH
Engineer Satofumi Matsuyama Katsunori Okai
Mode Tx, 3DH5 2402MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|--------|
| Hori | 30.000 | QP | 26.1 | 18.0 | 6.7 | 28.5 | 22.3 | 40.0 | 17.7 | |
| Hori | 38.725 | QP | 34.5 | 14.7 | 6.8 | 28.6 | 27.4 | 40.0 | 12.6 | |
| Hori | 52.005 | QP | 25.5 | 10.5 | 7.0 | 28.6 | 14.4 | 40.0 | 25.6 | |
| Hori | 92.444 | QP | 31.0 | 8.1 | 7.4 | 28.4 | 18.1 | 43.5 | 25.4 | |
| Hori | 190.001 | QP | 27.1 | 16.2 | 8.1 | 28.0 | 23.4 | 43.5 | 20.1 | |
| Hori | 450.412 | QP | 27.8 | 17.9 | 9.5 | 28.5 | 26.7 | 46.0 | 19.3 | |
| Hori | 2390.000 | PK | 45.6 | 26.4 | 2.2 | 34.8 | 39.4 | 73.9 | 34.5 | |
| Hori | 2400.000 | PK | 63.6 | 26.4 | 2.2 | 34.8 | 57.4 | 73.9 | 16.5 | |
| Hori | 4804.000 | PK | 50.3 | 30.4 | 3.9 | 34.0 | 50.6 | 73.9 | 23.3 | |
| Hori | 7206.000 | PK | 42.1 | 35.2 | 4.5 | 34.2 | 47.6 | 73.9 | 26.3 | NS |
| Hori | 9608.000 | PK | 42.8 | 38.1 | 5.3 | 34.7 | 51.5 | 73.9 | 22.4 | NS |
| Hori | 24020.000 | PK | 44.8 | 40.5 | -1.7 | 31.7 | 51.9 | 73.9 | 22.0 | NS |
| Hori | 2390.000 | AV | 32.6 | 26.4 | 2.2 | 34.8 | 26.4 | 53.9 | 27.5 | |
| Hori | 2400.000 | AV | 47.0 | 26.4 | 2.2 | 34.8 | 40.8 | 53.9 | 13.1 | |
| Hori | 4804.000 | AV | 41.8 | 30.4 | 3.9 | 34.0 | 42.1 | 53.9 | 11.8 | |
| Hori | 7206.000 | AV | 30.9 | 35.2 | 4.5 | 34.2 | 36.4 | 53.9 | 17.5 | NS |
| Hori | 9608.000 | AV | 31.9 | 38.1 | 5.3 | 34.7 | 40.6 | 53.9 | 13.3 | NS |
| Hori | 24020.000 | AV | 33.1 | 40.5 | -1.7 | 31.7 | 40.2 | 53.9 | 13.7 | NS |
| Vert | 30.000 | QP | 39.7 | 18.0 | 6.7 | 28.5 | 35.9 | 40.0 | 4.1 | |
| Vert | 39.271 | QP | 41.8 | 14.5 | 6.9 | 28.6 | 34.6 | 40.0 | 5.4 | |
| Vert | 52.002 | QP | 35.0 | 10.5 | 7.0 | 28.6 | 23.9 | 40.0 | 16.1 | |
| Vert | 89.850 | QP | 33.0 | 7.6 | 7.4 | 28.4 | 19.6 | 43.5 | 23.9 | |
| Vert | 190.003 | QP | 26.2 | 16.2 | 8.1 | 28.0 | 22.5 | 43.5 | 21.0 | |
| Vert | 450.411 | QP | 27.2 | 17.9 | 9.5 | 28.5 | 26.1 | 46.0 | 19.9 | |
| Vert | 2390.000 | PK | 47.4 | 26.4 | 2.2 | 34.8 | 41.2 | 73.9 | 32.7 | |
| Vert | 2400.000 | PK | 62.7 | 26.4 | 2.2 | 34.8 | 56.5 | 73.9 | 17.4 | |
| Vert | 4804.000 | PK | 54.0 | 30.4 | 3.9 | 34.0 | 54.3 | 73.9 | 19.6 | |
| Vert | 7206.000 | PK | 42.2 | 35.2 | 4.5 | 34.2 | 47.7 | 73.9 | 26.2 | NS |
| Vert | 9608.000 | PK | 42.4 | 38.1 | 5.3 | 34.7 | 51.1 | 73.9 | 22.8 | NS |
| Vert | 24020.000 | PK | 45.9 | 40.5 | -1.7 | 31.7 | 53.0 | 73.9 | 20.9 | NS |
| Vert | 2390.000 | AV | 32.6 | 26.4 | 2.2 | 34.8 | 26.4 | 53.9 | 27.5 | |
| Vert | 2400.000 | AV | 46.4 | 26.4 | 2.2 | 34.8 | 40.2 | 53.9 | 13.7 | |
| Vert | 4804.000 | AV | 45.3 | 30.4 | 3.9 | 34.0 | 45.6 | 53.9 | 8.3 | |
| Vert | 7206.000 | AV | 30.9 | 35.2 | 4.5 | 34.2 | 36.4 | 53.9 | 17.5 | NS |
| Vert | 9608.000 | AV | 31.9 | 38.1 | 5.3 | 34.7 | 40.6 | 53.9 | 13.3 | NS |
| Vert | 24020.000 | AV | 33.1 | 40.5 | -1.7 | 31.7 | 40.2 | 53.9 | 13.7 | NS |

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

*NS: No Signal detect

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 32FE0253-HO
Date 02/08/2012 02/09/2012
Temperature/ Humidity 22 deg.C/ 32% RH 23 deg.C/ 33% RH
Engineer Satofumi Matsuyama Katsunori Okai
Mode Tx, 3DH5 2441MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|--------|
| Hori | 30.000 | QP | 26.1 | 18.0 | 6.7 | 28.5 | 22.3 | 40.0 | 17.7 | |
| Hori | 39.681 | QP | 34.0 | 14.4 | 6.9 | 28.6 | 26.7 | 40.0 | 13.3 | |
| Hori | 52.005 | QP | 24.9 | 10.5 | 7.0 | 28.6 | 13.8 | 40.0 | 26.2 | |
| Hori | 90.622 | QP | 33.0 | 7.7 | 7.4 | 28.4 | 19.7 | 43.5 | 23.8 | |
| Hori | 190.199 | QP | 27.1 | 16.2 | 8.1 | 28.0 | 23.4 | 43.5 | 20.1 | |
| Hori | 450.333 | QP | 30.2 | 17.9 | 9.5 | 28.5 | 29.1 | 46.0 | 16.9 | |
| Hori | 4882.000 | PK | 48.7 | 30.5 | 3.8 | 34.0 | 49.0 | 73.9 | 24.9 | |
| Hori | 7323.000 | PK | 43.8 | 35.2 | 4.6 | 34.2 | 49.4 | 73.9 | 24.5 | NS |
| Hori | 9764.000 | PK | 44.4 | 38.3 | 5.3 | 34.7 | 53.3 | 73.9 | 20.6 | NS |
| Hori | 24410.000 | PK | 46.8 | 40.4 | -1.7 | 32.2 | 53.3 | 73.9 | 20.6 | NS |
| Hori | 4882.000 | AV | 38.9 | 30.5 | 3.8 | 34.0 | 39.2 | 53.9 | 14.7 | |
| Hori | 7323.000 | AV | 30.3 | 35.2 | 4.6 | 34.2 | 35.9 | 53.9 | 18.0 | NS |
| Hori | 9764.000 | AV | 31.4 | 38.3 | 5.3 | 34.7 | 40.3 | 53.9 | 13.6 | NS |
| Hori | 24410.000 | AV | 34.6 | 40.4 | -1.7 | 32.2 | 41.1 | 53.9 | 12.8 | NS |
| Vert | 30.000 | QP | 39.6 | 18.0 | 6.7 | 28.5 | 35.8 | 40.0 | 4.2 | |
| Vert | 39.665 | QP | 41.6 | 14.4 | 6.9 | 28.6 | 34.3 | 40.0 | 5.7 | |
| Vert | 52.722 | QP | 34.0 | 10.3 | 7.0 | 28.6 | 22.7 | 40.0 | 17.3 | |
| Vert | 90.241 | QP | 35.7 | 7.6 | 7.4 | 28.4 | 22.3 | 43.5 | 21.2 | |
| Vert | 190.011 | QP | 26.7 | 16.2 | 8.1 | 28.0 | 23.0 | 43.5 | 20.5 | |
| Vert | 450.332 | QP | 25.7 | 17.9 | 9.5 | 28.5 | 24.6 | 46.0 | 21.4 | |
| Vert | 4882.000 | PK | 51.9 | 30.5 | 3.8 | 34.0 | 52.2 | 73.9 | 21.7 | |
| Vert | 7323.000 | PK | 42.6 | 35.2 | 4.6 | 34.2 | 48.2 | 73.9 | 25.7 | NS |
| Vert | 9764.000 | PK | 44.2 | 38.3 | 5.3 | 34.7 | 53.1 | 73.9 | 20.8 | NS |
| Vert | 24410.000 | PK | 47.2 | 40.4 | -1.7 | 32.2 | 53.7 | 73.9 | 20.2 | NS |
| Vert | 4882.000 | AV | 43.3 | 30.5 | 3.8 | 34.0 | 43.6 | 53.9 | 10.3 | |
| Vert | 7323.000 | AV | 30.3 | 35.2 | 4.6 | 34.2 | 35.9 | 53.9 | 18.0 | NS |
| Vert | 9764.000 | AV | 31.4 | 38.3 | 5.3 | 34.7 | 40.3 | 53.9 | 13.6 | NS |
| Vert | 24410.000 | AV | 34.6 | 40.4 | -1.7 | 32.2 | 41.1 | 53.9 | 12.8 | NS |

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

*NS: No Signal detect

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 32FE0253-HO
Date 02/08/2012 02/09/2012
Temperature/ Humidity 22 deg.C/ 32% RH 23 deg.C/ 33% RH
Engineer Satofumi Matsuyama Katsunori Okai
Mode Tx, 3DH5 2480MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|--------|
| Hori | 30.000 | QP | 25.5 | 18.0 | 6.7 | 28.5 | 21.7 | 40.0 | 18.3 | |
| Hori | 39.381 | QP | 33.9 | 14.5 | 6.9 | 28.6 | 26.7 | 40.0 | 13.3 | |
| Hori | 52.068 | QP | 26.3 | 10.5 | 7.0 | 28.6 | 15.2 | 40.0 | 24.8 | |
| Hori | 91.022 | QP | 32.7 | 7.8 | 7.4 | 28.4 | 19.5 | 43.5 | 24.0 | |
| Hori | 190.002 | QP | 26.8 | 16.2 | 8.1 | 28.0 | 23.1 | 43.5 | 20.4 | |
| Hori | 450.314 | QP | 30.1 | 17.9 | 9.5 | 28.5 | 29.0 | 46.0 | 17.0 | |
| Hori | 2483.500 | PK | 52.4 | 26.5 | 2.3 | 34.8 | 46.4 | 73.9 | 27.5 | |
| Hori | 4960.000 | PK | 53.5 | 30.6 | 3.9 | 34.0 | 54.0 | 73.9 | 19.9 | |
| Hori | 7440.000 | PK | 43.5 | 35.1 | 4.6 | 34.3 | 48.9 | 73.9 | 25.0 | NS |
| Hori | 9920.000 | PK | 44.8 | 38.6 | 5.4 | 34.7 | 54.1 | 73.9 | 19.8 | NS |
| Hori | 24800.000 | PK | 47.6 | 40.3 | -1.6 | 32.7 | 53.6 | 73.9 | 20.3 | NS |
| Hori | 2483.500 | AV | 36.4 | 26.5 | 2.3 | 34.8 | 30.4 | 53.9 | 23.5 | |
| Hori | 4960.000 | AV | 45.5 | 30.6 | 3.9 | 34.0 | 46.0 | 53.9 | 7.9 | |
| Hori | 7440.000 | AV | 30.6 | 35.1 | 4.6 | 34.3 | 36.0 | 53.9 | 17.9 | NS |
| Hori | 9920.000 | AV | 31.7 | 38.6 | 5.4 | 34.7 | 41.0 | 53.9 | 12.9 | NS |
| Hori | 24800.000 | AV | 36.2 | 40.3 | -1.6 | 32.7 | 42.2 | 53.9 | 11.7 | NS |
| Vert | 30.000 | QP | 39.7 | 18.0 | 6.7 | 28.5 | 35.9 | 40.0 | 4.1 | |
| Vert | 39.365 | QP | 42.0 | 14.5 | 6.9 | 28.6 | 34.8 | 40.0 | 5.2 | |
| Vert | 52.821 | QP | 33.9 | 10.3 | 7.0 | 28.6 | 22.6 | 40.0 | 17.4 | |
| Vert | 89.744 | QP | 35.7 | 7.5 | 7.4 | 28.4 | 22.2 | 43.5 | 21.3 | |
| Vert | 190.002 | QP | 26.7 | 16.2 | 8.1 | 28.0 | 23.0 | 43.5 | 20.5 | |
| Vert | 450.315 | QP | 25.7 | 17.9 | 9.5 | 28.5 | 24.6 | 46.0 | 21.4 | |
| Vert | 2483.500 | PK | 53.8 | 26.5 | 2.3 | 34.8 | 47.8 | 73.9 | 26.1 | |
| Vert | 4960.000 | PK | 56.6 | 30.6 | 3.9 | 34.0 | 57.1 | 73.9 | 16.8 | |
| Vert | 7440.000 | PK | 43.1 | 35.1 | 4.6 | 34.3 | 48.5 | 73.9 | 25.4 | NS |
| Vert | 9920.000 | PK | 44.6 | 38.6 | 5.4 | 34.7 | 53.9 | 73.9 | 20.0 | NS |
| Vert | 24800.000 | PK | 48.1 | 40.3 | -1.6 | 32.7 | 54.1 | 73.9 | 19.8 | NS |
| Vert | 2483.500 | AV | 36.0 | 26.5 | 2.3 | 34.8 | 30.0 | 53.9 | 23.9 | |
| Vert | 4960.000 | AV | 48.7 | 30.6 | 3.9 | 34.0 | 49.2 | 53.9 | 4.7 | |
| Vert | 7440.000 | AV | 30.6 | 35.1 | 4.6 | 34.3 | 36.0 | 53.9 | 17.9 | NS |
| Vert | 9920.000 | AV | 31.7 | 38.6 | 5.4 | 34.7 | 41.0 | 53.9 | 12.9 | NS |
| Vert | 24800.000 | AV | 36.2 | 40.3 | -1.6 | 32.7 | 42.2 | 53.9 | 11.7 | NS |

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

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

*The 10th harmonic was not seen so the result was its base noise level.

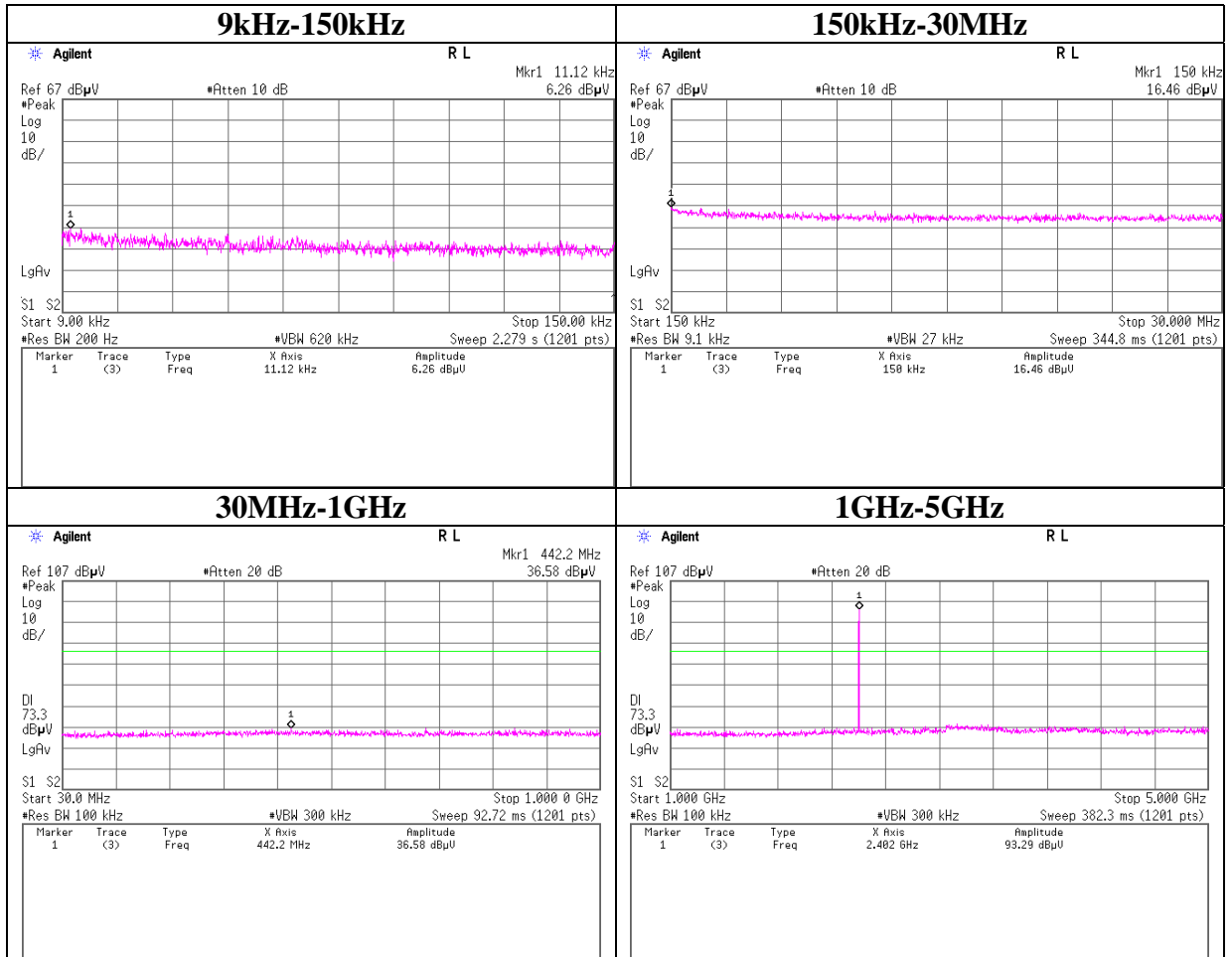
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

*NS: No Signal detect

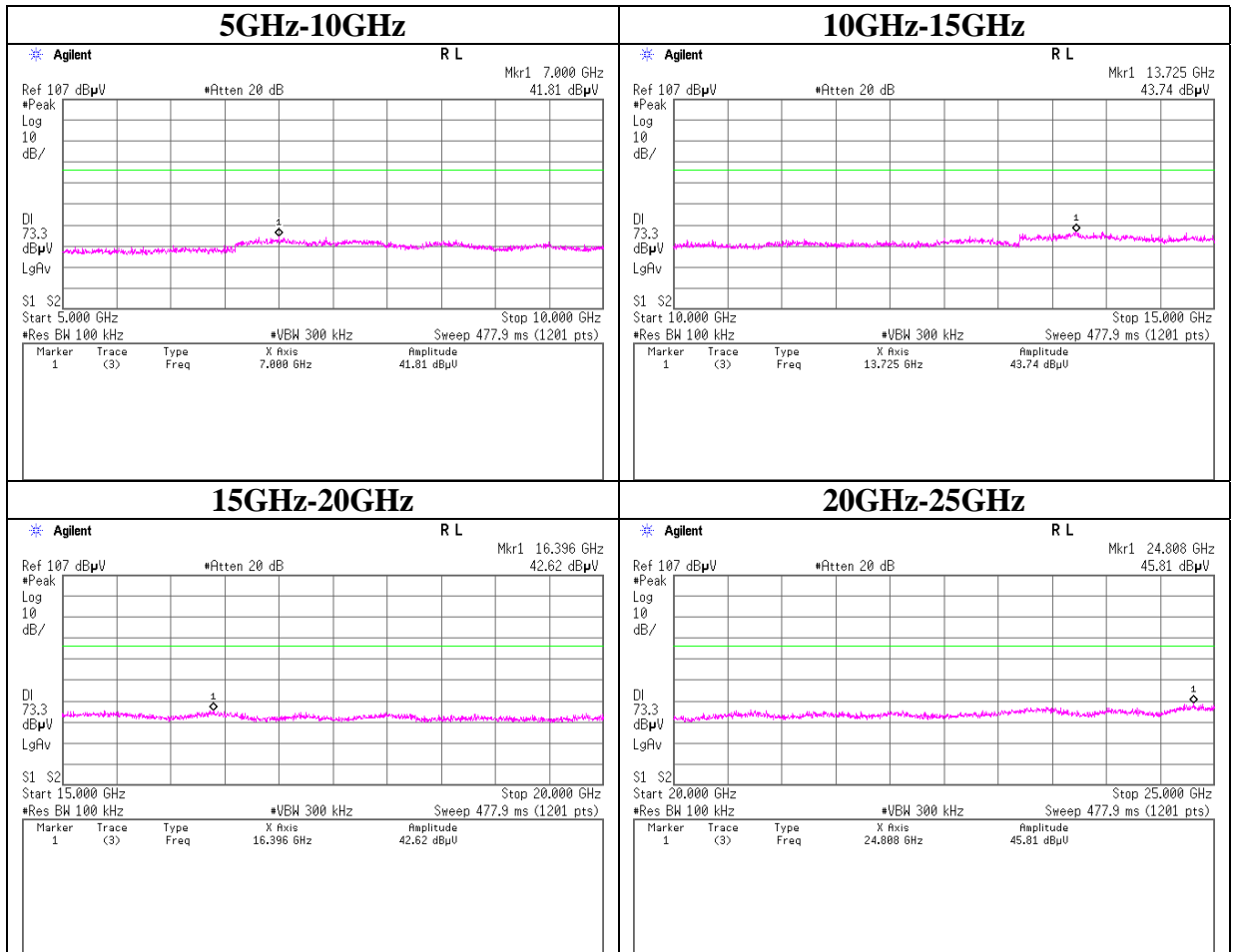
Conducted Spurious Emission

Tx DH5 2402MHz



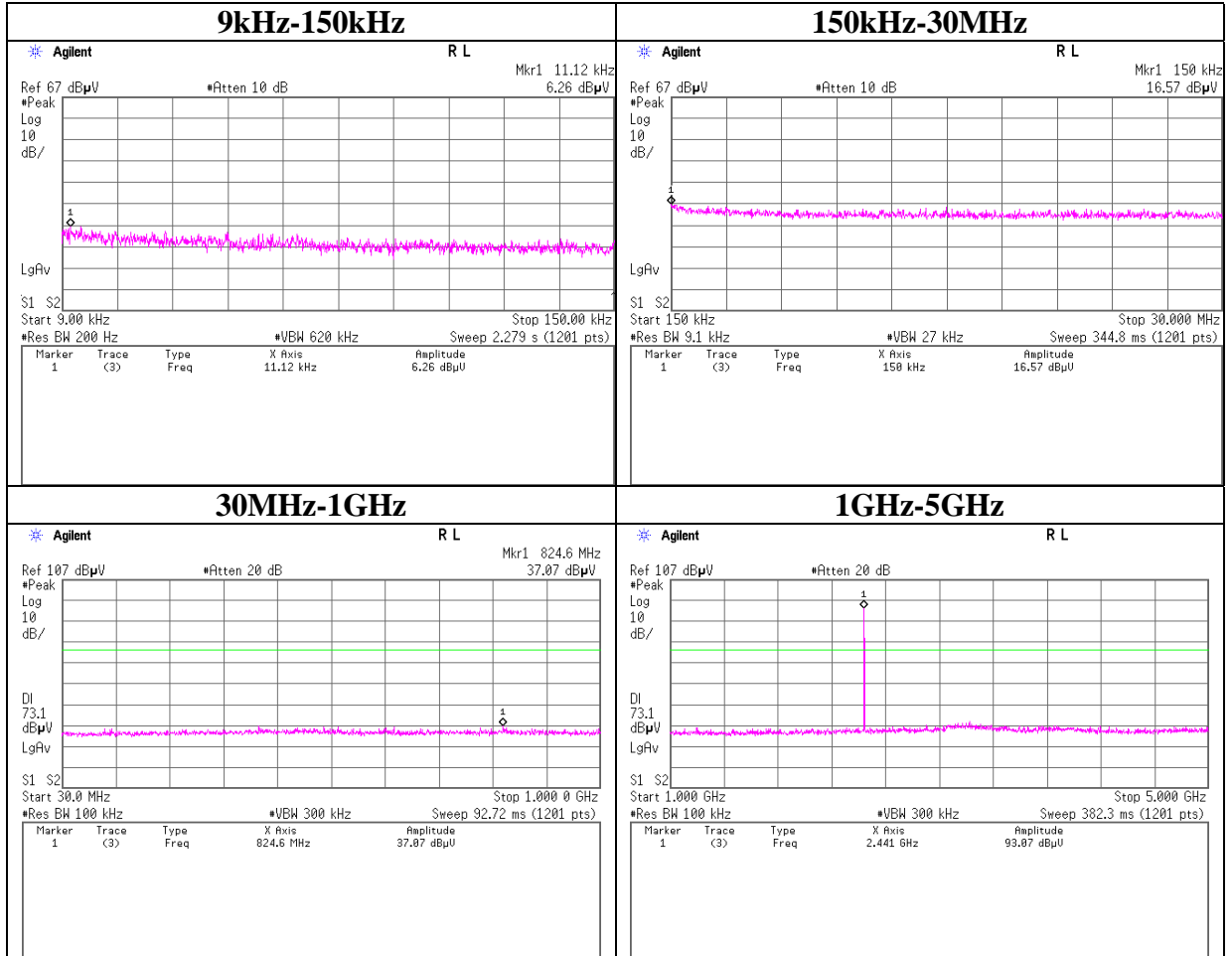
Conducted Spurious Emission

Tx DH5 2402MHz



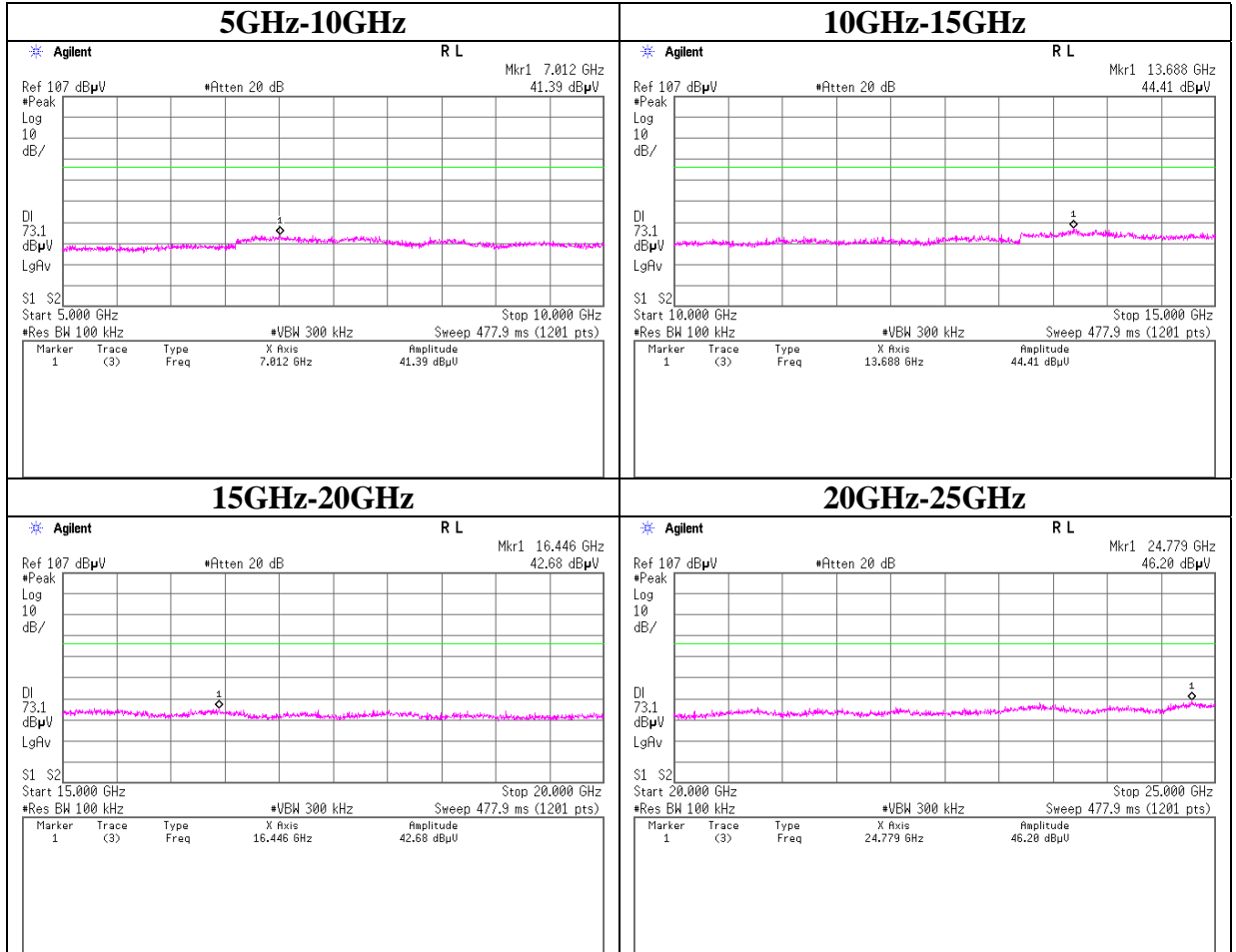
Conducted Spurious Emission

Tx DH5 2441MHz



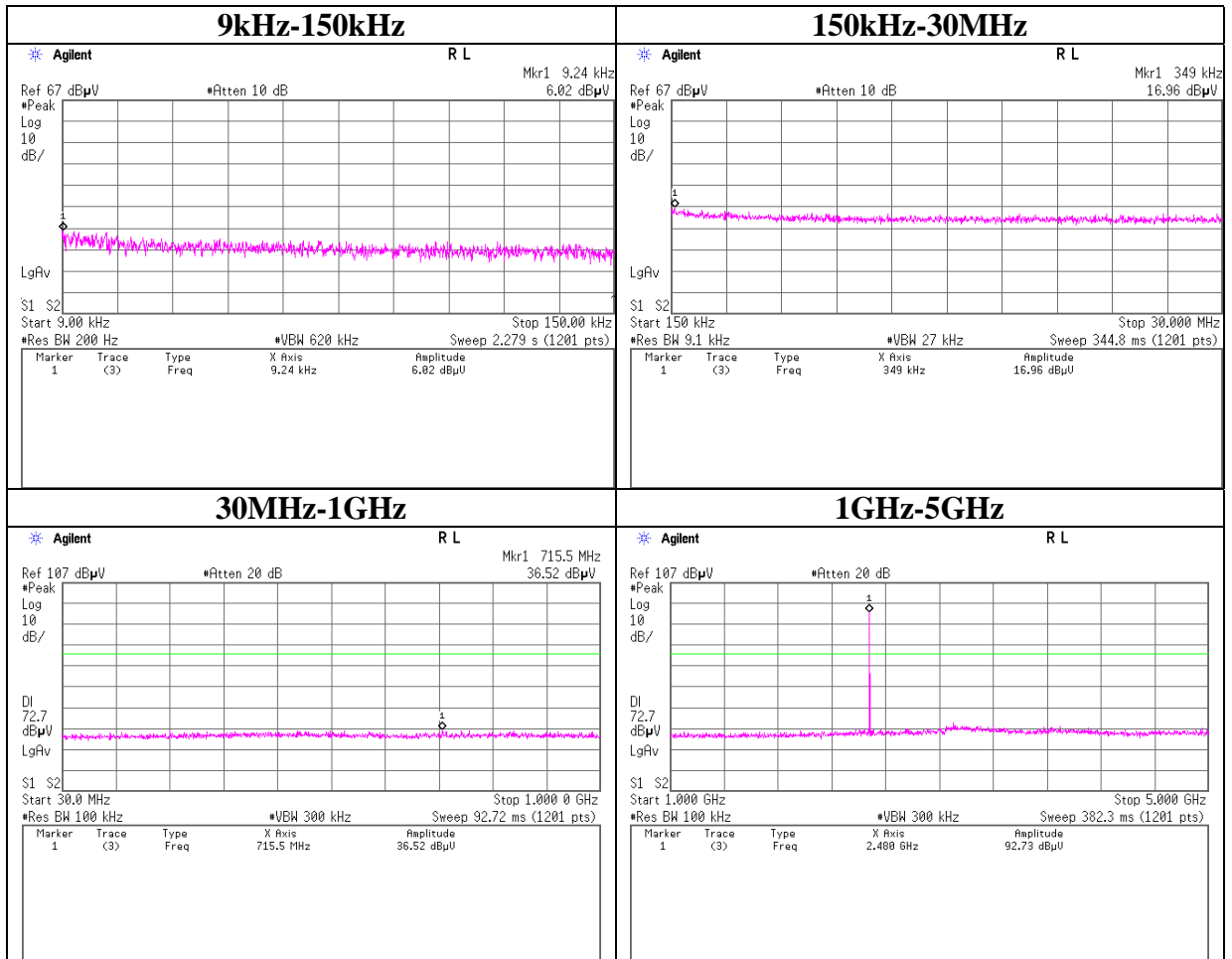
Conducted Spurious Emission

Tx DH5 2441MHz



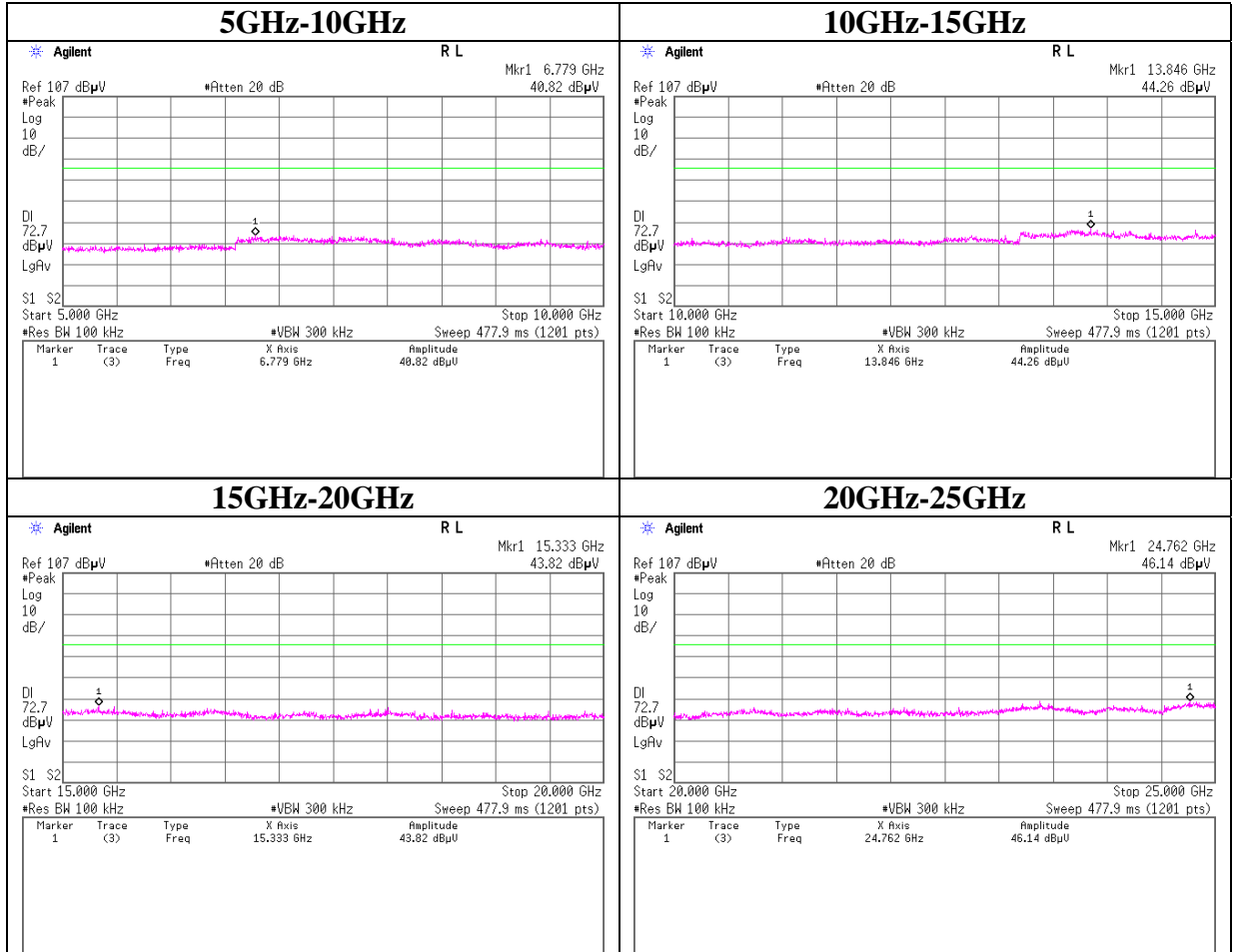
Conducted Spurious Emission

Tx DH5 2480MHz



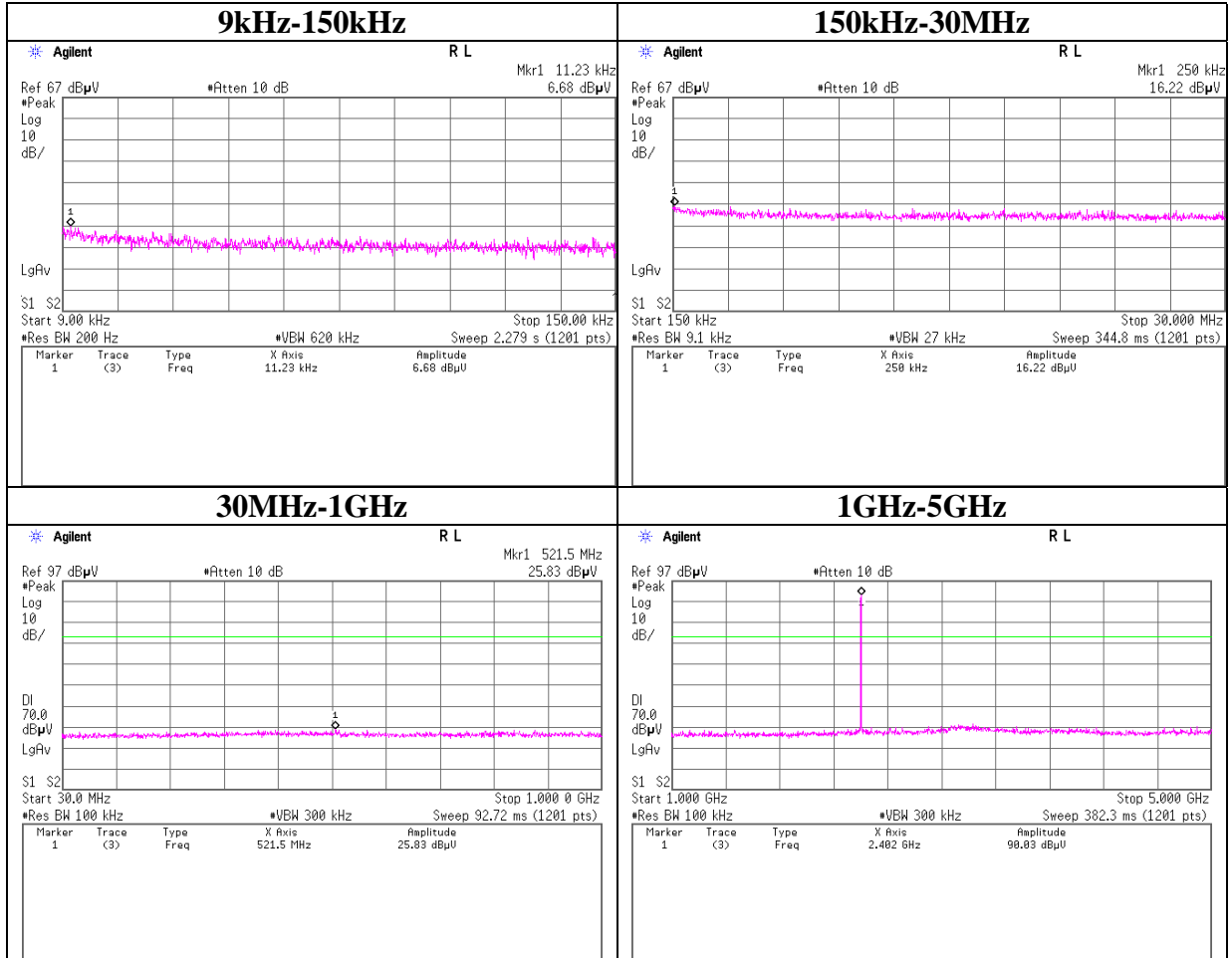
Conducted Spurious Emission

Tx DH5 2480MHz



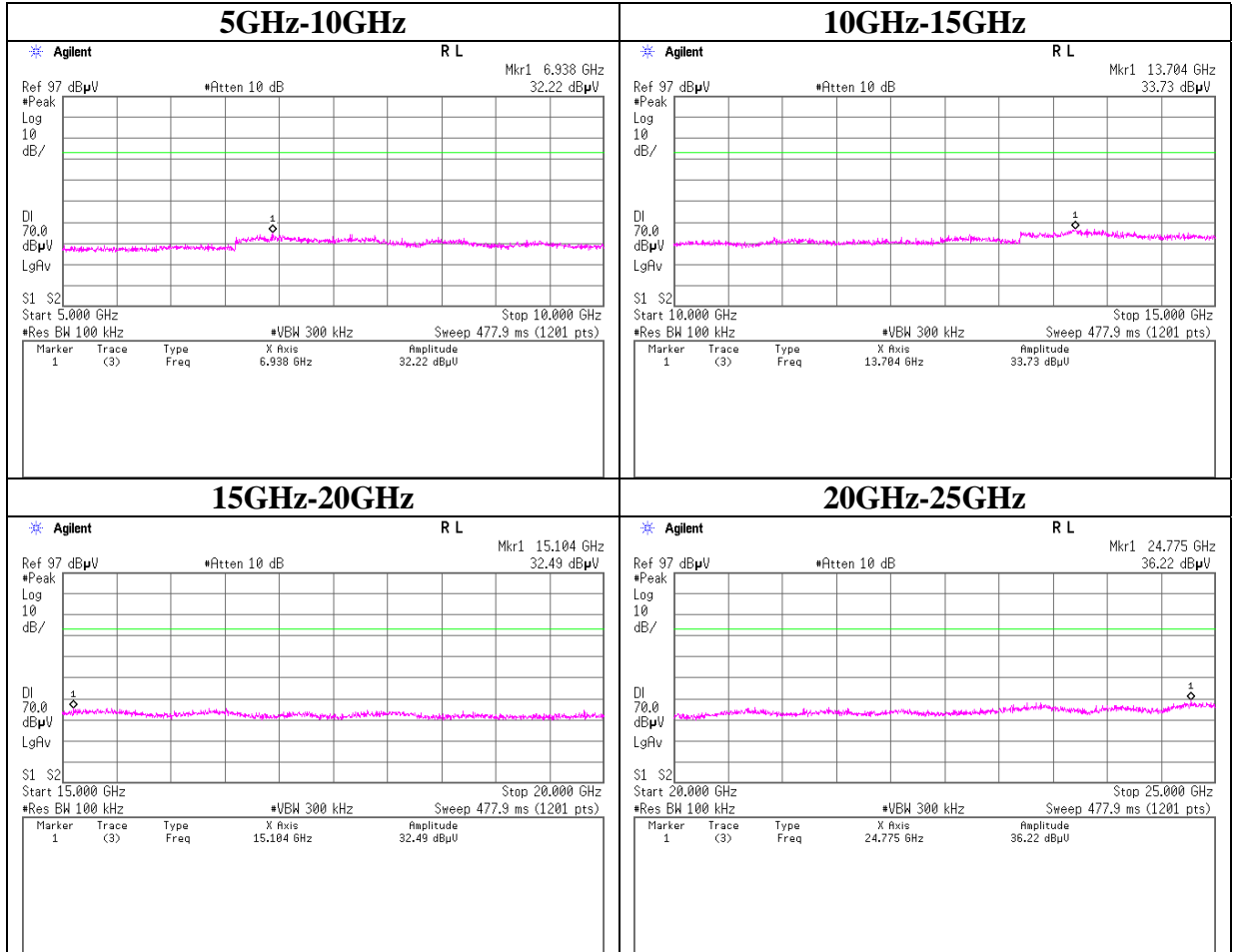
Conducted Spurious Emission

Tx 3DH5 2402MHz



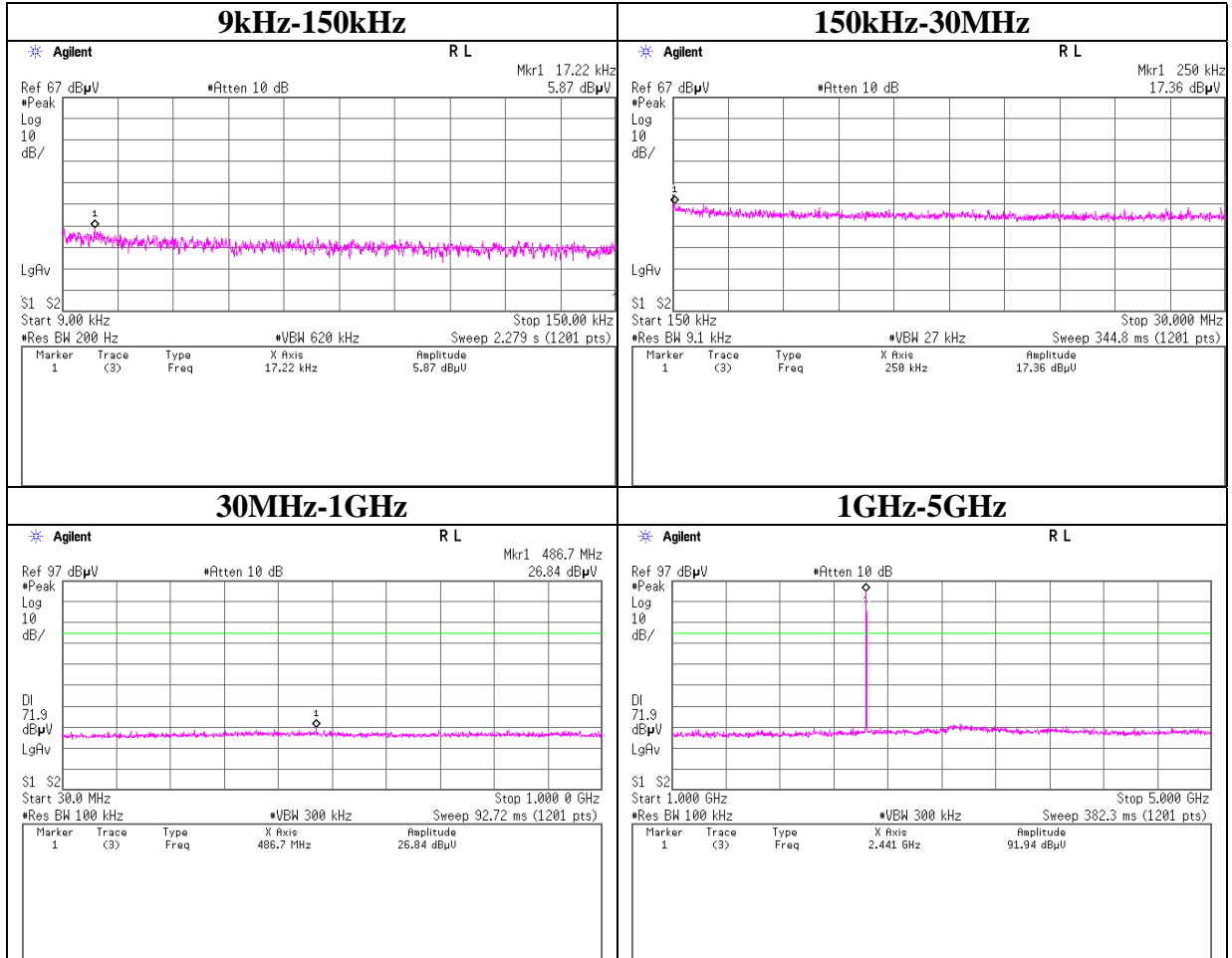
Conducted Spurious Emission

Tx 3DH5 2402MHz



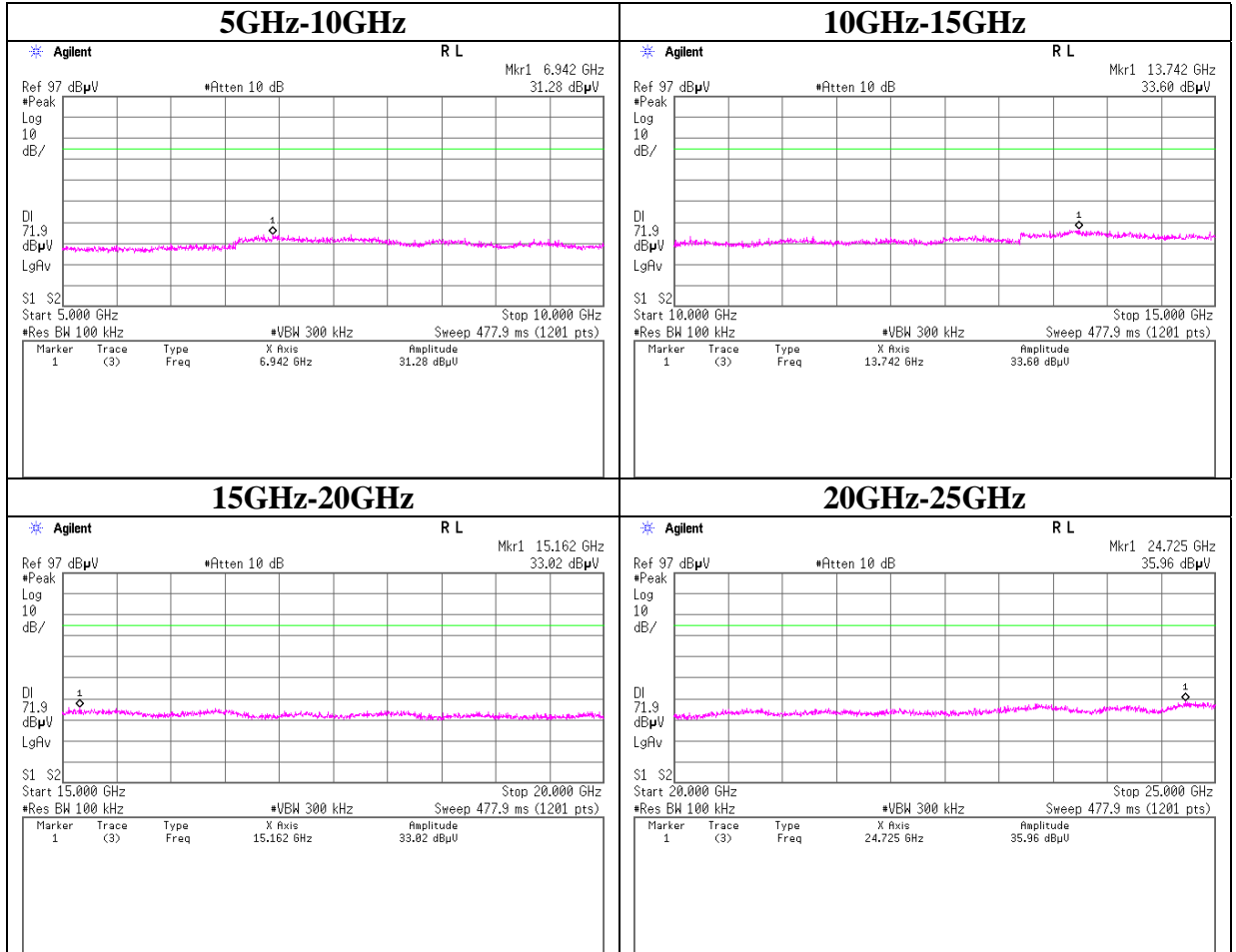
Conducted Spurious Emission

Tx 3DH5 2441MHz



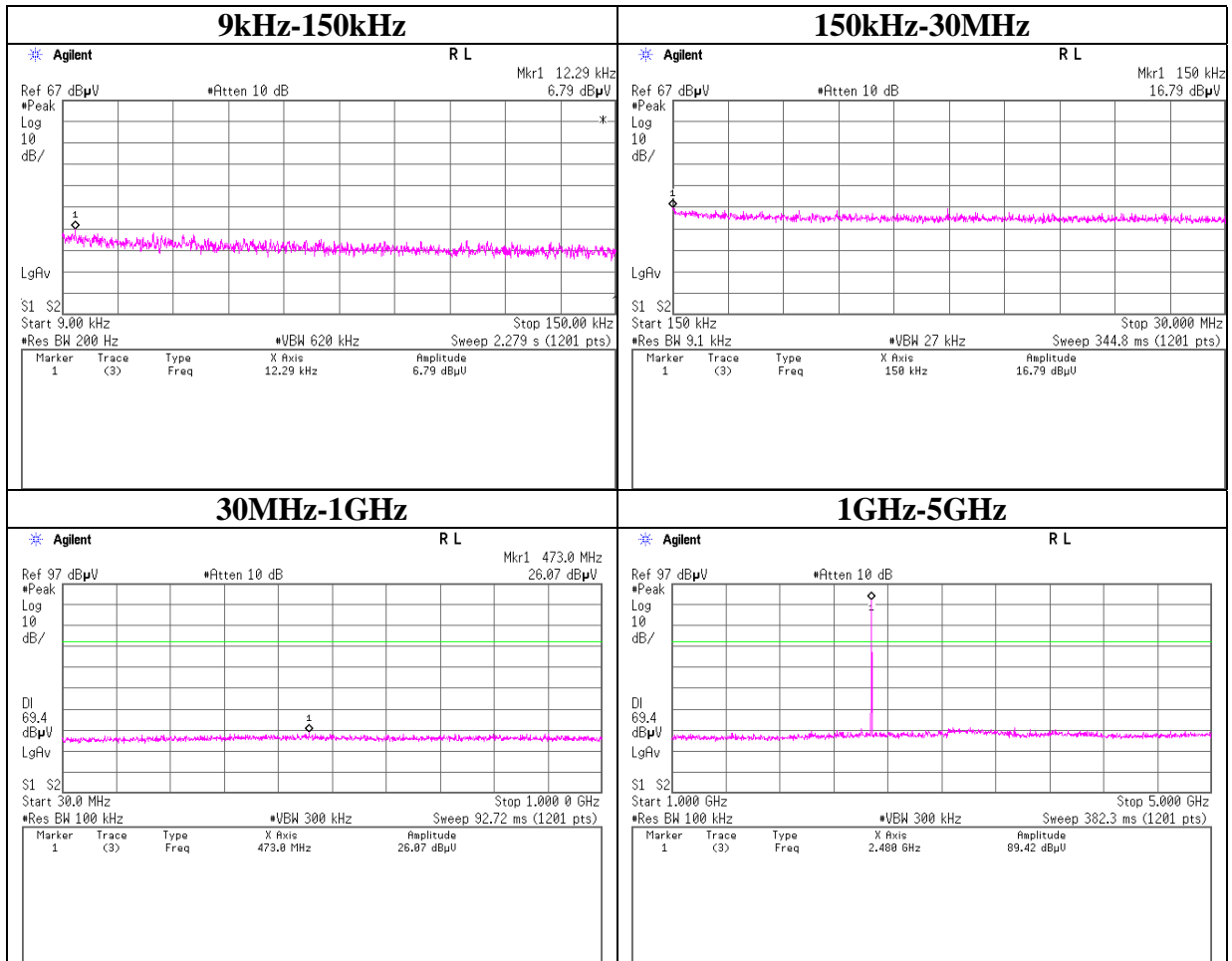
Conducted Spurious Emission

Tx 3DH5 2441MHz



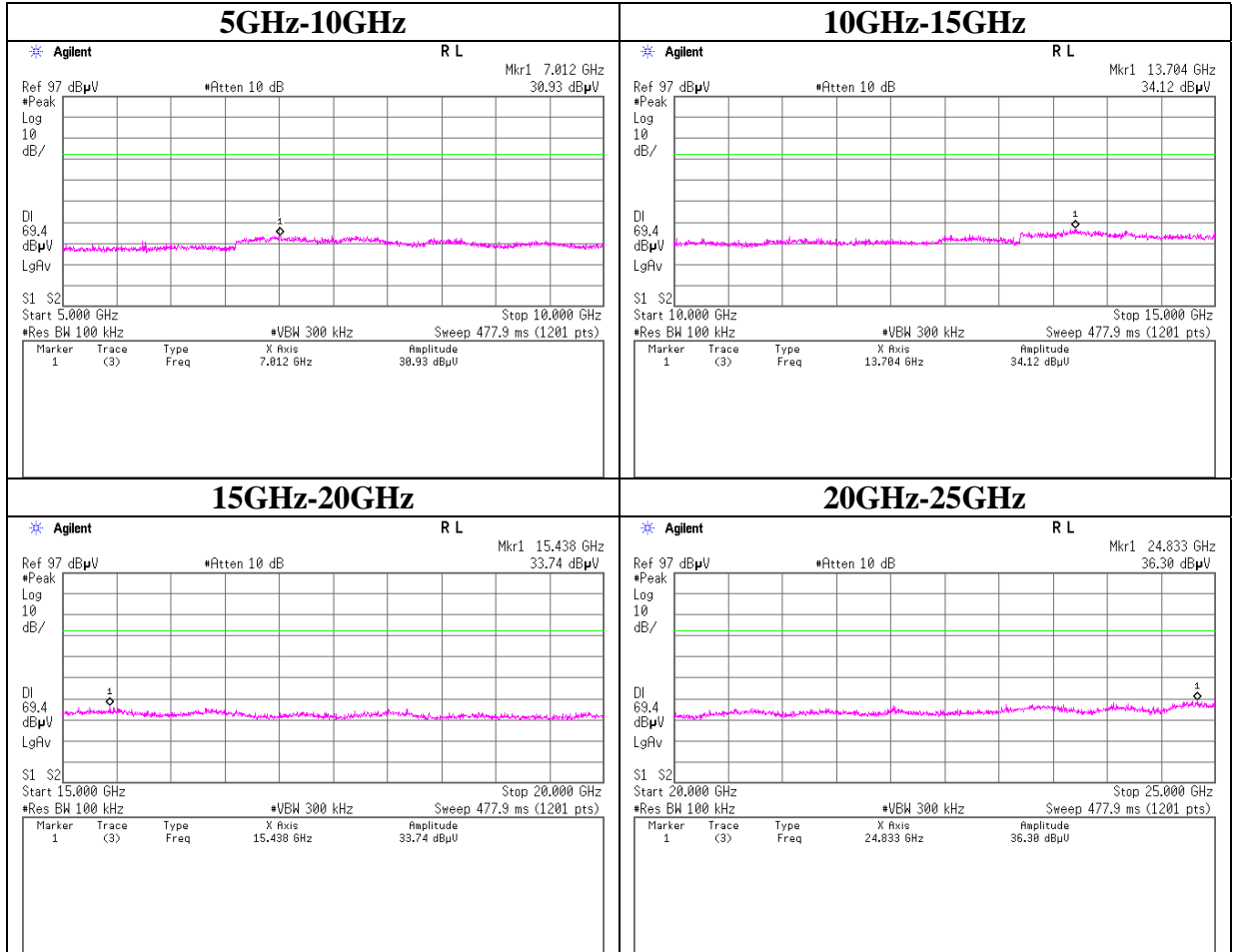
Conducted Spurious Emission

Tx 3DH5 2480MHz



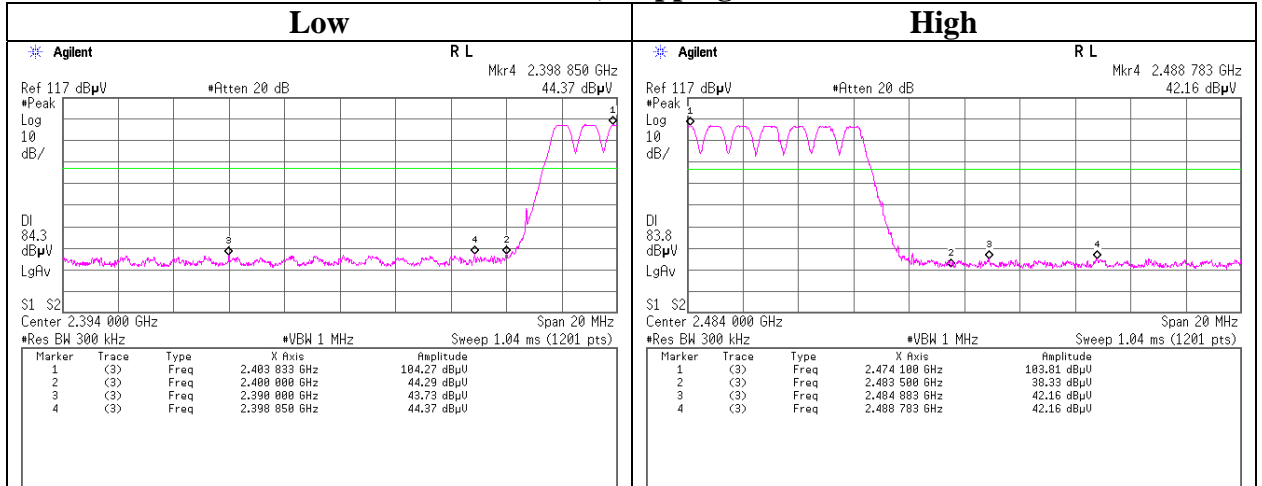
Conducted Spurious Emission

Tx 3DH5 2480MHz

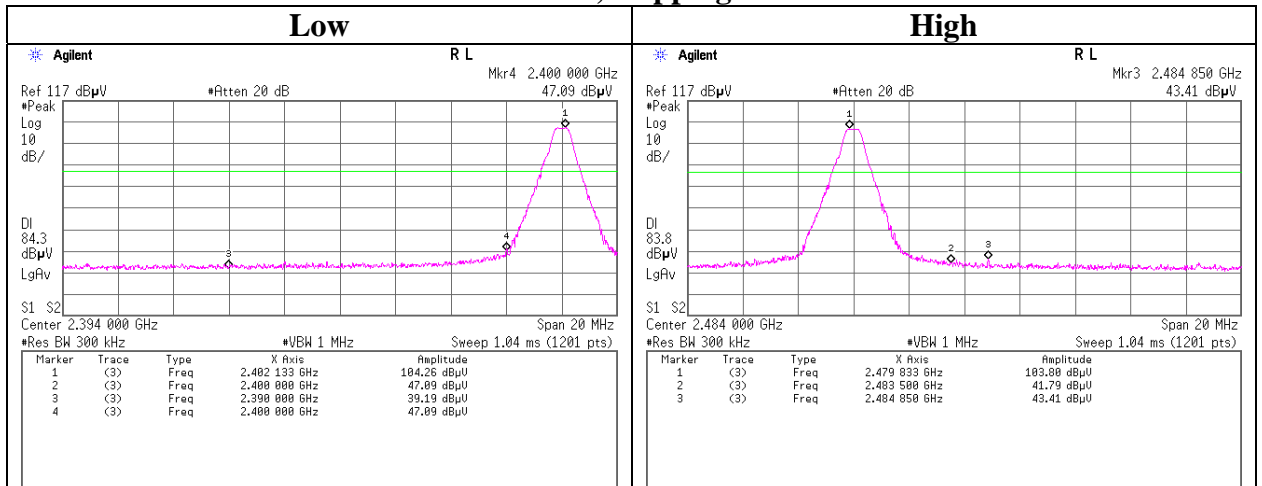


Conducted Emission Band Edge compliance

Tx DH5, Hopping on

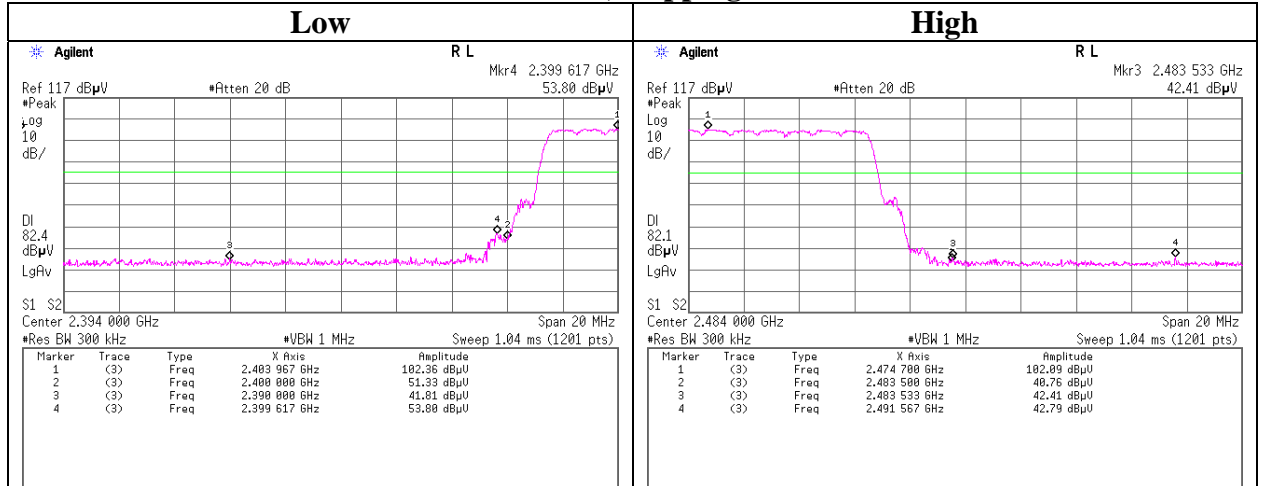


Tx DH5, Hopping off

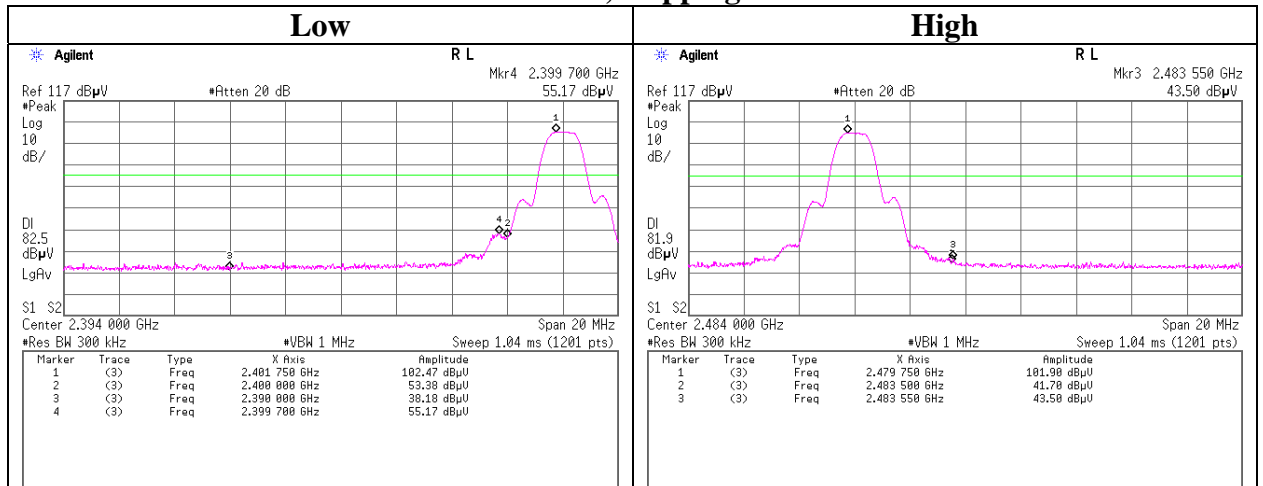


Conducted Emission Band Edge compliance

Tx 3DH5, Hopping on



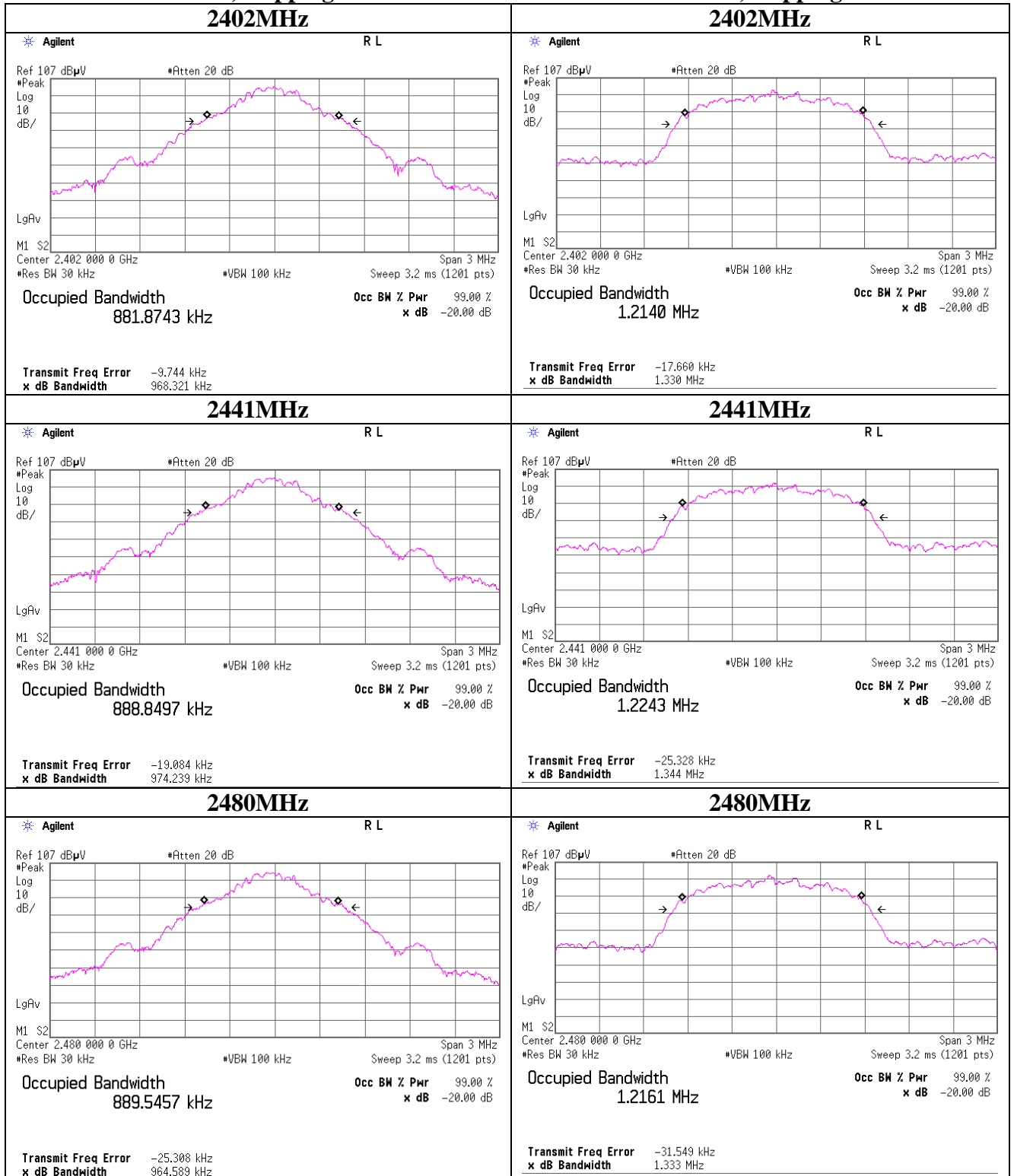
Tx 3DH5, Hopping off



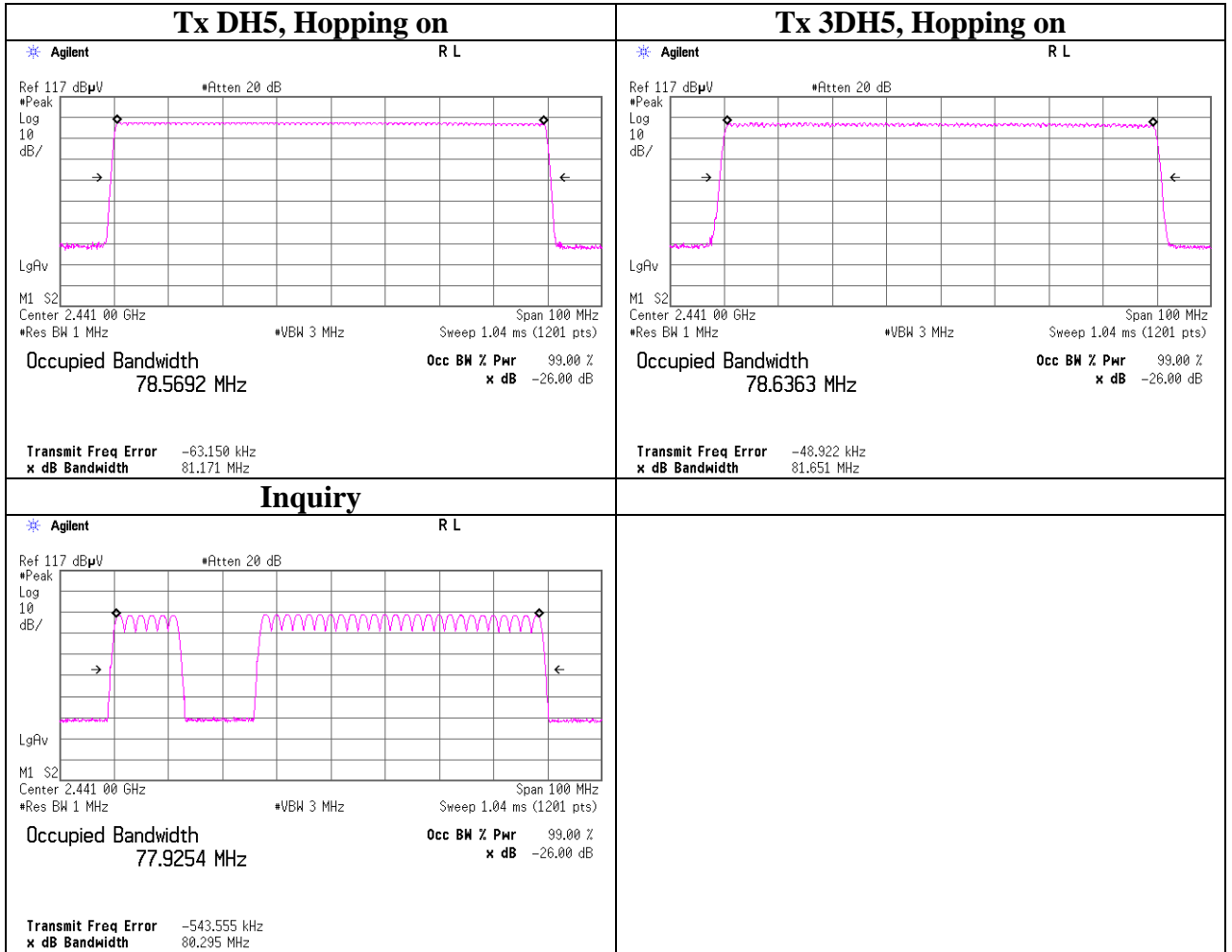
99% Occupied Bandwidth

Tx DH5, Hopping off

Tx 3DH5, Hopping off



99% Occupied Bandwidth



APPENDIX 2: Test instruments

EMI test equipment

| Control No. | Instrument | Manufacturer | Model No | Serial No | Test Item | Calibration Date * Interval(month) |
|-------------|----------------------------|----------------------|--|------------------------------|-----------|---------------------------------------|
| 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 | 2012/02/06 * 12 |
| MJM-14 | Measure | KOMELON | KMC-36 | - | RE/CE | - |
| COTS-MEMI | EMI measurement program | TSJ | TEPTO-DV | - | RE/CE | - |
| MSA-04 | Spectrum Analyzer | Agilent | E4448A | US44300523 | RE/CE | 2011/04/08 * 12 |
| MHA-20 | Horn Antenna 1-18GHz | Schwarzbeck | BBHA9120D | 258 | RE | 2011/05/23 * 12 |
| MPA-10 | Pre Amplifier | Agilent | 8449B | 3008A02142 | RE | 2012/01/25 * 12 |
| MHA-16 | Horn Antenna 15-40GHz | Schwarzbeck | BBHA9170 | BBHA9170306 | RE | 2011/05/23 * 12 |
| MCC-132 | Microwave Cable | HUBER+SUHNER | SUCOFLEX104 | 336161/4(1m) / 340639(5m) | RE | 2011/09/06 * 12 |
| MHF-06 | High Pass Filter 3.5-24GHz | TOKIMEC | TF323DCA | 601 | RE | 2011/05/16 * 12 |
| MTR-08 | Test Receiver | Rohde & Schwarz | ESCI | 100767 | RE | 2011/08/11 * 12 |
| MBA-02 | Biconical Antenna | Schwarzbeck | BBA9106 | VHA91032008 | RE | 2011/10/23 * 12 |
| MLA-02 | Logperiodic Antenna | Schwarzbeck | USLP9143 | 201 | RE | 2011/10/23 * 12 |
| MCC-12 | Coaxial Cable | Fujikura/Agilent | - | - | RE | 2012/02/16 * 12 |
| MAT-07 | Attenuator(6dB) | Weinschel Corp | 2 | BK7970 | RE | 2011/11/02 * 12 |
| MPA-09 | Pre Amplifier | Agilent | 8447D | 2944A10845 | RE | 2011/09/26 * 12 |
| MTR-03 | Test Receiver | Rohde & Schwarz | ESCI | 100300 | CE | 2011/04/15 * 12 |
| MLS-06 | LISN(AMN) | Schwarzbeck | NSLK8127 | 8127363 | CE | 2012/02/06 * 12 |
| MCC-13 | Coaxial Cable | Fujikura | 3D-2W(12m)/5D-2W(5m)/5D-2W(0.8m)/5D-2W(1m) | - | CE | 2012/02/16 * 12 |
| MAT-65 | Attenuator(13dB) | JFW Industries, Inc. | 50FP-013H2 N | - | CE | 2012/01/28 * 12 |
| MTR-08 | Test Receiver | Rohde & Schwarz | ESCI | 100767 | RE/CE | 2011/08/11 * 12 |
| MSA-10 | Spectrum Analyzer | Agilent | E4448A | MY46180655 | AT | 2012/02/03 * 12 |
| MPM-09 | Power Meter | Anritsu | ML2495A | 6K00003348 | AT | 2011/09/12 * 12 |
| MPSE-12 | Power sensor | Anritsu | MA2411B | 011598 | AT | 2011/09/12 * 12 |
| MCC-96 | Microwave Cable 1G-40GHz | Schner | SUCOFLEX102 | 30817/2 | AT | 2011/05/27 * 12 |
| MPD-02 | Power Divider DC-12.4GHz | SUHNER | 4901.19.A | - | AT | 2011/05/23 * 12 |
| MCC-138 | Microwave cable | HUBER+SUHNER | SUCOFLEX 102 | 37953/2 | AT | 2011/10/28 * 12 |
| MBTR15 | CBT Bluetooth Tester | Rohde & Schwarz | CBT | 100401 | AT | 2011/05/12 * 24 |
| MOS-14 | Thermo-Hygrometer | Custom | CTH-201 | - | AT | 2012/02/06 * 12 |
| MOS-19 | Thermo-Hygrometer | Custom | CTH-201 | 0001 | AT | 2011/12/09 * 12 |
| MCC-137 | Microwave cable | HUBER+SUHNER | SUCOFLEX 102 | 37954/2 | AT | 2011/10/28 * 12 |
| MAT-23 | Attenuator(10dB) 1-18GHz | Orient Microwave | BX10-0476-00 | - | AT | 2011/03/14 * 12 |
| MPSC-01 | Power splitters/Combiners | Mini-Circuit | ZFSC-2-2500 | 0124 | AT | 2011/09/27 * 12 |

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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