



Test report No. : 10229869S-A
Page : 1 of 57
Issued date : April 25, 2014
Revised date : June 19, 2014
FCC ID : OCS-MT1000A

RADIO TEST REPORT

Test Report No.: 10229869S-A

Applicant : Anritsu Corporation
Type of Equipment : Network Master Pro
Model No. : MT1000A
FCC ID : OCS-MT1000A
Test regulation : FCC Part15 Subpart C: 2014
Test result : Complied

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Date of test: March 27 to April 1, 2014

Tested by:

S. Takano

Shinichi Takano
Engineer
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Approved by :

T. Imamura

Toyokazu Imamura
Leader
Consumer Technology Division



JAB
Testing
RTL02610

- ☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan.
☒ There is no testing item of "Non-accreditation".

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13-EM-F0429

REVISION HISTORY

Original Test Report No.: 10229869S-A

[illegible]

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SECTION 1: Customer information

Company Name : Anritsu Corporation
Address : 5-1-1 Onna, Atsugi-shi, Kanagawa, 243-8555 Japan
Telephone Number : +81-46-296-6669
Facsimile Number : +81-46-225-8380
Contact Person : Yasuyuki Oishi

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

2.1 Identification of E.U.T.

Type of Equipment : Network Master Pro
Model Number : MT1000A
Serial Number : 708230036
Rating : Mains adapter: Input: AC 100 - 240V 50/60Hz, Output: DC18V 3.62A
Battery: DC 10.8V
Country of Mass-production : Denmark
Condition of EUT : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Receipt Date of Sample : February 24, 2014
Modification of EUT : No modification by the test lab.

2.2 Product description

Model: MT1000A (referred to as the EUT in this report) is Network Master Pro.

Clock frequency(ies) in the system : 20 MHz, 200 MHz, 625 MHz

<Bluetooth part>

Equipment type : Transceiver
Frequency of operation : 2402-2480MHz
Bandwidth & channel spacing : 79MHz & 1MHz
Type of modulation : GFSK, $\pi/4$ DQPSK, 8DPSK
Antenna type : Dipole
Antenna gain : 3.0dBi
Antenna connector type : IPEX MHF Connector (U.FL compatible)
Operation temperature range : 0 to +50 deg.C.

<Wireless LAN part>

Equipment type : Transceiver
Frequency of operation : 2412-2462MHz
Bandwidth & channel spacing : 20MHz & 5MHz
Type of modulation : CCK, OFDM
Antenna type : Dipole
Antenna gain : 3.0dBi
Antenna connector type : IPEX MHF Connector (U.FL compatible)
Operation temperature range : 0 to +50 deg.C.

* For Wireless LAN part, refer to the test report: 10229869S-B.

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FCC 15.31 (e)

The stable voltage (DC3.3V and DC1.8V) is provided constantly to RF part via regulator. Therefore, the EUT complies with the requirement.

FCC 15.203

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore the EUT complies with the requirement.

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SECTION 3: Test specification, procedures & results

3.1 Test specification

Test specification : FCC Part 15 Subpart C: 2014, final revised on March 6, 2014 and effective April 7, 2014
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.209 Radiated emission limits, general requirements
Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz,
and 5725-5850MHz

* The revision on March 6, 2014 does not affect the test specification applied to the EUT.

3.2 Procedures & Results

Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results
Conducted emission	ANSI C63.4:2009 7. AC powerline conducted emission measurements	FCC 15.207	-	N/A	14.1dB Freq.: 0.15855MHz Detection: Quasi-Peak Phase: L1 Mode: Tx 2480MHz, DH5	Complied
Carrier frequency separation	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)	Conducted	N/A	*See data.	Complied
20dB bandwidth	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)	Conducted	N/A		-
Number of hopping frequency	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)(iii)	Conducted	N/A		Complied
Dwell time	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)(iii)	Conducted	N/A		Complied
Maximum peak output power	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (b)(1)	Conducted	N/A		Complied
Band edge compliance & Spurious emission	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (d) 15.209	Conducted/ Radiated	N/A	0.3dB Freq.: 400.001MHz Polarization: Horizontal Detection: Quasi-Peak Mode: Tx 2480MHz, 3-DH5	Complied
Note: UL Japan's Work Procedures No. 13-EM-W0420 and 13-EM-W0422						

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3.3 Addition to standard

Item	Test Procedure	Specification	Remarks	Worst Margin	Results
Occupied Bandwidth (99%)	ANSI C63.4:2009 13. Measurement of intentional radiators, RSS-Gen 4.6.1	-	Conducted	-	-
Note: UL Japan's Work Procedures No. 13-EM-W0420 and 13-EM-W0422					

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

3.4 Uncertainty

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

Item	Frequency range	No.1 SAC ^{*1} /SR ^{*2} (±)	No.2 SAC/SR (±)	No.3 SAC/SR (±)
Conducted emission (AC Mains) LISN	150kHz-30MHz	3.6 dB	3.6 dB	3.5 dB
Radiated emission (Measurement distance: 3m)	9kHz-30MHz	3.7 dB	3.7 dB	3.6 dB
	30MHz-300MHz	4.8 dB	5.0 dB	4.8 dB
	300MHz-1GHz	5.0 dB	5.0 dB	4.8 dB
	1GHz-15GHz	4.9 dB	4.9 dB	4.9 dB
Radiated emission (Measurement distance: 1m)	15GHz-18GHz	5.7 dB	5.6 dB	5.6 dB
	18GHz-40GHz	5.2 dB	4.3 dB	4.3 dB

*1: SAC=Semi-Anechoic Chamber

*2: SR= Shielded Room is applied besides radiated emission

Conducted emission test

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

Radiated emission test

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

Antenna port conducted test

Power measurement uncertainty above 1GHz for this test was: (±) 1.5dB

Spurious emission (Conducted) measurement (below 1GHz) uncertainty for this test was: (±) 1.6dB

Spurious emission (Conducted) measurement (1G-3GHz) uncertainty for this test was: (±) 1.4dB

Spurious emission (Conducted) measurement (3G-18GHz) uncertainty for this test was: (±) 2.8dB

Spurious emission (Conducted) measurement (18G-26.5GHz) uncertainty for this test was: (±) 2.5dB

Bandwidth measurement uncertainty for this test was: (±) 5.4%

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3.5 Test location

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JAB Accreditation No. : RTL02610

	FCC Registration No.	IC Registration No.	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
☒ No.1 semi-anechoic chamber	697847	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☐ No.2 semi-anechoic chamber	697847	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☒ No.3 semi-anechoic chamber	697847	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5m
☐ No.4 semi-anechoic chamber	-	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
☒ No.1 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☐ No.2 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☐ No.3 shielded room	-	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
☐ No.4 shielded room	-	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
☒ No.5 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
☐ No.6 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
☒ No.1 measurement room	-	-	2.55 x 4.1 x 2.5	-	-

3.6 Test setup, Data of test & Test instruments

Refer to APPENDIX 1 to 3.

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

4.1 Operating mode

Test item	Operating mode	Tested frequency
Conducted emission	Transmitting Hopping OFF (DH5 / 3-DH5), Payload: PRBS9	2402MHz, 2441MHz, 2480MHz
Carrier frequency separation	Transmitting Hopping ON (DH5 / 3-DH5) / Inquiry, Payload: PRBS9	-
20dB bandwidth	Transmitting Hopping OFF (DH5 / 3-DH5) / Inquiry, Payload: PRBS9	2402MHz, 2441MHz, 2480MHz
Number of hopping frequency	Transmitting Hopping ON (DH5 / 3-DH5) / Inquiry, Payload: PRBS9	-
Dwell time	Transmitting (Hopping ON), Payload: PRBS9 - DH1, - DH3, - DH5 - 3-DH1, - 3-DH3, - 3-DH5 -Inquiry	-
Maximum peak output power	Transmitting Hopping OFF, Payload: PRBS9 - DH5, - 2-DH5, - 3-DH5	2402MHz, 2441MHz, 2480MHz
Band edge compliance & Spurious emission (Conducted) ----- (Radiated)	Transmitting (DH5 / 3-DH5), Payload: PRBS9 -Hopping ON -Hopping OFF ----- Transmitting (DH5 / 3-DH5), Payload: PRBS9 -Hopping OFF	Band edge compliance: 2402MHz, 2480MHz Spurious emission: 2402MHz, 2441MHz, 2480MHz
99% occupied bandwidth	Transmitting (DH5 / 3-DH5), Payload: PRBS9 / Inquiry -Hopping ON -Hopping OFF	2402MHz, 2441MHz, 2480MHz

*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload (except Dwell time test).

*Remarks: Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not affect the output power and bandwidth of the EUT.

The carrier separation may be less than 20 dB bandwidth, therefore 125mW power limit was applied to it.

Software : Tera Term version 4.80
Power Settings : 15 (maximum value)

We removed 2-DH mode (2 Mb/s EDR: pi/4DQPSK) except power measurement by using 3-DH mode (3 Mb/s EDR: 8DPSK) as a representative.

Justification: The system was configured in typical fashion (as customer would normally use it) for testing.

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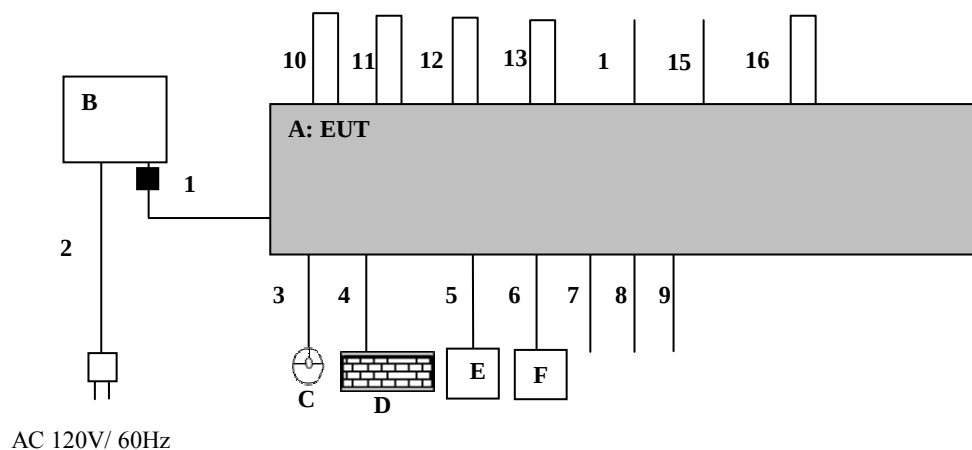
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4.2 Configuration and peripherals

■ : Standard ferrite core



* Test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Network Master Pro	MT1000A	708230036	Anritu	EUT
B	AC Adaptor	ATS065-A180	132800002	TECH	-
C	Mouse	M-UAE96	-	HP	-
D	Keyboard	BSKBU02	A01213	BUFFALO	-
E	Head Set	HL-108	-	DELTACO	-
F	GPS Receiver	CAN 310	19S093144	GARMIN	-

List of cables used

No.	Item	Length (m)	Shield	Remarks
1	DC	1.5	Unshielded	-
2	AC	2.0	Unshielded	-
3	Mouse	1.8	Unshielded	-
4	Keyboard	1.4	Unshielded	-
5	Head Set	1.8	Unshielded	-
6	GPS Receiver	5.0	Shielded	-
7	USB	2.0	Shielded	-
8	Coaxial	3.0	Shielded	-
9	Ethernet	1.65	Unshielded	Cat.5
10	Bantam	1.9	Unshielded	-
11	Coaxial	2.1	Shielded	-
12	Bantam	1.9	Unshielded	-
13	Coaxial	2.1	Shielded	-
14	Balanced	2.0	Unshielded	-
15	Balanced	2.0	Unshielded	-
16	Ethernet	2.1	Unshielded	Cat.5e

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SECTION 5: Conducted emission

5.1 Operating environment

Test place : See test data (APPENDIX 1)
Temperature : See test data (APPENDIX 1)
Humidity : See test data (APPENDIX 1)

5.2 Test configuration

EUT was placed on a platform of nominal size, 1m by 2.0m, raised 0.8m above the conducting ground plane. The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of peripheral was aligned and was 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 LISN.
Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source. All unused 50ohm connectors of the LISN were resistively terminated in 50ohm when not connected to the measuring equipment.
Photographs of the set up are shown in APPENDIX 3.

5.3 Test conditions

Frequency range : 0.15 - 30MHz
EUT position : Table top

5.4 Test procedure

The AC Mains Terminal Continuous disturbance Voltage had been measured with the EUT within a Shielded room. The EUT was connected to a Line Impedance Stabilization Network (LISN).
An overview sweep with peak detection has been performed.
The measurements had been performed with a quasi-peak detector and if required, a CISPR average detector.
The conducted emission measurements were made with the following detection of the test receiver.

Detection Type : Quasi-Peak/ CISPR Average
IF Bandwidth : 9kHz

5.5 Results

Summary of the test results : Pass
Refer to APPENDIX 1

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SECTION 6: Carrier frequency separation

Test procedure

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass
Refer to APPENDIX 1.

SECTION 7: 20dB bandwidth & Occupied bandwidth (99%)

Test procedure

The bandwidth was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass
Refer to APPENDIX 1.

SECTION 8: Number of hopping frequency

Test procedure

The Number of Hopping Frequency was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass
Refer to APPENDIX 1.

SECTION 9: Dwell time

Test procedure

The Dwell time was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass
Refer to APPENDIX 1.

SECTION 10: Maximum peak output power

Test procedure

The Maximum Peak Output Power was measured with a power meter connected to the antenna port.

Summary of the test results: Pass
Refer to APPENDIX 1.

SECTION 11: Spurious emissions (Antenna port conducted)

Test procedure

The Out of Band Emissions was measured with a spectrum analyzer connected to the antenna port.

The radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement. 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=10kHz)

Summary of the test results: Pass
Refer to APPENDIX 1.

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SECTION 12: Radiated emission

12.1 Operating environment

Test room : See test data (APPENDIX 1)
Temperature : See test data (APPENDIX 1)
Humidity : See test data (APPENDIX 1)

12.2 Test configuration

EUT was placed on a platform of nominal size, 1.0m by 1.5m (30-1000MHz) or 1.0m by 2.0m (1-25GHz), raised 0.8m above the conducting ground plane. The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity. The rear of EUT, including its peripherals was aligned and flushed with rear of tabletop. I/O cables that were connected to the peripherals were bundled in center. They were folded back and for the forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. Photographs of the set up are shown in APPENDIX 3.

12.3 Test conditions

Frequency range : 30MHz - 25GHz
EUT position : Table top

12.4 Test procedure

The Radiated Electric Field Strength intensity has been measured on a semi-anechoic chamber with a ground plane and at a distance of 3m (below 15GHz) / 1m (above 15GHz) (Refer to Figure 1). Measurements were performed with quasi-peak, peak and average detector. The measuring antenna height was varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity. The measurements were performed for both vertical and horizontal antenna polarization.

The radiated emission measurements were made with the following detection.

Frequency	30 - 1000MHz	1 - 25GHz		20dBc
Detection Type	: Quasi-Peak	Peak	Average *1)	Peak
IF Bandwidth	: 120kHz	RBW:1MHz VBW:3MHz	RBW:1MHz VBW:10Hz	RBW: 100kHz, VBW: 300kHz

*1) When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold. Although 00-705 accepts VBW=10Hz for AV measurements, confirmed that superfluous smoothing was not performed.

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

Antenna polarization	Carrier	Spurious (Below 1GHz)	Spurious (1-15GHz)	Spurious (15-18GHz)	Spurious (18-25GHz)
Horizontal	X	X	X	X	X
Vertical	Y	X	Y	Y	Y

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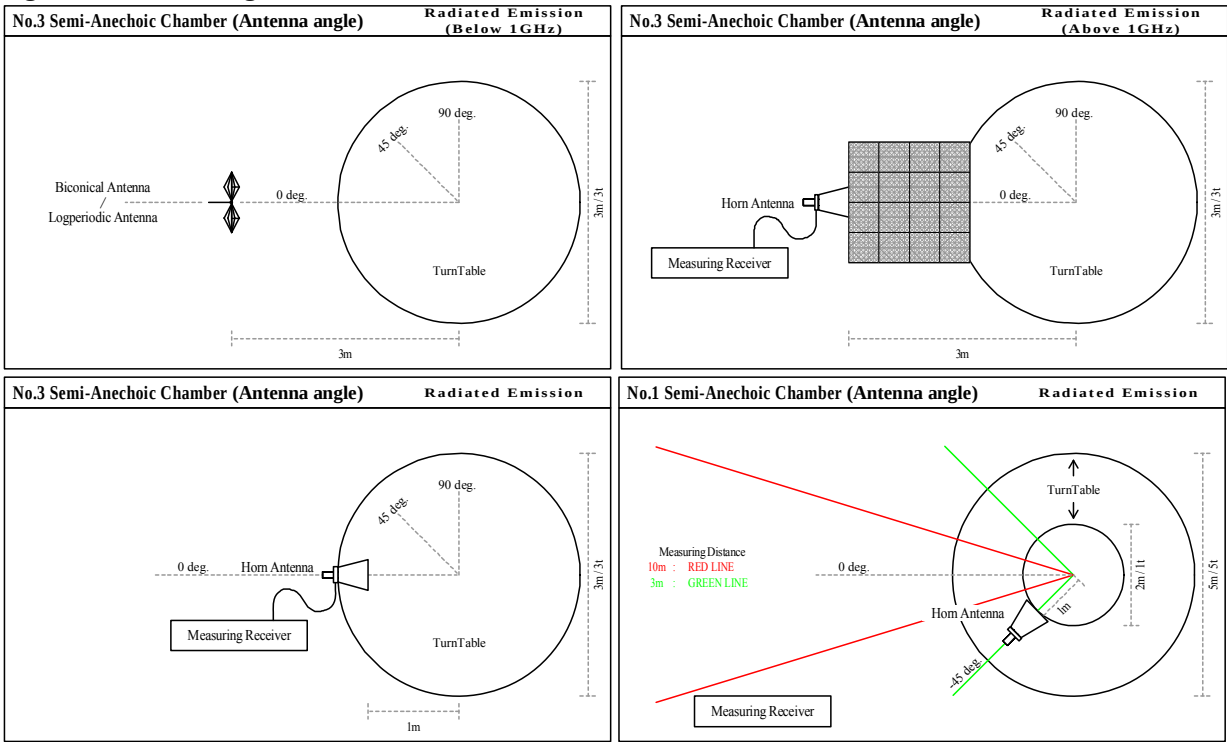
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Figure 1. Antenna angle



12.5 Band edge

Band edge level is below the limits of FCC 15.209. Refer to the data.

12.6 Results

Summary of the test results: Pass
*No noise was detected above the 4th order harmonics.

Refer to APPENDIX 1.

Contents of APPENDIXES

APPENDIX 1: Data of Radio tests

Conducted emission
20dB bandwidth and Carrier frequency separation
Number of hopping frequency
Dwell time
Maximum peak output power
Radiated emission
Spurious emission (Antenna port conducted)
Occupied bandwidth

APPENDIX 2: Test instruments

Test instruments

APPENDIX 3: Photographs of test setup

Conducted emission
Radiated emission
Pre-check of the worst position

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DATA OF CONDUCTED EMISSION TEST

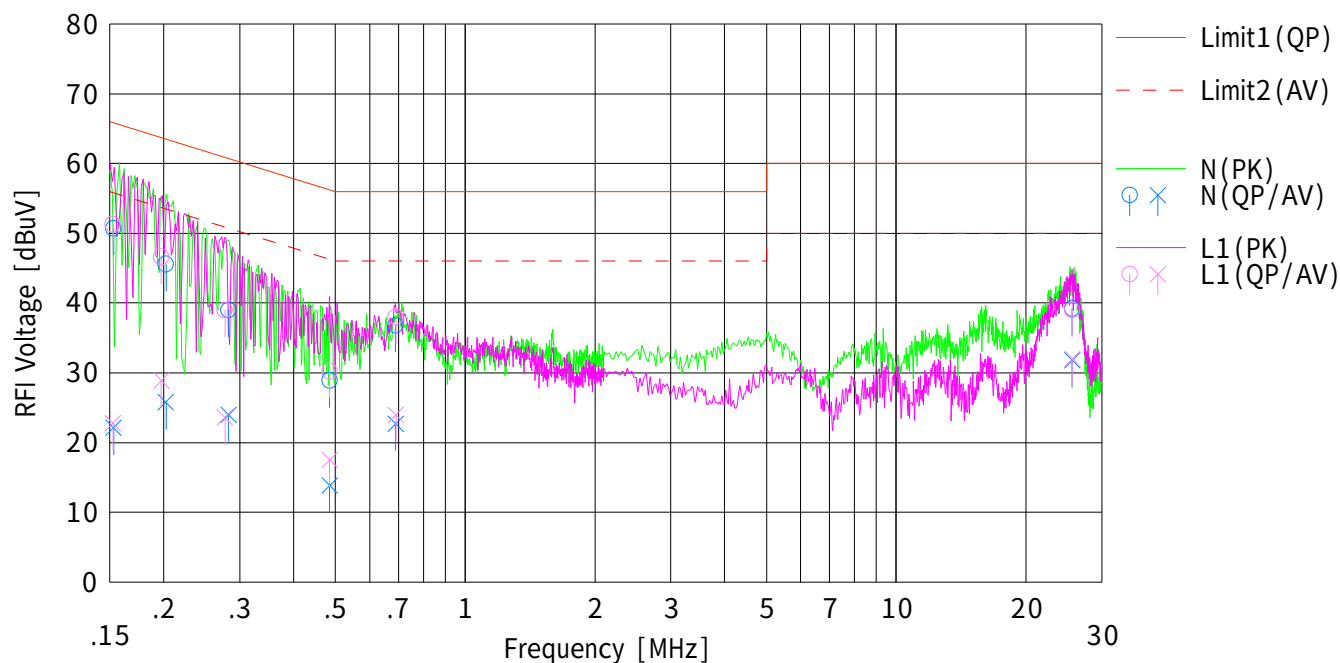
UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room
Date : 2014/03/30

Company : Anritu Corporation
Kind of EUT : Network Master Pro
Model No. : MT1000A
Serial No. : 708230036
Remarks : -

Mode : Tx DH5 2402MHz
Order No. : 10229869S
Power : AC120V / 60Hz
Temp./Humi. : 22deg.C./38%RH

Limit1 : FCC 15C(15.207) QP
Limit2 : FCC 15C(15.207) AV

Engineer : Tomochika Sato



No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15286	38.2	9.6	12.5	50.7	22.1	65.8	55.8	15.1	33.7	N	
2	0.20231	33.2	13.4	12.4	45.6	25.8	63.5	53.5	17.9	27.7	N	
3	0.28273	26.5	11.5	12.5	39.0	24.0	60.7	50.7	21.7	26.7	N	
4	0.48514	16.5	1.4	12.4	28.9	13.8	56.2	46.2	27.3	32.4	N	
5	0.69044	24.3	10.2	12.5	36.8	22.7	56.0	46.0	19.2	23.3	N	
6	25.62156	25.6	18.2	13.6	39.2	31.8	60.0	50.0	20.8	18.2	N	
7	0.15256	38.8	10.3	12.5	51.3	22.8	65.8	55.8	14.5	33.0	L1	
8	0.19735	34.2	16.5	12.4	46.6	28.9	63.7	53.7	17.1	24.8	L1	
9	0.27742	26.5	11.1	12.5	39.0	23.6	60.8	50.8	21.8	27.2	L1	
10	0.48514	17.8	5.1	12.4	30.2	17.5	56.2	46.2	26.0	28.7	L1	
11	0.69088	25.5	11.5	12.5	38.0	24.0	56.0	46.0	18.0	22.0	L1	
12	25.62462	25.4	18.4	13.6	39.0	32.0	60.0	50.0	21.0	18.0	L1	

DATA OF CONDUCTED EMISSION TEST

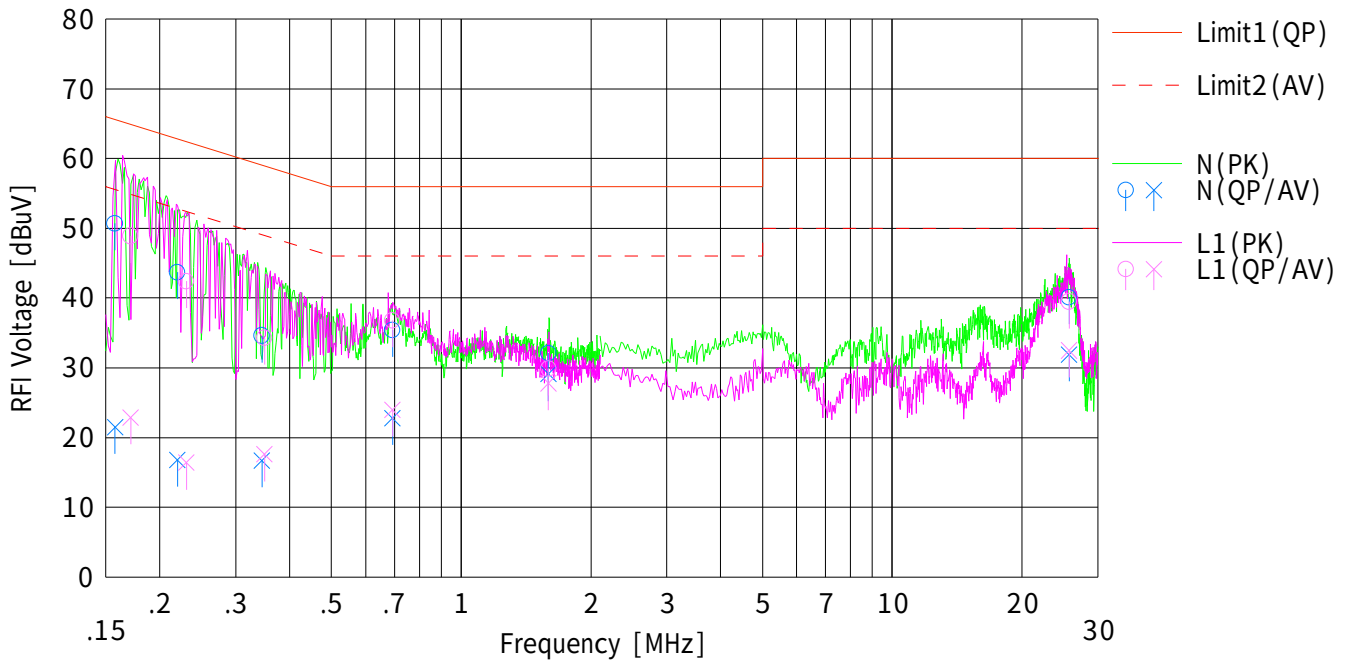
UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room
Date : 2014/03/30

Company : Anritu Corporation
Kind of EUT : Network Master Pro
Model No. : MT1000A
Serial No. : 708230036
Remarks : -

Mode : Tx DH5 2441MHz
Order No. : 10229869S
Power : AC120V / 60Hz
Temp./Humi. : 22deg.C./38%RH

Limit1 : FCC 15C(15.207) QP
Limit2 : FCC 15C(15.207) AV

Engineer : Tomochika Sato



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15741	38.2	9.0	12.5	50.7	21.5	65.5	55.5	14.8	34.0	N	
2	0.21957	31.2	4.3	12.5	43.7	16.8	62.8	52.8	19.1	36.0	N	
3	0.34523	22.2	4.3	12.4	34.6	16.7	59.0	49.0	24.4	32.3	N	
4	0.69350	22.9	10.3	12.5	35.4	22.8	56.0	46.0	20.6	23.2	N	
5	1.59474	19.5	16.5	12.6	32.1	29.1	56.0	46.0	23.9	16.9	N	
6	25.72175	26.5	18.3	13.6	40.1	31.9	60.0	50.0	19.9	18.1	N	
7	0.17106	36.5	10.5	12.4	48.9	22.9	64.9	54.9	16.0	32.0	L1	
8	0.23027	29.9	3.9	12.5	42.4	16.4	62.4	52.4	20.0	36.0	L1	
9	0.35015	21.9	5.2	12.4	34.3	17.6	58.9	48.9	24.6	31.3	L1	
10	0.69270	24.3	11.5	12.5	36.8	24.0	56.0	46.0	19.2	22.0	L1	
11	1.59488	17.3	15.2	12.6	29.9	27.8	56.0	46.0	26.1	18.2	L1	
12	25.73110	25.9	18.9	13.6	39.5	32.5	60.0	50.0	20.5	17.5	L1	

DATA OF CONDUCTED EMISSION TEST

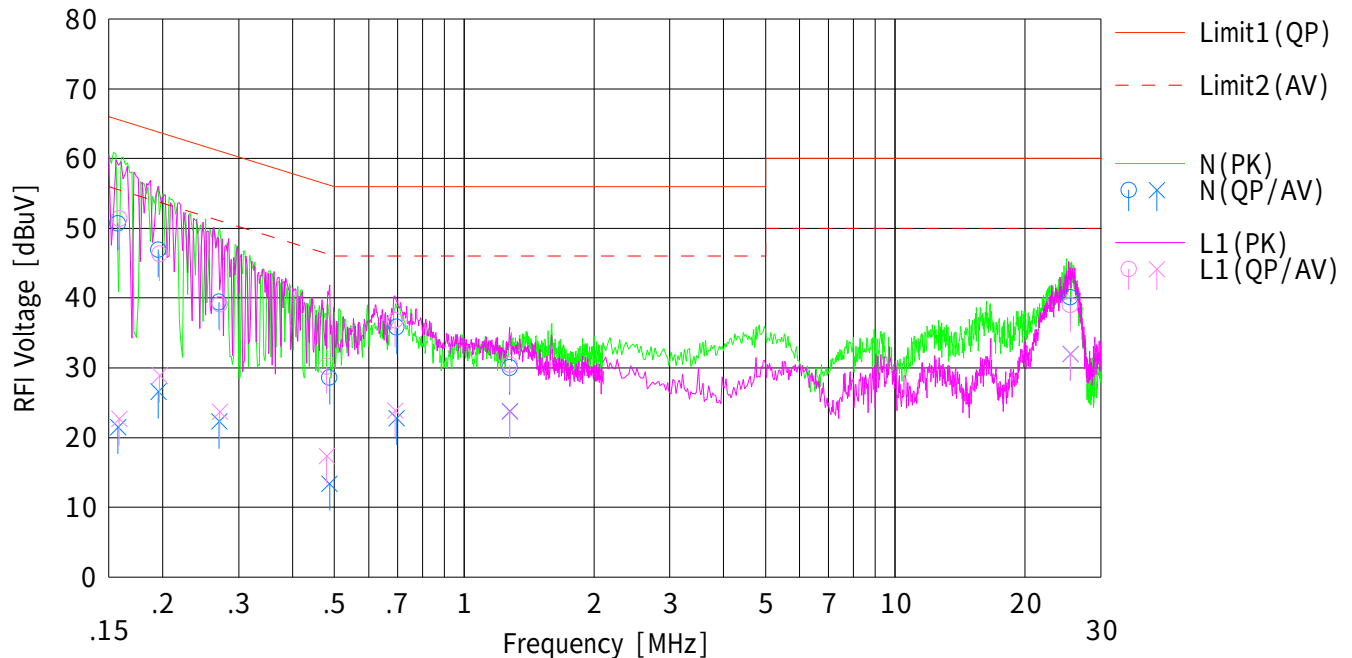
UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room
Date : 2014/03/30

Company : Anritu Corporation
Kind of EUT : Network Master Pro
Model No. : MT1000A
Serial No. : 708230036
Remarks : -

Mode : Tx DH5 2480MHz
Order No. : 10229869S
Power : AC120V / 60Hz
Temp./Humi. : 22deg.C./38%RH

Limit1 : FCC 15C(15.207) QP
Limit2 : FCC 15C(15.207) AV

Engineer : Tomochika Sato



No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15739	38.2	9.0	12.5	50.7	21.5	65.6	55.6	14.9	34.1	N	
2	0.19516	34.5	14.2	12.4	46.9	26.6	63.8	53.8	16.9	27.2	N	
3	0.26998	26.9	9.8	12.5	39.4	22.3	61.1	51.1	21.7	28.8	N	
4	0.48757	16.2	1.0	12.4	28.6	13.4	56.2	46.2	27.6	32.8	N	
5	0.69836	23.3	10.3	12.5	35.8	22.8	56.0	46.0	20.2	23.2	N	
6	1.27746	17.4	11.2	12.6	30.0	23.8	56.0	46.0	26.0	22.2	N	
7	25.51229	26.5	18.4	13.6	40.1	32.0	60.0	50.0	19.9	18.0	N	
8	0.15855	38.9	10.2	12.5	51.4	22.7	65.5	55.5	14.1	32.8	L1	
9	0.19682	33.9	16.5	12.4	46.3	28.9	63.7	53.7	17.4	24.8	L1	
10	0.27146	26.6	11.2	12.5	39.1	23.7	61.0	51.0	21.9	27.3	L1	
11	0.47998	17.8	4.9	12.4	30.2	17.3	56.3	46.3	26.1	29.0	L1	
12	0.69216	24.3	11.4	12.5	36.8	23.9	56.0	46.0	19.2	22.1	L1	
13	1.27641	17.8	11.1	12.6	30.4	23.7	56.0	46.0	25.6	22.3	L1	
14	25.50711	25.4	18.4	13.6	39.0	32.0	60.0	50.0	21.0	18.0	L1	

DATA OF CONDUCTED EMISSION TEST

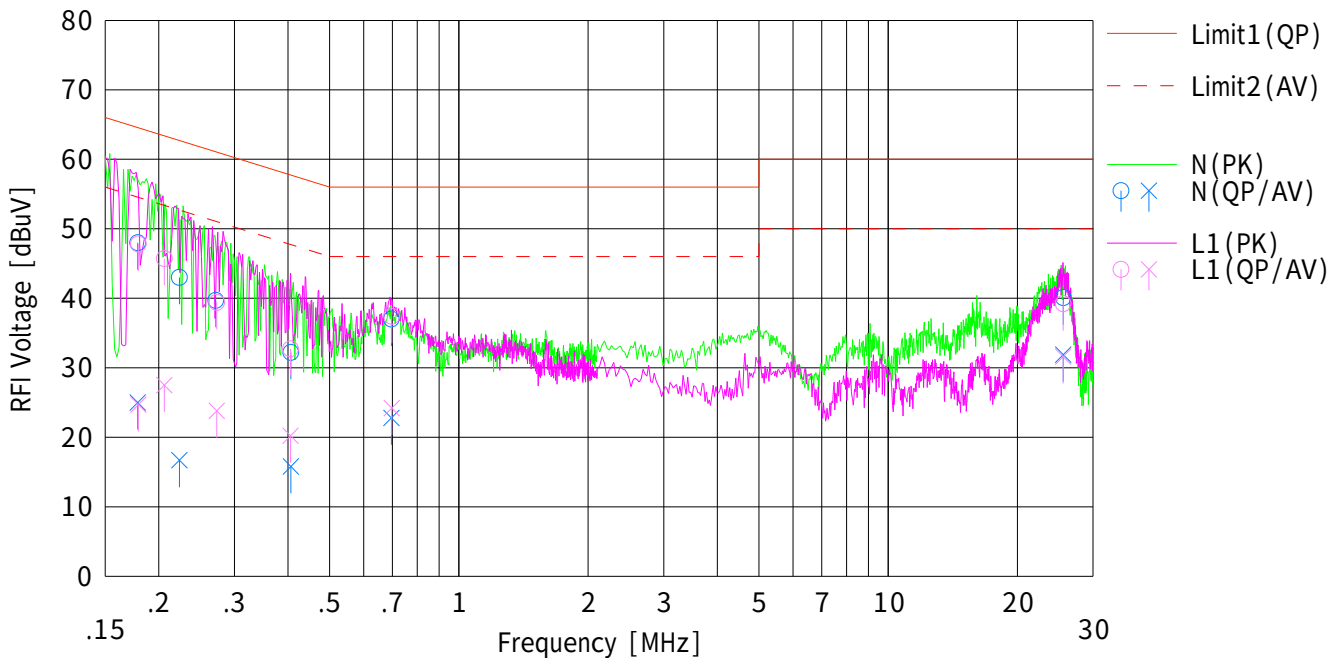
UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room
Date : 2014/03/30

Company : Anritsu Corporation
Kind of EUT : Network Master Pro
Model No. : MT1000A
Serial No. : 708230036
Remarks : -

Mode : Tx 3 - DH5 2402MHz
Order No. : 10229869S
Power : AC120V / 60Hz
Temp./Humi. : 22deg.C./38%RH

Limit1 : FCC 15C(15.207) QP
Limit2 : FCC 15C(15.207) AV

Engineer : Tomochika Sato



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.17883	35.6	12.6	12.4	48.0	25.0	64.5	54.5	16.5	29.5	N	
2	0.22346	30.5	4.2	12.5	43.0	16.7	62.6	52.6	19.6	35.9	N	
3	0.27161	27.2	---	12.5	39.7	---	61.0	51.0	21.3	---	N	
4	0.40596	19.8	3.4	12.4	32.2	15.8	57.7	47.7	25.5	31.9	N	
5	0.69679	24.5	10.3	12.5	37.0	22.8	56.0	46.0	19.0	23.2	N	
6	25.57824	26.5	18.3	13.6	40.1	31.9	60.0	50.0	19.9	18.1	N	
7	0.17919	35.4	12.3	12.4	47.8	24.7	64.5	54.5	16.7	29.8	L1	
8	0.20611	33.2	15.0	12.5	45.7	27.5	63.3	53.3	17.6	25.8	L1	
9	0.27286	26.9	11.3	12.5	39.4	23.8	61.0	51.0	21.6	27.2	L1	
10	0.40560	20.3	7.8	12.4	32.7	20.2	57.7	47.7	25.0	27.5	L1	
11	0.69783	24.9	11.7	12.5	37.4	24.2	56.0	46.0	18.6	21.8	L1	
12	25.56850	25.6	18.0	13.6	39.2	31.6	60.0	50.0	20.8	18.4	L1	

DATA OF CONDUCTED EMISSION TEST

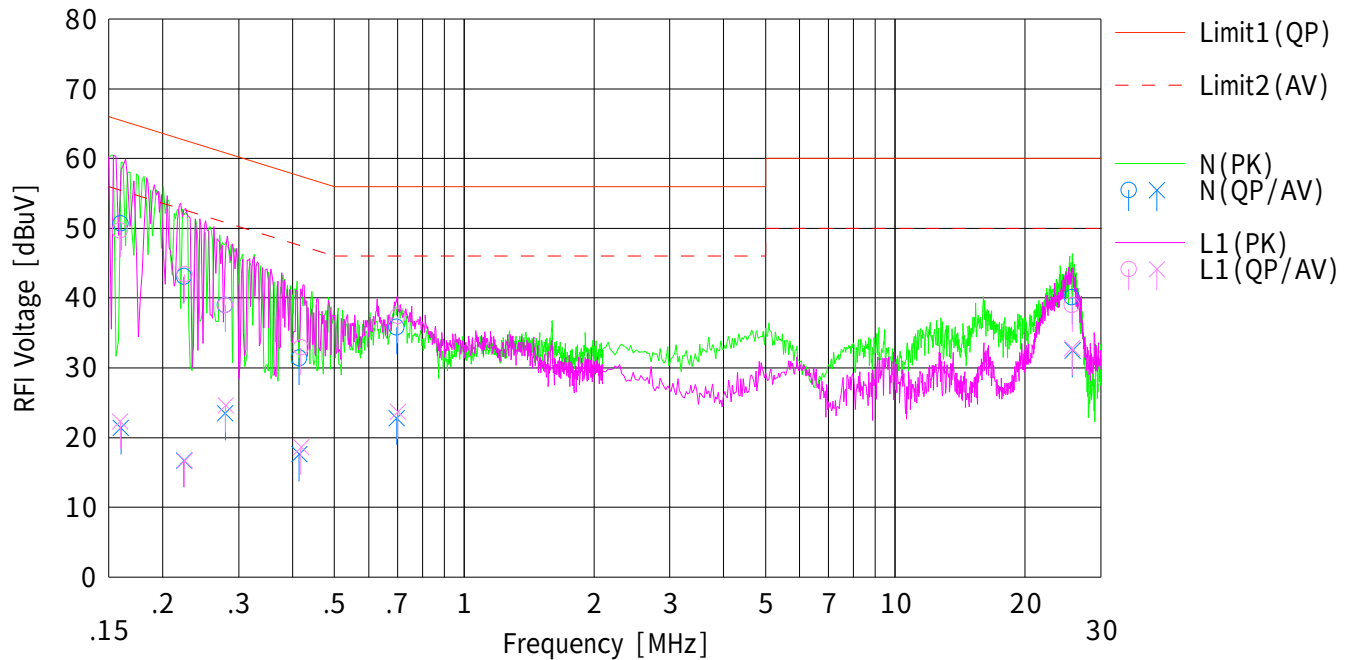
UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room
Date : 2014/03/30

Company : Anritu Corporation
Kind of EUT : Network Master Pro
Model No. : MT1000A
Serial No. : 708230036
Remarks : -

Mode : Tx 3-DH5 2441MHz
Order No. : 10229869S
Power : AC120V / 60Hz
Temp./Humi. : 22deg.C./38%RH

Limit1 : FCC 15C(15.207) QP
Limit2 : FCC 15C(15.207) AV

Engineer : Tomochika Sato



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.16002	38.2	8.9	12.5	50.7	21.4	65.4	55.4	14.7	34.0	N	
2	0.22400	30.6	4.2	12.5	43.1	16.7	62.6	52.6	19.5	35.9	N	
3	0.27909	26.5	11.0	12.5	39.0	23.5	60.8	50.8	21.8	27.3	N	
4	0.41462	19.0	5.2	12.4	31.4	17.6	57.5	47.5	26.1	29.9	N	
5	0.69771	23.3	10.3	12.5	35.8	22.8	56.0	46.0	20.2	23.2	N	
6	25.75492	26.5	18.9	13.6	40.1	32.5	60.0	50.0	19.9	17.5	N	
7	0.15936	37.2	9.8	12.5	49.7	22.3	65.4	55.4	15.7	33.1	L1	
8	0.22468	30.9	4.2	12.5	43.4	16.7	62.6	52.6	19.2	35.9	L1	
9	0.27952	26.5	12.1	12.5	39.0	24.6	60.8	50.8	21.8	26.2	L1	
10	0.41841	20.5	6.2	12.4	32.9	18.6	57.4	47.4	24.5	28.8	L1	
11	0.70173	24.9	11.2	12.5	37.4	23.7	56.0	46.0	18.6	22.3	L1	
12	25.74967	25.4	19.2	13.6	39.0	32.8	60.0	50.0	21.0	17.2	L1	

DATA OF CONDUCTED EMISSION TEST

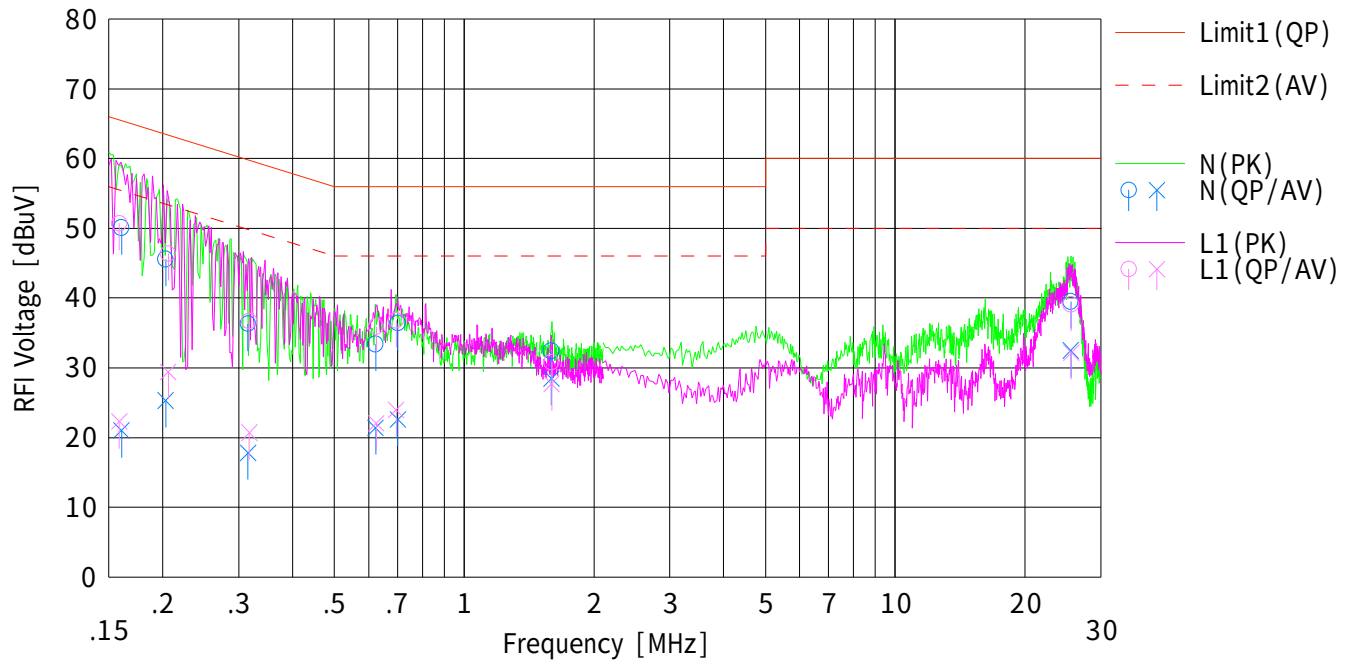
UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room
Date : 2014/03/30

Company : Anritu Corporation
Kind of EUT : Network Master Pro
Model No. : MT1000A
Serial No. : 708230036
Remarks : -

Mode : Tx 3-DH5 2480MHz
Order No. : 10229869S
Power : AC120V / 60Hz
Temp./Humi. : 22deg.C./38%RH

Limit1 : FCC 15C(15.207) QP
Limit2 : FCC 15C(15.207) AV

Engineer : Tomochika Sato



No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.16033	37.6	8.5	12.5	50.1	21.0	65.4	55.4	15.3	34.4	N	
2	0.20308	33.2	12.9	12.4	45.6	25.3	63.4	53.4	17.8	28.1	N	
3	0.31537	23.9	5.4	12.4	36.3	17.8	59.8	49.8	23.5	32.0	N	
4	0.62361	20.9	8.9	12.5	33.4	21.4	56.0	46.0	22.6	24.6	N	
5	0.70125	23.9	10.1	12.5	36.4	22.6	56.0	46.0	19.6	23.4	N	
6	1.59372	19.8	15.9	12.6	32.4	28.5	56.0	46.0	23.6	17.5	N	
7	25.58680	25.9	18.9	13.6	39.5	32.5	60.0	50.0	20.5	17.5	N	
8	0.15859	38.2	9.8	12.5	50.7	22.3	65.5	55.5	14.8	33.2	L1	
9	0.20606	33.9	16.9	12.5	46.4	29.4	63.3	53.3	16.9	23.9	L1	
10	0.31749	24.3	8.3	12.4	36.7	20.7	59.7	49.7	23.0	29.0	L1	
11	0.62579	23.4	9.5	12.5	35.9	22.0	56.0	46.0	20.1	24.0	L1	
12	0.69552	24.3	11.5	12.5	36.8	24.0	56.0	46.0	19.2	22.0	L1	
13	1.59512	18.2	15.1	12.6	30.8	27.7	56.0	46.0	25.2	18.3	L1	
14	25.58939	25.5	18.6	13.6	39.1	32.2	60.0	50.0	20.9	17.8	L1	

20dB Bandwidth and Carrier Frequency Separation

Test place

UL Japan, Inc. Shonan EMC Lab.

No.1 Measurement Room

Date

March 27, 2014

Temperature / Humidity

25 deg.C , 45 %RH

Engineer

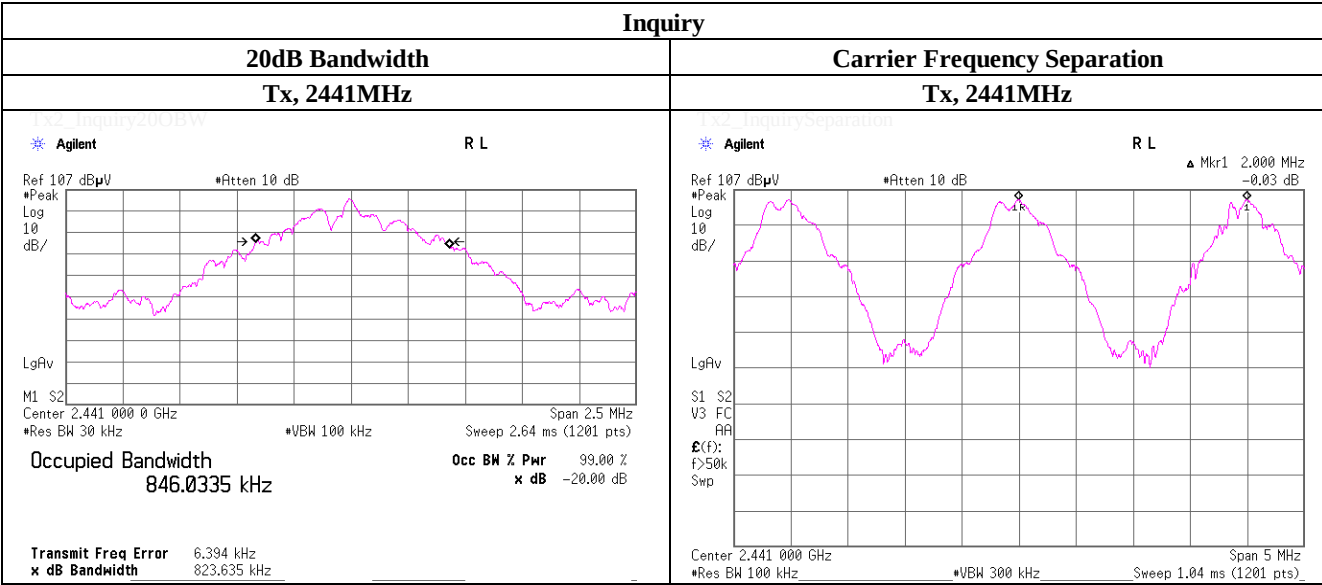
Shinichi Takano

Mode

Tx, Bluetooth, BDR, PRBS9

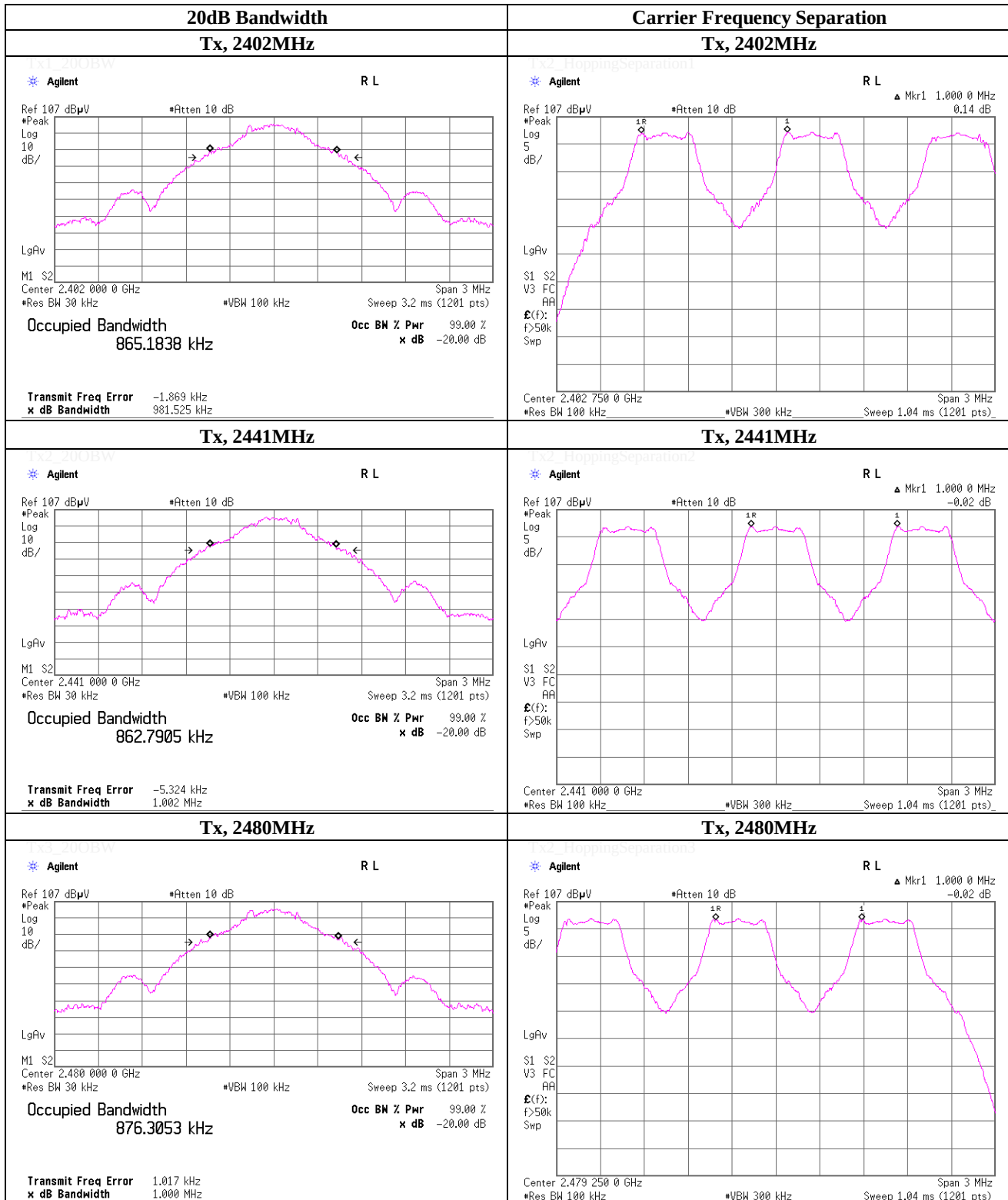
Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency Separation [MHz]
DH5	2402.0	0.982	1.000	>= 0.654
DH5	2441.0	1.002	1.000	>= 0.668
DH5	2480.0	1.000	1.000	>= 0.667
Inquiry	2441.0	0.824	2.000	>= 0.549

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



20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, BDR, PRBS9



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Shonan EMC Lab.

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Facsimile : +81 463 50 6401

20dB Bandwidth and Carrier Frequency Separation

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date March 27, 2014
Temperature / Humidity 25 deg.C , 45 %RH
Engineer Shinichi Takano
Mode Tx, Bluetooth, EDR, PRBS9

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency Separation [MHz]
3-DH5	2402.0	1.339	1.000	>= 0.893
3-DH5	2441.0	1.335	1.000	>= 0.890
3-DH5	2480.0	1.331	1.000	>= 0.887

Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).

No limit applies to 20dB Bandwidth.

UL Japan, Inc.

Shonan EMC Lab.

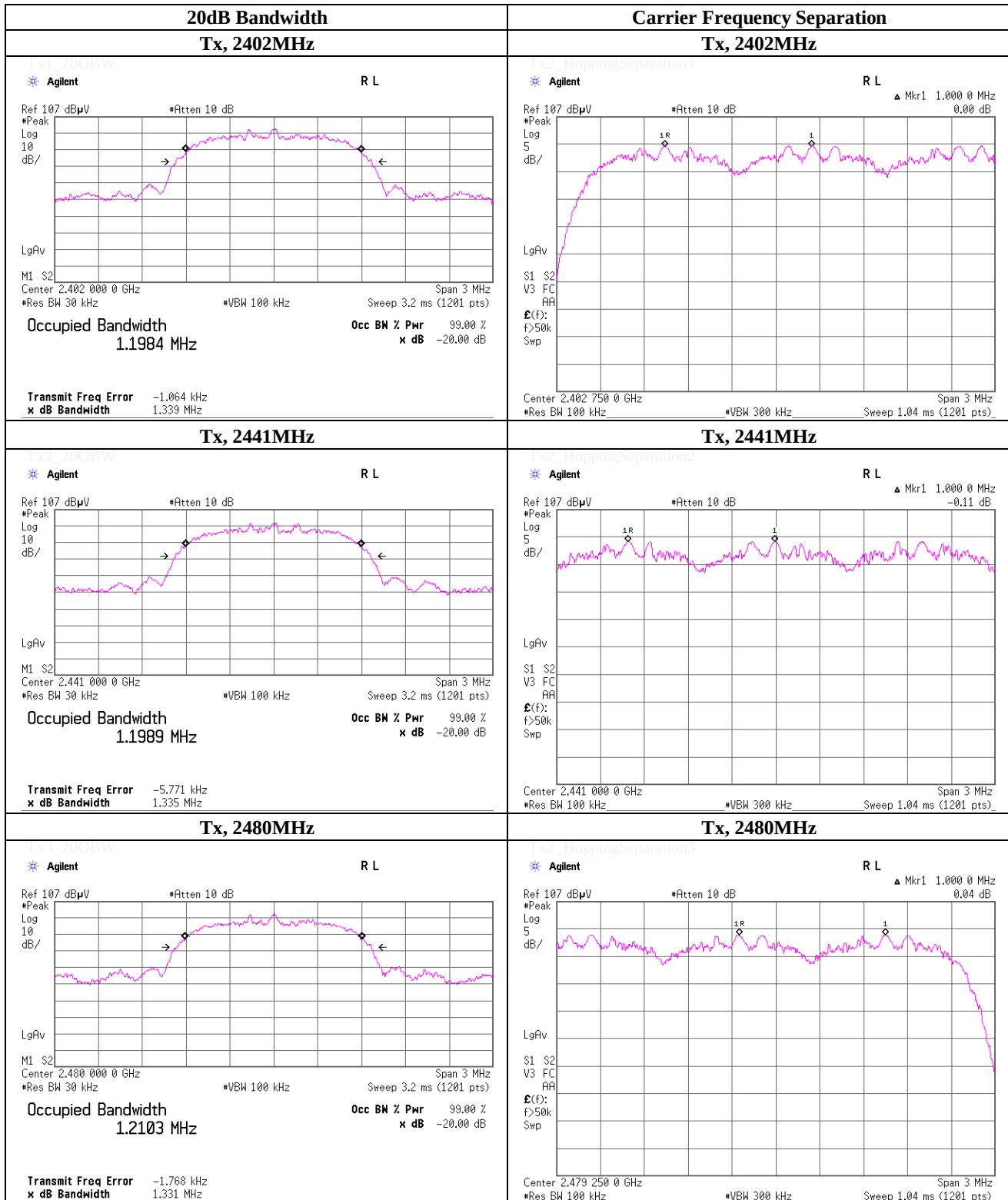
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

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20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, EDR, PRBS9



UL Japan, Inc.

Shonan EMC Lab.

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Number of Hopping Frequency

Test place

UL Japan, Inc. Shonan EMC Lab.

No.1 Measurement Room

Date

March 27, 2014

Temperature / Humidity

25 deg.C , 45 %RH

Engineer

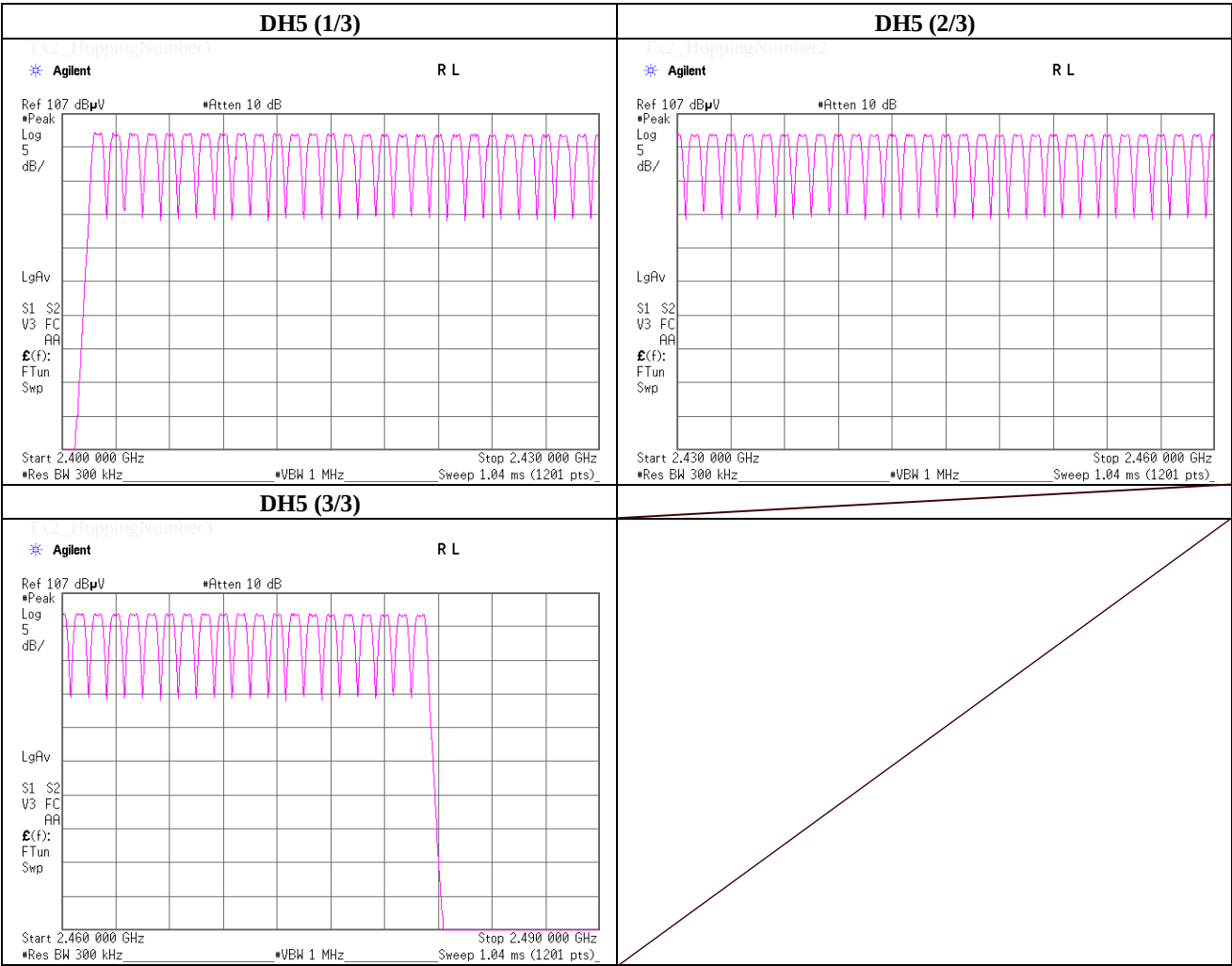
Shinichi Takano

Mode

Tx, Bluetooth, BDR, PRBS9

Mode	Number of Channel [times]	Limit [times]
DH5	79	>= 15

* Test was not performed at AFH mode whose number of hopping channel is 20 channels because this Bluetooth radio is in compliance of Bluetooth Specification.



Number of Hopping Frequency

Test place

UL Japan, Inc. Shonan EMC Lab.

No.5 Shielded Room

Date

March 27, 2014

Temperature / Humidity

25 deg.C , 45 %RH

Engineer

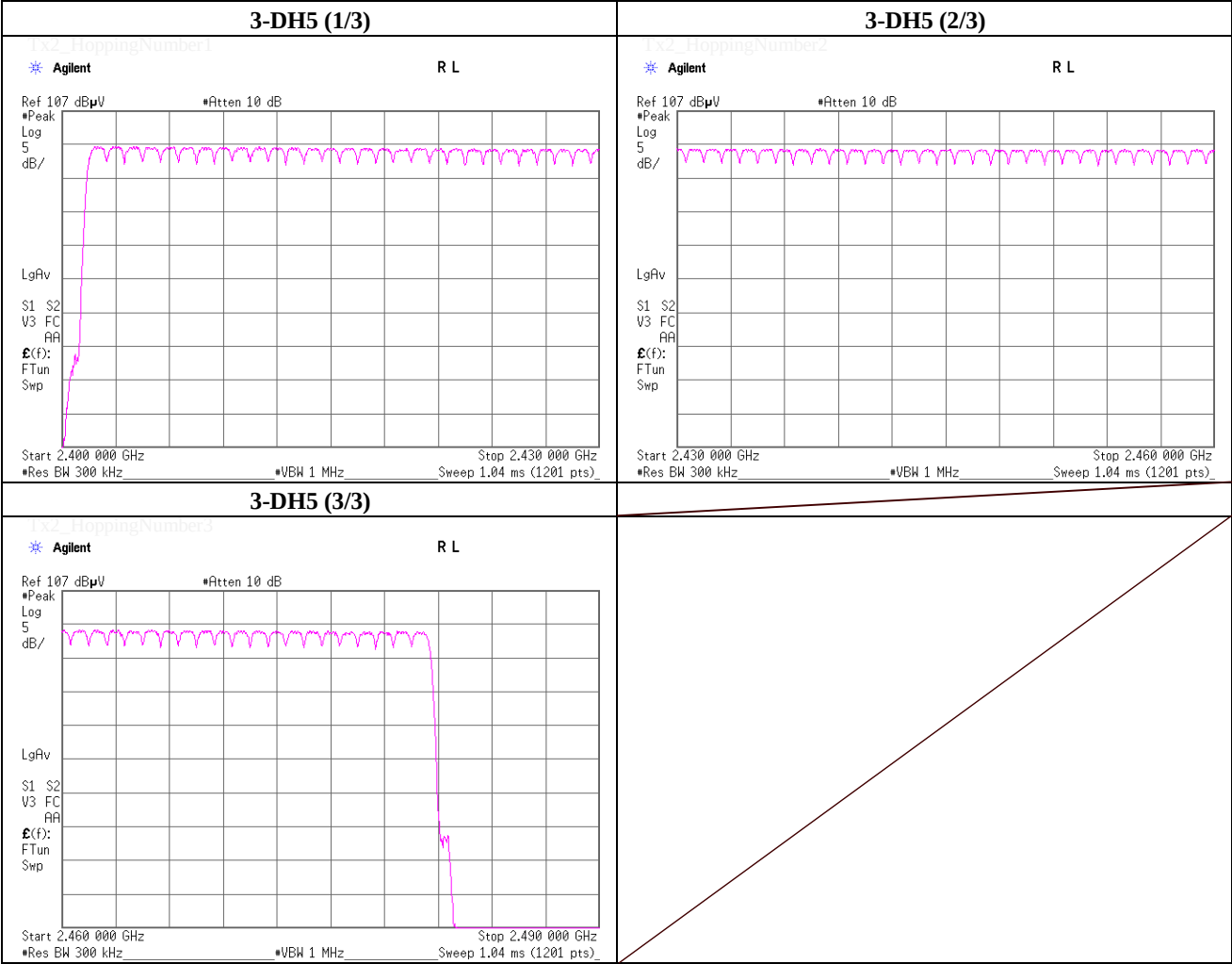
Shinichi Takano

Mode

Tx, Bluetooth, EDR, PRBS9

Mode	Number of Channel [times]	Limit [times]
3-DH5	79	>= 15

* Test was not performed at AFH mode whose number of hopping channel is 20 channels because this Bluetooth radio is in compliance of Bluetooth Specification.



Number of Hopping Frequency

Test place

UL Japan, Inc. Shonan EMC Lab.

No.1 Measurement Room

Date

March 27, 2014

Temperature / Humidity

25 deg.C , 45 %RH

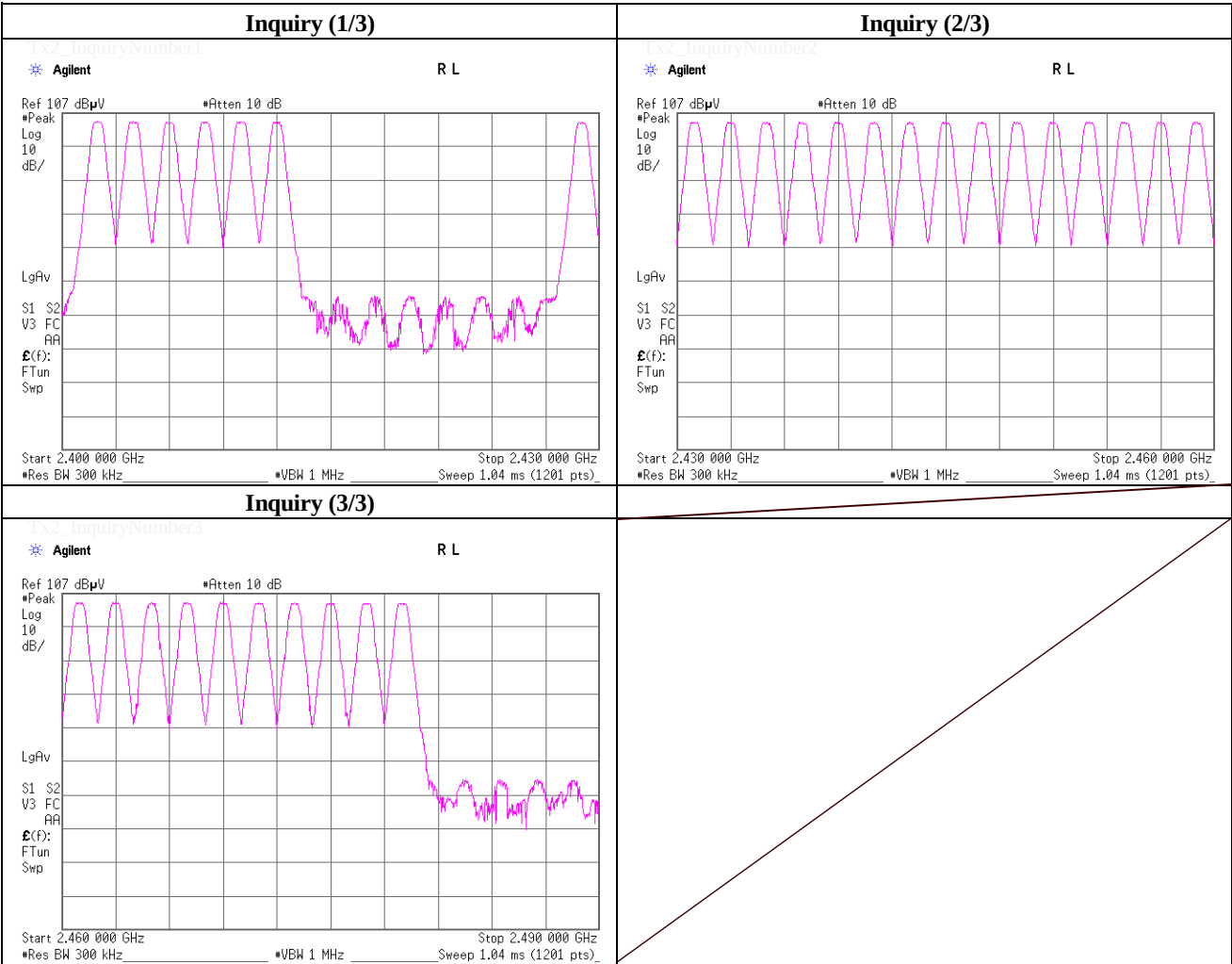
Engineer

Shinichi Takano

Mode

Tx, Bluetooth, Inquiry

Mode	Number of Channel [times]	Limit [times]
Inquiry	32	>= 15



Dwell Time

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	March 27, 2014	
Temperature / Humidity	25 deg.C , 45 %RH	
Engineer	Shinichi Takano	
Mode	Tx, Bluetooth, BDR, PRBS9	

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	49.6	/ 5.0 sec. x 31.6 sec. = 314 times	0.422	132	400
DH3	27.0	/ 5.0 sec. x 31.6 sec. = 171 times	1.684	288	400
DH5	18.6	/ 5.0 sec. x 31.6 sec. = 118 times	2.934	346	400
Inquiry	100.0	/ 1.0 sec. x 12.8 sec. = 1280 times	0.130	166	400

Sample Calculation

Result = Number of transmission x Length of transmission time

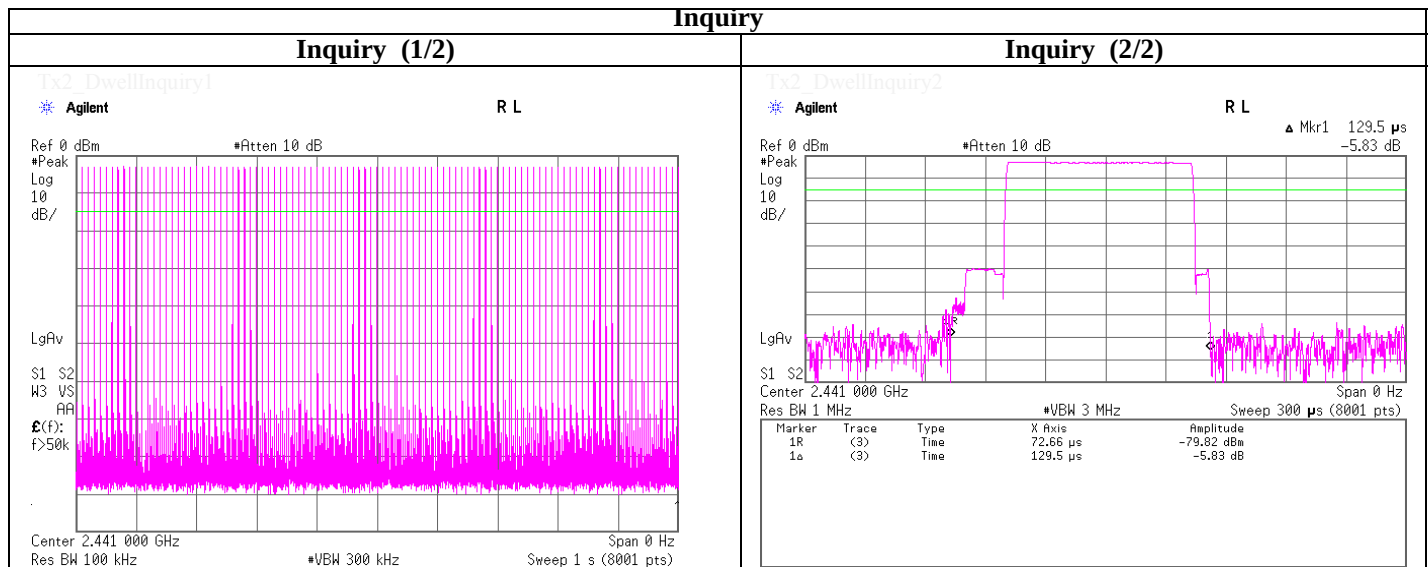
*Average data of 5 tests.(except Inquiry)

Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	50	49	48	50	51	49.6
DH3	29	27	28	25	26	27.0
DH5	15	19	22	17	20	18.6
Inquiry	100	100	100	100	100	100.0

Sample Calculation

Average= Summation(Sampling 1 to 5) / 5

* This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in $N \times 0.4s$, where N is the number of channels being used in the hopping sequence ($20 \leq N \leq 79$), is always less than 0.4s regardless of packet size (DH1, DH3 or DH5). This is confirmed in the test report for $N=79$.



UL Japan, Inc.

Shonan EMC Lab.

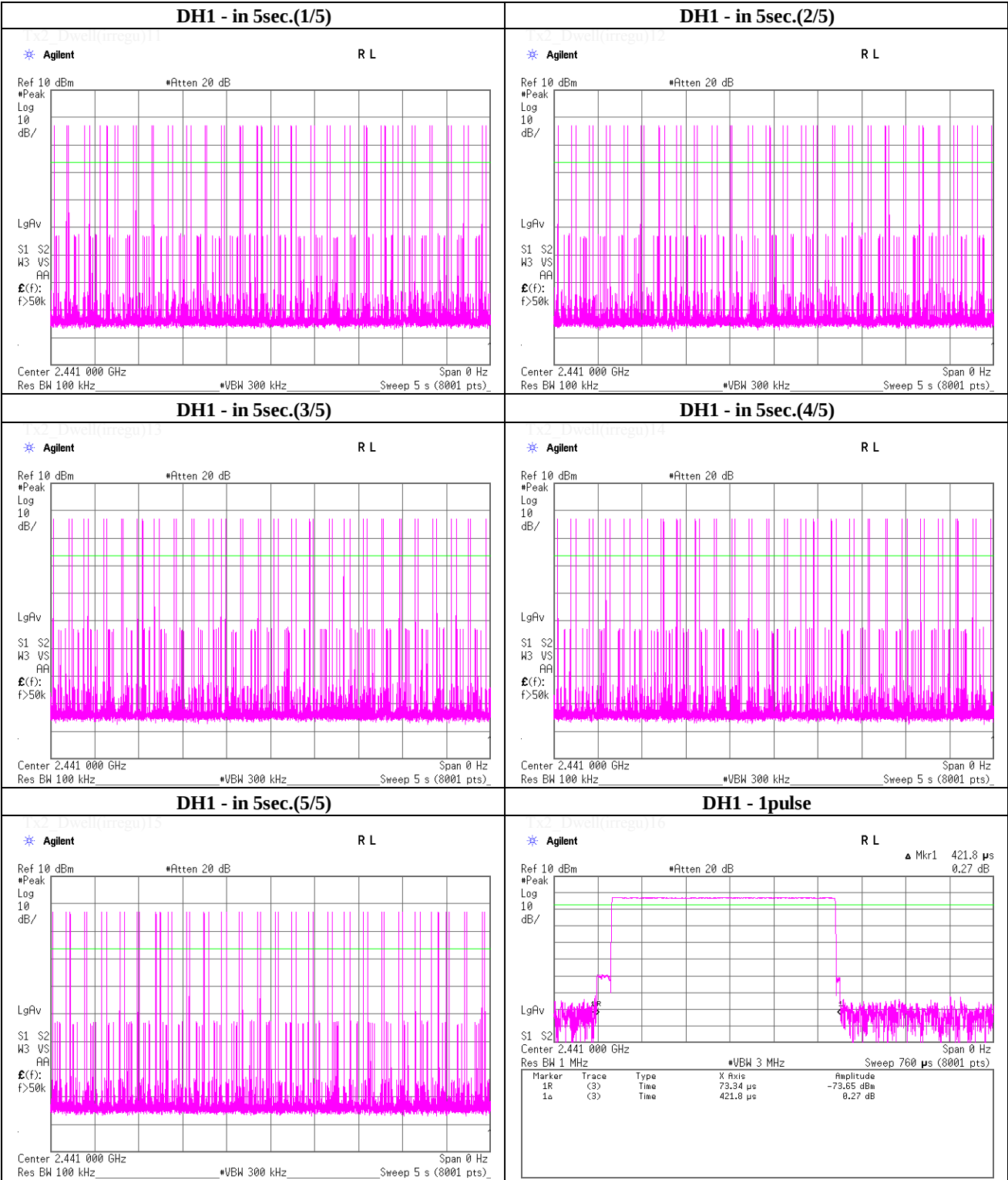
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

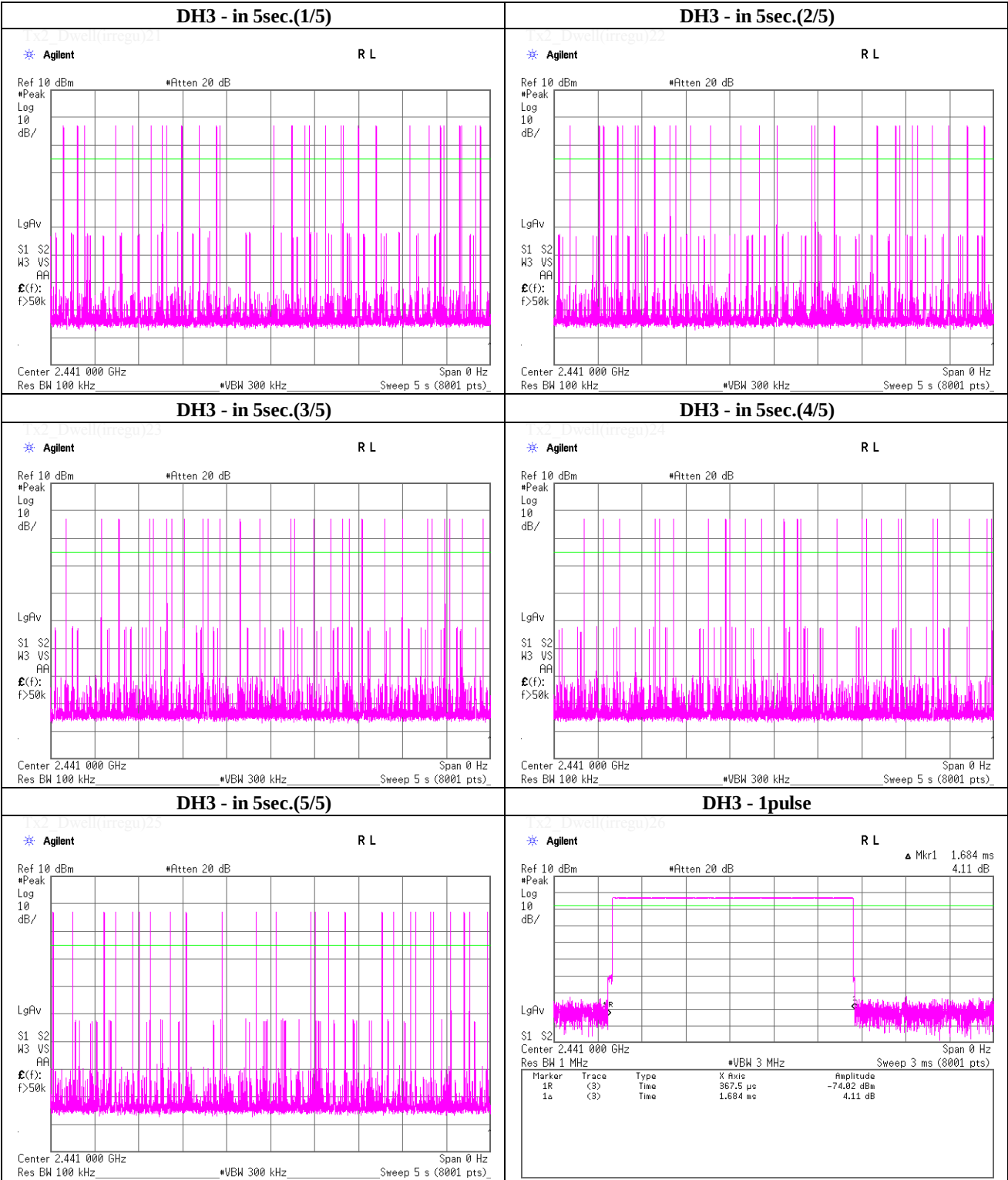
Dwell time

Tx, Bluetooth, BDR, PRBS9



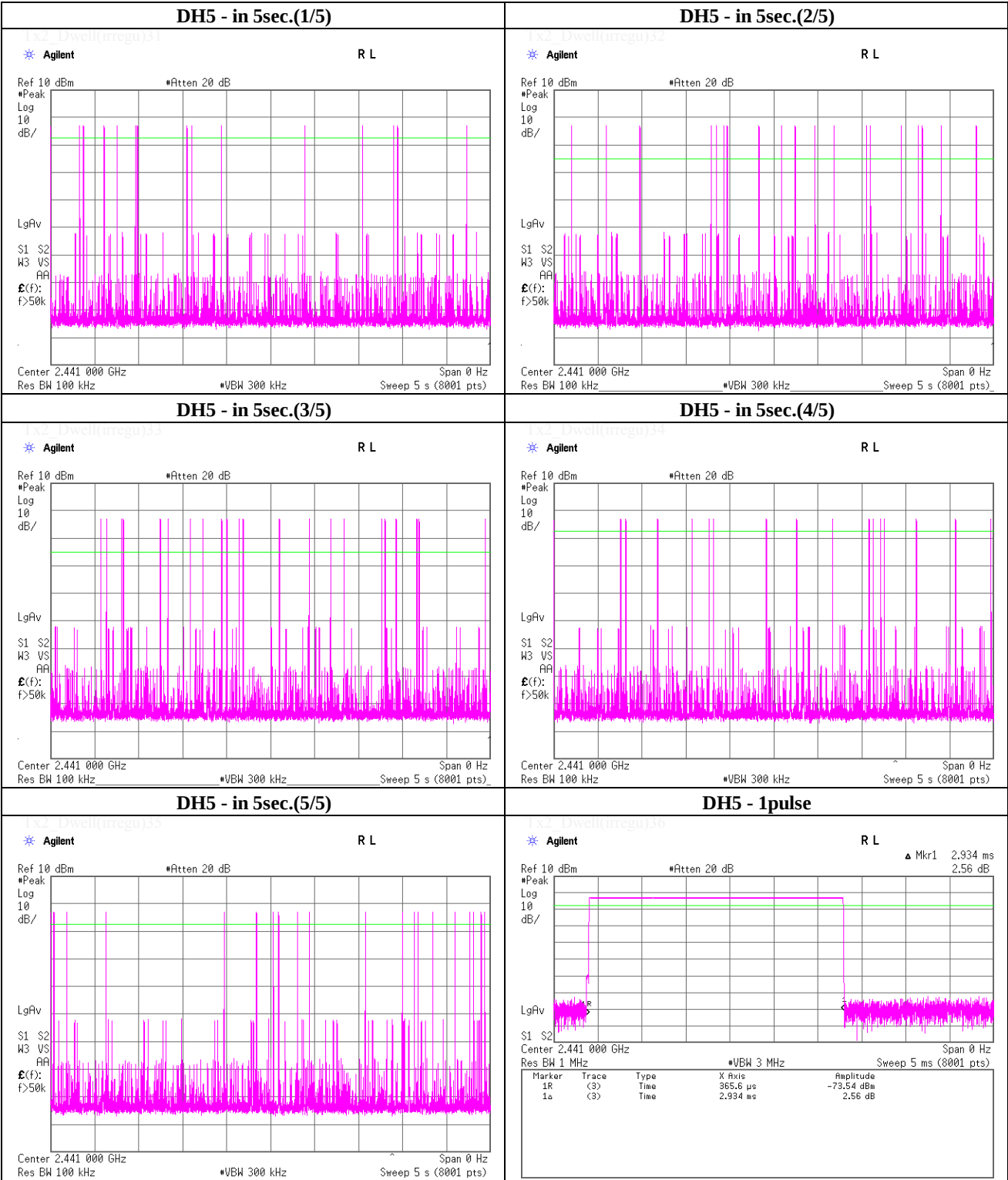
Dwell time

Tx, Bluetooth, BDR, PRBS9



Dwell time

Tx, Bluetooth, BDR, PRBS9



Dwell Time

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date March 27, 2014
 Temperature / Humidity 25 deg.C , 45 %RH
 Engineer Shinichi Takano
 Mode Tx, Bluetooth, EDR, PRBS9

Mode	Number of transmission in a 31.6 (79 Hopping x 0.4) second	Length of transmission time [msec]	Result [msec]	Limit [msec]
3-DH1	49.6 / 5.0 sec. x 31.6 sec. = 314 times	0.429	135	400
3-DH3	25.8 / 5.0 sec. x 31.6 sec. = 164 times	1.680	276	400
3-DH5	19.0 / 5.0 sec. x 31.6 sec. = 121 times	2.931	355	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	
3-DH1	48	51	51	49	49	49.6
3-DH3	25	23	27	29	25	25.8
3-DH5	21	18	16	20	20	19.0

Sample Calculation

Average= Summation(Sampling 1 to 5) / 5

* This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in $N \times 0.4s$, where N is the number of channels being used in the hopping sequence ($20 \leq N \leq 79$), is always less than 0.4s regardless of packet size (3-DH1, 3-DH3 or 3-DH5). This is confirmed in the test report for $N=79$.

UL Japan, Inc.

Shonan EMC Lab.

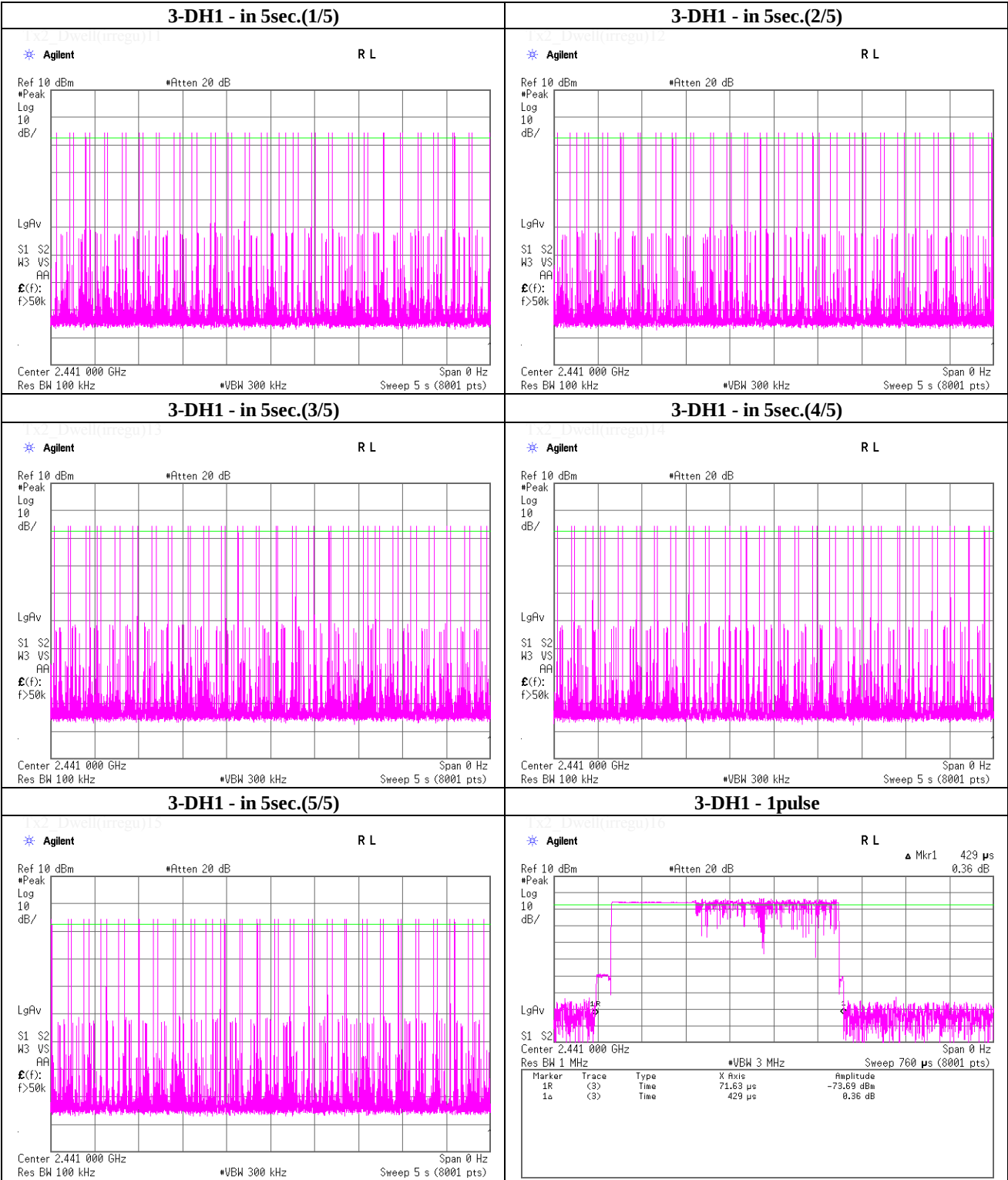
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

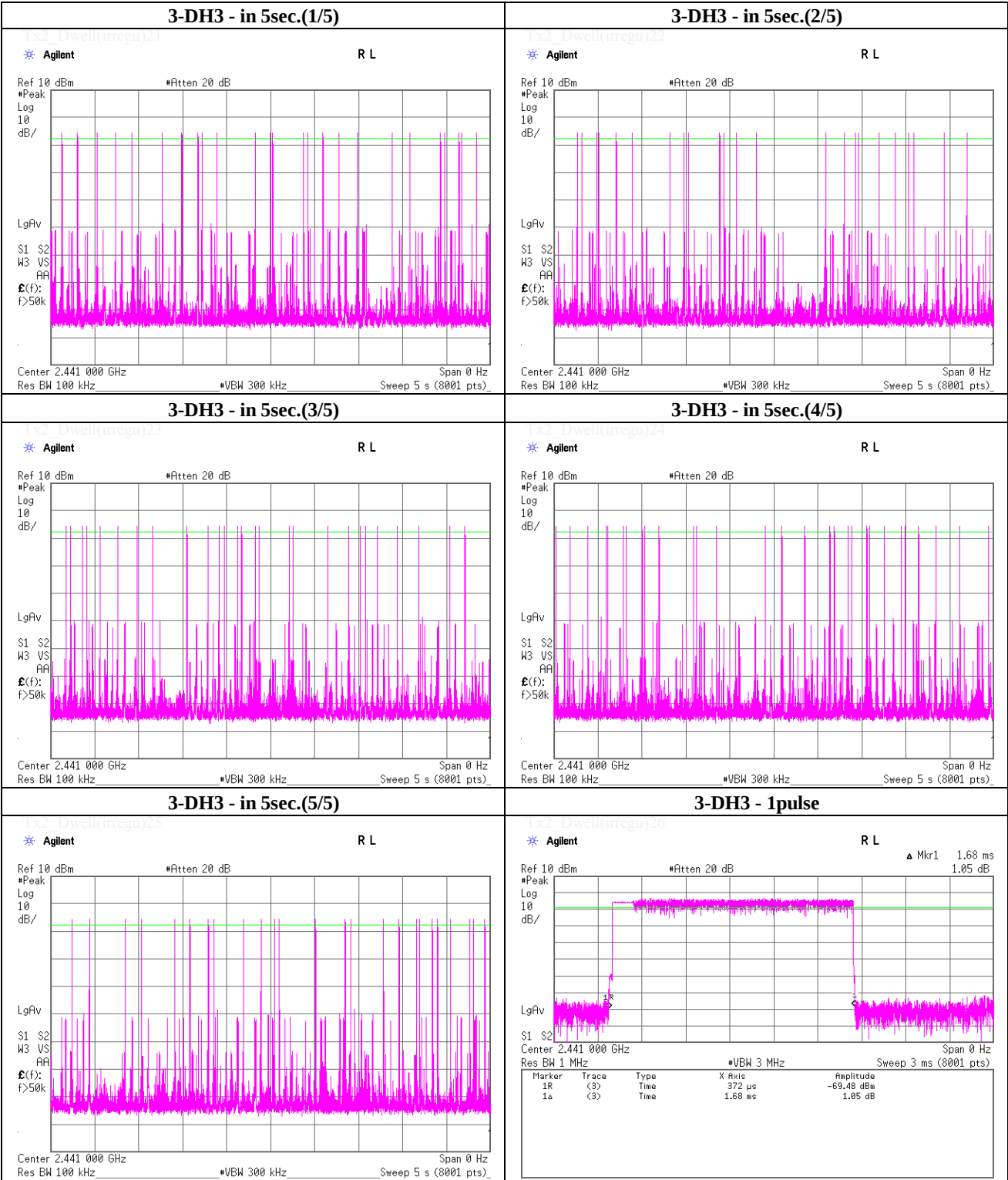
Dwell time

Tx, Bluetooth, EDR, PRBS9



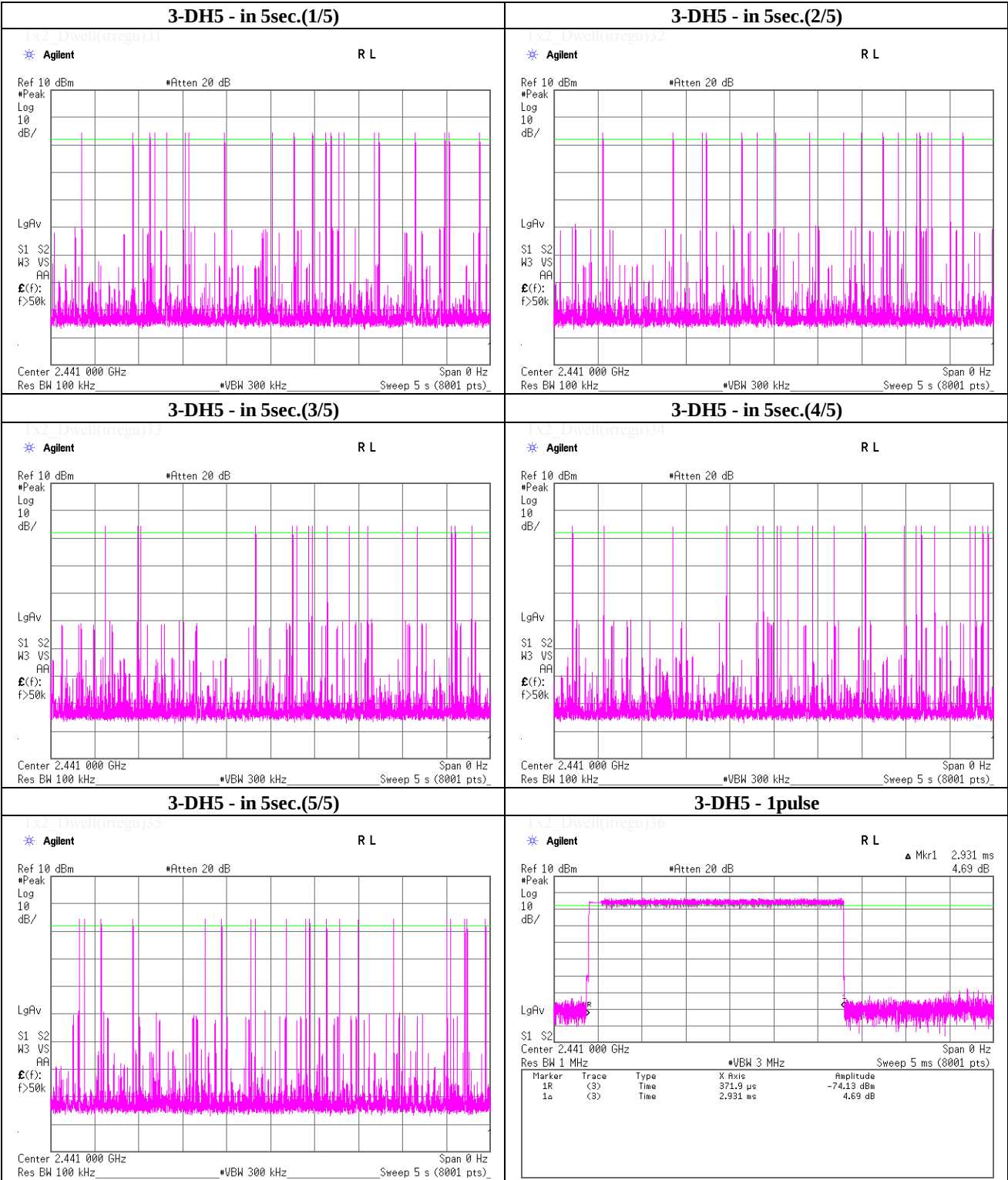
Dwell time

Tx, Bluetooth, EDR, PRBS9



Dwell time

Tx, Bluetooth, EDR, PRBS9



Maximum Peak Conducted Output Power (Conducted)

Test place UL Japan, Inc. Shonan EMC Lab. No.1 Measurement Room
 Date March 27, 2014
 Temperature / Humidity 25 deg.C , 45 %RH
 Engineer Shinichi Takano
 Mode Tx, Bluetooth

(* P/M: Power Meter with power sensor)

	Freq. [MHz]	P/M (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-2.79	1.55	10.04	8.80	7.59	20.97	125	12.17
DH5	2441.0	-3.01	1.56	10.04	8.59	7.23	20.97	125	12.38
DH5	2480.0	-3.08	1.57	10.04	8.53	7.13	20.97	125	12.44
2-DH5	2402.0	-3.09	1.55	10.04	8.50	7.08	20.97	125	12.47
2-DH5	2441.0	-3.32	1.56	10.04	8.28	6.73	20.97	125	12.69
2-DH5	2480.0	-3.41	1.57	10.04	8.20	6.61	20.97	125	12.77
3-DH5	2402.0	-2.66	1.55	10.04	8.93	7.82	20.97	125	12.04
3-DH5	2441.0	-2.83	1.56	10.04	8.77	7.53	20.97	125	12.20
3-DH5	2480.0	-2.88	1.57	10.04	8.73	7.46	20.97	125	12.24

Sample Calculation:

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

Reference data for SAR testing

(* AV: Average)

	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
					[dBm]	[mW]
DH5	2402.0	-4.04	1.55	10.04	7.55	5.69
DH5	2441.0	-4.25	1.56	10.04	7.35	5.43
DH5	2480.0	-4.32	1.57	10.04	7.29	5.36
2-DH5	2402.0	-5.91	1.55	10.04	5.68	3.70
2-DH5	2441.0	-5.81	1.56	10.04	5.79	3.79
2-DH5	2480.0	-7.18	1.57	10.04	4.43	2.77
3-DH5	2402.0	-6.70	1.55	10.04	4.89	3.08
3-DH5	2441.0	-7.10	1.56	10.04	4.50	2.82
3-DH5	2480.0	-7.36	1.57	10.04	4.25	2.66

Sample Calculation:

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

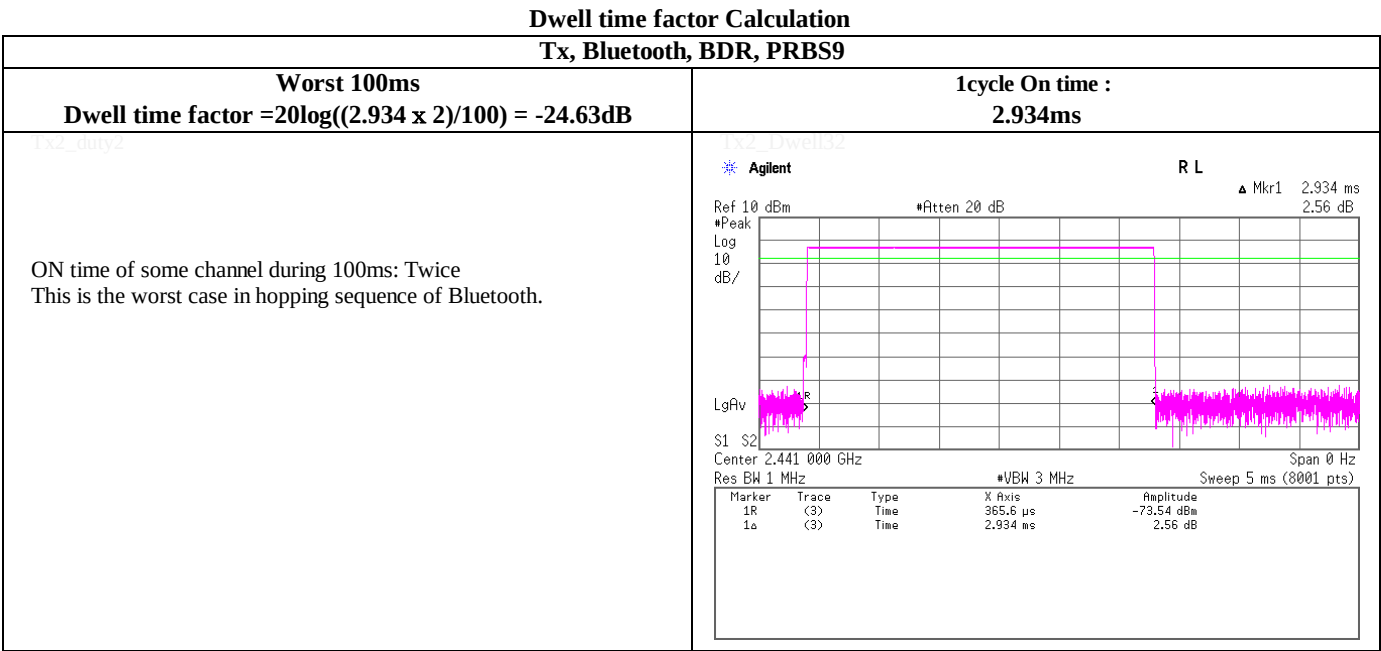
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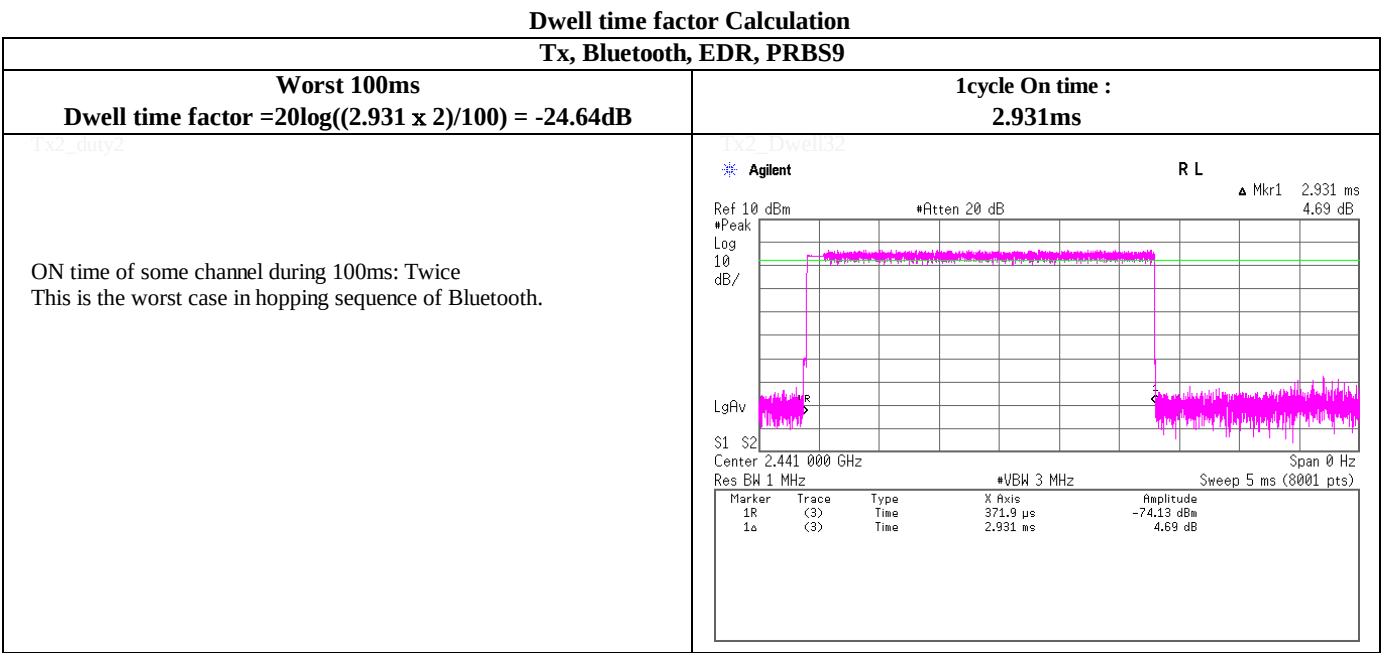
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Dwell time factor Calculation chart



Dwell time factor Calculation chart



Radiated Emission

Test place No.1 and No.3 Semi Anechoic Chamber
 Date March 29, 2014 March 31, 2014 April 1, 2014
 Temperature / Humidity 20 deg.C, 35 %RH 25 deg.C, 36 %RH 24 deg.C, 31 %RH
 Engineer Wataru Kojima Kenichi Adachi Wataru Kojima
 Mode Tx, 2402 MHz
 Tx, Bluetooth, BDR

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	83.939	QP	49.0	7.0	7.5	32.1	31.4	40.0	8.6	233	340	
Hori.	271.527	QP	46.4	17.8	8.4	32.0	40.6	46.0	5.4	184	118	
Hori.	400.001	QP	52.2	16.3	9.0	32.0	45.5	46.0	0.5	156	210	
Hori.	1750.006	PK	48.8	26.1	14.0	38.6	50.3	73.9	23.6	100	297	
Hori.	1858.103	PK	43.0	26.3	14.1	38.7	44.7	73.9	29.2	100	0	
Hori.	2390.000	PK	43.7	26.8	14.7	38.2	47.0	73.9	26.9	116	183	
Hori.	2400.000	PK	47.1	26.8	14.7	38.2	50.4	73.9	23.5	116	183	
Hori.	3202.650	PK	51.7	28.2	6.7	38.1	48.5	73.9	25.4	100	202	
Hori.	4804.000	PK	54.2	30.9	7.9	37.1	55.9	73.9	18.0	100	191	
Hori.	7206.000	PK	43.5	37.1	9.1	39.4	50.3	73.9	23.6	100	0	Floor noise
Hori.	9608.000	PK	42.5	38.6	10.2	37.6	53.7	73.9	20.2	100	0	Floor noise
Hori.	12010.000	PK	41.1	39.6	11.2	38.5	53.4	73.9	20.5	100	0	Floor noise
Hori.	1750.006	AV	42.1	26.1	14.0	38.6	43.6	53.9	10.3	100	297	
Hori.	1858.103	AV	32.2	26.3	14.1	38.7	33.9	53.9	20.0	100	0	
Hori.	2390.000	AV	32.0	26.8	14.7	38.2	35.3	53.9	18.6	116	183	
Hori.	2400.000	AV	34.7	26.8	14.7	38.2	38.0	53.9	15.9	116	183	
Hori.	3202.650	AV	46.9	28.2	6.7	38.1	43.7	53.9	10.2	100	202	
Hori.	7206.000	AV	33.1	37.1	9.1	39.4	39.9	53.9	14.0	100	0	Floor noise
Hori.	9608.000	AV	30.1	38.6	10.2	37.6	41.3	53.9	12.6	100	0	Floor noise
Hori.	12010.000	AV	30.3	39.6	11.2	38.5	42.6	53.9	11.3	100	0	Floor noise
Vert.	271.527	QP	47.3	17.8	8.4	32.0	41.5	46.0	4.5	201	183	
Vert.	400.001	QP	51.0	16.3	9.0	32.0	44.3	46.0	1.7	151	183	
Vert.	1750.006	PK	45.8	26.1	14.0	38.6	47.3	73.9	26.6	100	329	
Vert.	1849.970	PK	44.5	26.3	14.1	38.7	46.2	73.9	27.7	100	278	
Vert.	2390.000	PK	44.2	26.8	14.7	38.2	47.5	73.9	26.4	100	187	
Vert.	2400.000	PK	46.3	26.8	14.7	38.2	49.6	73.9	24.3	100	187	
Vert.	3202.650	PK	52.2	28.2	6.7	38.1	49.0	73.9	24.9	126	162	
Vert.	4804.000	PK	55.1	30.9	7.9	37.1	56.8	73.9	17.1	100	173	
Vert.	7206.000	PK	45.1	37.1	9.1	39.4	51.9	73.9	22.0	100	0	Floor noise
Vert.	9608.000	PK	42.2	38.6	10.2	37.6	53.4	73.9	20.5	100	0	Floor noise
Vert.	12010.000	PK	42.1	39.6	11.2	38.5	54.4	73.9	19.5	100	0	Floor noise
Vert.	1750.006	AV	39.0	26.1	14.0	38.6	40.5	53.9	13.4	100	329	
Vert.	1849.970	AV	33.9	26.3	14.1	38.7	35.6	53.9	18.3	100	278	
Vert.	2390.000	AV	32.1	26.8	14.7	38.2	35.4	53.9	18.5	100	187	
Vert.	2400.000	AV	34.2	26.8	14.7	38.2	37.5	53.9	16.4	100	187	
Vert.	3202.650	AV	47.3	28.2	6.7	38.1	44.1	53.9	9.8	126	162	
Vert.	7206.000	AV	33.1	37.1	9.1	39.4	39.9	53.9	14.0	100	0	Floor noise
Vert.	9608.000	AV	30.1	38.6	10.2	37.6	41.3	53.9	12.6	100	0	Floor noise
Vert.	12010.000	AV	30.1	39.6	11.2	38.5	42.4	53.9	11.5	100	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

Dwell time factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Dwell Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4804.000	AV	49.8	30.9	7.9	37.1	-24.6	26.9	53.9	27.0	
Vert.	4804.000	AV	50.5	30.9	7.9	37.1	-24.6	27.6	53.9	26.3	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier) + Dwell(time)factor

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet (RBW 100kHz, VBW 300kHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	93.8	26.8	14.7	38.2	97.1	-	-	
Hori.	193.944	QP	46.3	16.3	7.8	32.1	38.3	77.1	38.8	
Hori.	300.001	QP	50.5	13.8	8.5	32.0	40.8	77.1	36.3	
Hori.	892.166	QP	40.6	21.5	10.8	31.1	41.8	77.1	35.3	
Vert.	2402.000	PK	92.9	26.8	14.7	38.2	96.2	-	-	
Vert.	193.944	QP	48.3	16.3	7.8	32.1	40.3	76.2	35.9	
Vert.	300.001	QP	41.4	13.8	8.5	32.0	31.7	76.2	44.5	
Vert.	892.166	QP	43.6	21.5	10.8	31.1	44.8	76.2	31.4	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

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Radiated Emission

Test place No.1 and No.3 Semi Anechoic Chamber
 Date March 29, 2014 March 31, 2014 April 1, 2014
 Temperature / Humidity 20 deg.C, 35 %RH 25 deg.C, 36 %RH 24 deg.C, 31 %RH
 Engineer Wataru Kojima Kenichi Adachi Wataru Kojima
 Mode Tx, 2441 MHz
 Tx, Bluetooth, BDR

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	83.941	QP	48.8	7.0	7.5	32.1	31.2	40.0	8.8	231	338	
Hori.	271.529	QP	46.0	17.8	8.4	32.0	40.2	46.0	5.8	187	114	
Hori.	400.001	QP	52.3	16.3	9.0	32.0	45.6	46.0	0.4	158	208	
Hori.	1750.164	PK	48.2	26.1	14.0	38.6	49.7	73.9	24.2	100	173	
Hori.	1845.583	PK	50.4	26.3	14.1	38.7	52.1	73.9	21.8	100	15	
Hori.	3000.000	PK	46.1	28.3	6.6	38.1	42.9	73.9	31.0	100	307	
Hori.	4882.000	PK	54.4	31.4	7.9	37.0	56.7	73.9	17.2	100	188	
Hori.	7323.000	PK	44.1	37.2	9.1	39.4	51.0	73.9	22.9	100	0	Floor noise
Hori.	9764.000	PK	40.4	38.8	10.1	37.5	51.8	73.9	22.1	100	0	Floor noise
Hori.	12205.000	PK	42.0	39.6	11.3	38.3	54.6	73.9	19.3	100	0	Floor noise
Hori.	1750.164	AV	41.2	26.1	14.0	38.6	42.7	53.9	11.2	100	173	
Hori.	1845.583	AV	39.9	26.3	14.1	38.7	41.6	53.9	12.3	100	15	
Hori.	3000.000	AV	39.8	28.3	6.6	38.1	36.6	53.9	17.3	100	307	
Hori.	7323.000	AV	32.9	37.2	9.1	39.4	39.8	53.9	14.1	100	0	Floor noise
Hori.	9764.000	AV	30.2	38.8	10.1	37.5	41.6	53.9	12.3	100	0	Floor noise
Hori.	12205.000	AV	30.4	39.6	11.3	38.3	43.0	53.9	10.9	100	0	Floor noise
Vert.	271.529	QP	46.8	17.8	8.4	32.0	41.0	46.0	5.0	100	186	
Vert.	400.001	QP	50.8	16.3	9.0	32.0	44.1	46.0	1.9	153	184	
Vert.	1750.005	PK	46.9	26.1	14.0	38.6	48.4	73.9	25.5	100	233	
Vert.	1850.500	PK	49.4	26.3	14.1	38.7	51.1	73.9	22.8	100	51	
Vert.	2200.004	PK	45.9	26.7	14.5	38.5	48.6	73.9	25.3	100	256	
Vert.	3000.000	PK	48.5	28.3	6.6	38.1	45.3	73.9	28.6	121	285	
Vert.	4882.000	PK	56.5	31.4	7.9	37.0	58.8	73.9	15.1	100	177	
Vert.	7323.000	PK	44.7	37.2	9.1	39.4	51.6	73.9	22.3	100	0	Floor noise
Vert.	9764.000	PK	42.2	38.8	10.1	37.5	53.6	73.9	20.3	100	0	Floor noise
Vert.	12205.000	PK	43.2	39.6	11.3	38.3	55.8	73.9	18.1	100	0	Floor noise
Vert.	1750.005	AV	39.7	26.1	14.0	38.6	41.2	53.9	12.7	100	233	
Vert.	1850.500	AV	38.5	26.3	14.1	38.7	40.2	53.9	13.7	100	51	
Vert.	2200.004	AV	37.1	26.7	14.5	38.5	39.8	53.9	14.1	100	256	
Vert.	3000.000	AV	42.5	28.3	6.6	38.1	39.3	53.9	14.6	121	285	
Vert.	7323.000	AV	33.2	37.2	9.1	39.4	40.1	53.9	13.8	100	0	Floor noise
Vert.	9764.000	AV	30.7	38.8	10.1	37.5	42.1	53.9	11.8	100	0	Floor noise
Vert.	12205.000	AV	30.6	39.6	11.3	38.3	43.2	53.9	10.7	100	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

Dwell time factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Dwell Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4882.000	AV	49.7	31.4	7.9	37.0	-24.6	27.4	53.9	26.5	
Vert.	4882.000	AV	51.9	31.4	7.9	37.0	-24.6	29.6	53.9	24.3	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier) + Dwell(time)factor

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet (RBW 100kHz, VBW 300kHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2441.000	PK	97.1	26.8	14.7	38.2	100.4	-	-	
Hori.	193.943	QP	46.0	16.3	7.8	32.1	38.0	80.4	42.4	
Hori.	300.002	QP	50.0	13.8	8.5	32.0	40.3	80.4	40.1	
Hori.	892.167	QP	40.0	21.5	10.8	31.1	41.2	80.4	39.2	
Vert.	2441.000	PK	93.8	26.8	14.7	38.2	97.1	-	-	
Vert.	193.943	QP	48.0	16.3	7.8	32.1	40.0	77.1	37.1	
Vert.	300.002	QP	40.8	13.8	8.5	32.0	31.1	77.1	46.0	
Vert.	892.167	QP	43.1	21.5	10.8	31.1	44.3	77.1	32.8	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

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Radiated Emission

Test place No.1 and No.3 Semi Anechoic Chamber
Date March 29, 2014 March 31, 2014 April 1, 2014
Temperature / Humidity 20 deg.C, 35 %RH 25 deg.C, 36 %RH 24 deg.C, 31 %RH
Engineer Wataru Kojima Kenichi Adachi Wataru Kojima
Mode Tx, 2480 MHz
 Tx, Bluetooth, BDR

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	83.940	QP	48.9	7.0	7.5	32.1	31.3	40.0	8.7	236	339	
Hori.	271.526	QP	46.2	17.8	8.4	32.0	40.4	46.0	5.6	106	113	
Hori.	400.001	QP	52.3	16.3	9.0	32.0	45.6	46.0	0.4	158	209	
Hori.	1750.000	PK	47.1	26.1	14.0	38.6	48.6	73.9	25.3	100	307	
Hori.	1848.239	PK	52.8	26.3	14.1	38.7	54.5	73.9	19.4	100	23	
Hori.	2483.500	PK	47.6	26.9	14.8	38.1	51.2	73.9	22.7	110	190	
Hori.	3000.000	PK	47.0	28.3	6.6	38.1	43.8	73.9	30.1	100	282	
Hori.	4960.000	PK	51.2	31.8	7.8	37.0	53.8	73.9	20.1	100	191	
Hori.	7440.000	PK	44.9	37.4	9.3	39.4	52.2	73.9	21.7	100	0	Floor noise
Hori.	9920.000	PK	40.3	38.9	10.1	37.5	51.8	73.9	22.1	100	0	Floor noise
Hori.	12400.000	PK	42.2	39.7	11.4	38.2	55.1	73.9	18.8	100	0	Floor noise
Hori.	1750.000	AV	40.3	26.1	14.0	38.6	41.8	53.9	12.1	100	307	
Hori.	1848.239	AV	40.4	26.3	14.1	38.7	42.1	53.9	11.8	100	23	
Hori.	2483.500	AV	34.6	26.9	14.8	38.1	38.2	53.9	15.7	110	190	
Hori.	3000.000	AV	39.8	28.3	6.6	38.1	36.6	53.9	17.3	100	282	
Hori.	7440.000	AV	33.4	37.4	9.3	39.4	40.7	53.9	13.2	100	0	Floor noise
Hori.	9920.000	AV	31.5	38.9	10.1	37.5	43.0	53.9	10.9	100	0	Floor noise
Hori.	12400.000	AV	30.9	39.7	11.4	38.2	43.8	53.9	10.1	100	0	Floor noise
Vert.	271.526	QP	47.0	17.8	8.4	32.0	41.2	46.0	4.8	189	179	
Vert.	400.001	QP	50.9	16.3	9.0	32.0	44.2	46.0	1.8	154	186	
Vert.	1653.352	PK	47.3	25.9	13.9	38.6	48.5	73.9	25.4	120	1	
Vert.	1750.155	PK	48.6	26.1	14.0	38.6	50.1	73.9	23.8	138	111	
Vert.	2363.980	PK	46.8	26.8	14.7	38.3	50.0	73.9	23.9	100	0	
Vert.	2483.500	PK	46.4	26.9	14.8	38.1	50.0	73.9	23.9	100	0	
Vert.	3000.000	PK	46.5	28.3	6.6	38.1	43.3	73.9	30.6	100	256	
Vert.	4960.000	PK	52.8	31.8	7.8	37.0	55.4	73.9	18.5	100	243	
Vert.	7440.000	PK	44.8	37.4	9.3	39.4	52.1	73.9	21.8	100	0	Floor noise
Vert.	9920.000	PK	42.6	38.9	10.1	37.5	54.1	73.9	19.8	100	0	Floor noise
Vert.	12400.000	PK	43.8	39.7	11.4	38.2	56.7	73.9	17.2	100	0	Floor noise
Vert.	1653.352	AV	38.5	25.9	13.9	38.6	39.7	53.9	14.2	120	1	
Vert.	1750.155	AV	43.1	26.1	14.0	38.6	44.6	53.9	9.3	138	111	
Vert.	2363.980	AV	32.1	26.8	14.7	38.3	35.3	53.9	18.6	100	0	
Vert.	2483.500	AV	34.0	26.9	14.8	38.1	37.6	53.9	16.3	100	0	
Vert.	3000.000	AV	40.7	28.3	6.6	38.1	37.5	53.9	16.4	100	256	
Vert.	7440.000	AV	34.3	37.4	9.3	39.4	41.6	53.9	12.3	100	0	Floor noise
Vert.	9920.000	AV	31.6	38.9	10.1	37.5	43.1	53.9	10.8	100	0	Floor noise
Vert.	12400.000	AV	30.9	39.7	11.4	38.2	43.8	53.9	10.1	100	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

Dwell time factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Dwell Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4960.000	AV	48.0	31.8	7.8	37.0	-24.6	26.0	53.9	27.9	
Vert.	4960.000	AV	47.7	31.8	7.8	37.0	-24.6	25.7	53.9	28.2	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier) + Dwell(time)factor

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet (RBW 100kHz, VBW 300kHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2480.000	PK	98.2	26.9	14.8	38.2	101.7	-	-	
Hori.	193.945	QP	46.8	16.3	7.8	32.1	38.8	81.7	42.9	
Hori.	300.001	QP	50.7	13.8	8.5	32.0	41.0	81.7	40.7	
Hori.	892.168	QP	40.3	21.5	10.8	31.1	41.5	81.7	40.2	
Vert.	2480.000	PK	95.4	26.9	14.8	38.2	98.9	-	-	
Vert.	193.945	QP	47.9	16.3	7.8	32.1	39.9	78.9	39.0	
Vert.	300.001	QP	41.1	13.8	8.5	32.0	31.4	78.9	47.5	
Vert.	892.168	QP	43.4	21.5	10.8	31.1	44.6	78.9	34.3	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

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Radiated Emission

Test place No.1 and No.3 Semi Anechoic Chamber
 Date March 29, 2014 March 31, 2014 April 1, 2014
 Temperature / Humidity 20 deg.C, 35 %RH 25 deg.C, 36 %RH 24 deg.C, 31 %RH
 Engineer Wataru Kojima Kenichi Adachi Wataru Kojima
 Mode Tx, 2402 MHz
 Tx, Bluetooth, BDR

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	83.934	QP	49.3	7.0	7.5	32.1	31.7	40.0	8.3	235	342	
Hori.	271.528	QP	46.0	17.8	8.4	32.0	40.2	46.0	5.8	182	119	
Hori.	400.001	QP	52.3	16.3	9.0	32.0	45.6	46.0	0.4	155	206	
Hori.	1750.134	PK	46.7	26.1	14.0	38.6	48.2	73.9	25.7	117	326	
Hori.	2390.000	PK	44.0	26.8	14.7	38.2	47.3	73.9	26.6	117	211	
Hori.	2400.000	PK	60.2	26.8	14.7	38.2	63.5	73.9	10.4	117	211	
Hori.	3202.660	PK	49.5	28.2	6.7	38.1	46.3	73.9	27.6	100	180	
Hori.	4804.000	PK	53.2	30.9	7.9	37.1	54.9	73.9	19.0	100	197	
Hori.	7206.000	PK	44.5	37.1	9.1	39.4	51.3	73.9	22.6	100	0	Floor noise
Hori.	9608.000	PK	41.6	38.6	10.2	37.6	52.8	73.9	21.1	100	0	Floor noise
Hori.	12010.000	PK	41.3	39.6	11.2	38.5	53.6	73.9	20.3	100	0	Floor noise
Hori.	1750.134	AV	40.1	26.1	14.0	38.6	41.6	53.9	12.3	117	326	
Hori.	2390.000	AV	31.7	26.8	14.7	38.2	35.0	53.9	18.9	117	211	
Hori.	2400.000	AV	45.9	26.8	14.7	38.2	49.2	53.9	4.7	117	211	
Hori.	3202.660	AV	43.1	28.2	6.7	38.1	39.9	53.9	14.0	100	180	
Hori.	7206.000	AV	33.3	37.1	9.1	39.4	40.1	53.9	13.8	100	0	Floor noise
Hori.	9608.000	AV	30.3	38.6	10.2	37.6	41.5	53.9	12.4	100	0	Floor noise
Hori.	12010.000	AV	30.1	39.6	11.2	38.5	42.4	53.9	11.5	100	0	Floor noise
Vert.	271.528	QP	46.9	17.8	8.4	32.0	41.1	46.0	4.9	195	189	
Vert.	400.001	QP	51.1	16.3	9.0	32.0	44.4	46.0	1.6	153	186	
Vert.	1085.941	PK	47.8	23.9	13.1	38.9	45.9	73.9	28.0	117	241	
Vert.	1750.000	PK	47.7	26.1	14.0	38.6	49.2	73.9	24.7	100	89	
Vert.	2390.000	PK	43.6	26.8	14.7	38.2	46.9	73.9	27.0	100	223	
Vert.	2400.000	PK	59.2	26.8	14.7	38.2	62.5	73.9	11.4	100	223	
Vert.	3202.646	PK	51.2	28.2	6.7	38.1	48.0	73.9	25.9	100	222	
Vert.	4804.000	PK	51.1	30.9	7.9	37.1	52.8	73.9	21.1	100	249	
Vert.	7206.000	PK	42.8	37.1	9.1	39.4	49.6	73.9	24.3	100	0	Floor noise
Vert.	9608.000	PK	42.3	38.6	10.2	37.6	53.5	73.9	20.4	100	0	Floor noise
Vert.	12010.000	PK	41.0	39.6	11.2	38.5	53.3	73.9	20.6	100	0	Floor noise
Vert.	1085.941	AV	38.2	23.9	13.1	38.9	36.3	53.9	17.6	117	241	
Vert.	1750.000	AV	41.5	26.1	14.0	38.6	43.0	53.9	10.9	100	89	
Vert.	2390.000	AV	31.7	26.8	14.7	38.2	35.0	53.9	18.9	100	223	
Vert.	2400.000	AV	44.8	26.8	14.7	38.2	48.1	53.9	5.8	100	223	
Vert.	3202.646	AV	43.4	28.2	6.7	38.1	40.2	53.9	13.7	100	222	
Vert.	7206.000	AV	33.2	37.1	9.1	39.4	40.0	53.9	13.9	100	0	Floor noise
Vert.	9608.000	AV	30.1	38.6	10.2	37.6	41.3	53.9	12.6	100	0	Floor noise
Vert.	12010.000	AV	29.9	39.6	11.2	38.5	42.2	53.9	11.7	100	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

Dwell time factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Dwell Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4804.000	AV	46.0	30.9	7.9	37.1	-24.6	23.1	53.9	30.8	
Vert.	4804.000	AV	43.3	30.9	7.9	37.1	-24.6	20.4	53.9	33.5	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier) + Dwell(time)factor

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet (RBW 100kHz, VBW 300kHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	91.2	26.8	14.7	38.2	94.5	-	-	
Hori.	193.946	QP	46.1	16.3	7.8	32.1	38.1	74.5	36.4	
Hori.	300.001	QP	49.7	13.8	8.5	32.0	40.0	74.5	34.5	
Hori.	892.169	QP	38.4	21.5	10.8	31.1	39.6	74.5	34.9	
Vert.	2402.000	PK	88.3	26.8	14.7	38.2	91.6	-	-	
Vert.	193.946	QP	47.8	16.3	7.8	32.1	39.8	71.6	31.8	
Vert.	300.001	QP	41.9	13.8	8.5	32.0	32.2	71.6	39.4	
Vert.	892.169	QP	41.4	21.5	10.8	31.1	42.6	71.6	29.0	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

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Radiated Emission

Test place No.1 and No.3 Semi Anechoic Chamber
 Date March 29, 2014 March 31, 2014 April 1, 2014
 Temperature / Humidity 20 deg.C, 35 %RH 25 deg.C, 36 %RH 24 deg.C, 31 %RH
 Engineer Wataru Kojima Kenichi Adachi Wataru Kojima
 Mode Tx, 2441 MHz
 Tx, Bluetooth, BDR

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	83.941	QP	49.5	7.0	7.5	32.1	31.9	40.0	8.1	234	341	
Hori.	271.526	QP	46.6	17.8	8.4	32.0	40.8	46.0	5.2	178	110	
Hori.	400.001	QP	52.2	16.3	9.0	32.0	45.5	46.0	0.5	152	209	
Hori.	1750.000	PK	46.8	26.1	14.0	38.6	48.3	73.9	25.6	112	77	
Hori.	4882.000	PK	53.1	31.4	7.9	37.0	55.4	73.9	18.5	100	193	
Hori.	7323.000	PK	46.6	37.2	9.1	39.4	53.5	73.9	20.4	100	0	Floor noise
Hori.	9764.000	PK	41.9	38.8	10.1	37.5	53.3	73.9	20.6	100	0	Floor noise
Hori.	12205.000	PK	42.0	39.6	11.3	38.3	54.6	73.9	19.3	100	0	Floor noise
Hori.	1750.000	AV	39.5	26.1	14.0	38.6	41.0	53.9	12.9	112	77	
Hori.	7323.000	AV	33.5	37.2	9.1	39.4	40.4	53.9	13.5	100	0	Floor noise
Hori.	9764.000	AV	30.8	38.8	10.1	37.5	42.2	53.9	11.7	100	0	Floor noise
Hori.	12205.000	AV	30.7	39.6	11.3	38.3	43.3	53.9	10.6	100	0	Floor noise
Vert.	271.526	QP	47.5	17.8	8.4	32.0	41.7	46.0	4.3	199	179	
Vert.	400.001	QP	50.8	16.3	9.0	32.0	44.1	46.0	1.9	100	187	
Vert.	1750.000	PK	45.6	26.1	14.0	38.6	47.1	73.9	26.8	100	150	
Vert.	3000.000	PK	47.8	28.3	6.6	38.1	44.6	73.9	29.3	100	286	
Vert.	4882.000	PK	52.8	31.4	7.9	37.0	55.1	73.9	18.8	100	177	
Vert.	7323.000	PK	45.4	37.2	9.1	39.4	52.3	73.9	21.6	100	0	Floor noise
Vert.	9764.000	PK	43.1	38.8	10.1	37.5	54.5	73.9	19.4	100	0	Floor noise
Vert.	12205.000	PK	42.8	39.6	11.3	38.3	55.4	73.9	18.5	100	0	Floor noise
Vert.	1750.000	AV	37.5	26.1	14.0	38.6	39.0	53.9	14.9	100	150	
Vert.	3000.000	AV	42.2	28.3	6.6	38.1	39.0	53.9	14.9	100	286	
Vert.	7323.000	AV	33.7	37.2	9.1	39.4	40.6	53.9	13.3	100	0	Floor noise
Vert.	9764.000	AV	30.9	38.8	10.1	37.5	42.3	53.9	11.6	100	0	Floor noise
Vert.	12205.000	AV	30.8	39.6	11.3	38.3	43.4	53.9	10.5	100	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

Dwell time factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Dwell Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4882.000	AV	45.5	31.4	7.9	37.0	-24.6	23.2	53.9	30.7	
Vert.	4882.000	AV	45.6	31.4	7.9	37.0	-24.6	23.3	53.9	30.6	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier) + Dwell(time)factor

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet (RBW 100kHz, VBW 300kHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2441.000	PK	92.6	26.8	14.7	38.2	95.9	-	-	
Hori.	193.948	QP	45.8	16.3	7.8	32.1	37.8	75.9	38.1	
Hori.	300.002	QP	49.9	13.8	8.5	32.0	40.2	75.9	35.7	
Hori.	892.163	QP	40.7	21.5	10.8	31.1	41.9	75.9	34.0	
Vert.	2441.000	PK	94.1	26.8	14.7	38.2	97.4	-	-	
Vert.	193.948	QP	48.5	16.3	7.8	32.1	40.5	77.4	36.9	
Vert.	300.002	QP	40.8	13.8	8.5	32.0	31.1	77.4	46.3	
Vert.	892.163	QP	41.6	21.5	10.8	31.1	42.8	77.4	34.6	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

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Radiated Emission

Test place No.1 and No.3 Semi Anechoic Chamber
 Date March 29, 2014 March 31, 2014 April 1, 2014
 Temperature / Humidity 20 deg.C, 35 %RH 25 deg.C, 36 %RH 24 deg.C, 31 %RH
 Engineer Wataru Kojima Kenichi Adachi Wataru Kojima
 Mode Tx, 2480 MHz
 Tx, Bluetooth, EDR

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	83.947	QP	49.0	7.0	7.5	32.1	31.4	40.0	8.6	237	337	
Hori.	271.525	QP	45.4	17.8	8.4	32.0	39.6	46.0	6.4	182	116	
Hori.	400.001	QP	52.4	16.3	9.0	32.0	45.7	46.0	0.3	152	207	
Hori.	1750.000	PK	45.7	26.1	14.0	38.6	47.2	73.9	26.7	100	193	
Hori.	2000.000	PK	44.8	26.6	14.3	38.7	47.0	73.9	26.9	108	48	
Hori.	2483.500	PK	48.0	26.9	14.8	38.1	51.6	73.9	22.3	100	173	
Hori.	3000.000	PK	46.0	28.3	6.6	38.1	42.8	73.9	31.1	100	326	
Hori.	4960.000	PK	51.8	31.8	7.8	37.0	54.4	73.9	19.5	100	199	
Hori.	7440.000	PK	45.3	37.4	9.3	39.4	52.6	73.9	21.3	100	0	Floor noise
Hori.	9920.000	PK	43.1	38.9	10.1	37.5	54.6	73.9	19.3	100	0	Floor noise
Hori.	12400.000	PK	43.3	39.7	11.4	38.2	56.2	73.9	17.7	100	0	Floor noise
Hori.	1750.000	AV	38.1	26.1	14.0	38.6	39.6	53.9	14.3	100	193	
Hori.	2000.000	AV	35.5	26.6	14.3	38.7	37.7	53.9	16.2	108	48	
Hori.	2483.500	AV	35.2	26.9	14.8	38.1	38.8	53.9	15.1	100	173	
Hori.	3000.000	AV	40.8	28.3	6.6	38.1	37.6	53.9	16.3	100	326	
Hori.	7440.000	AV	33.6	37.4	9.3	39.4	40.9	53.9	13.0	100	0	Floor noise
Hori.	9920.000	AV	31.6	38.9	10.1	37.5	43.1	53.9	10.8	100	0	Floor noise
Hori.	12400.000	AV	30.3	39.7	11.4	38.2	43.2	53.9	10.7	100	0	Floor noise
Vert.	271.525	QP	46.0	17.8	8.4	32.0	40.2	46.0	5.8	195	179	
Vert.	400.001	QP	50.4	16.3	9.0	32.0	43.7	46.0	2.3	154	182	
Vert.	1750.000	PK	45.3	26.1	14.0	38.6	46.8	73.9	27.1	100	149	
Vert.	2000.000	PK	45.4	26.6	14.3	38.7	47.6	73.9	26.3	100	246	
Vert.	2483.500	PK	49.8	26.9	14.8	38.1	53.4	73.9	20.5	100	178	
Vert.	3000.000	PK	48.0	28.3	6.6	38.1	44.8	73.9	29.1	100	281	
Vert.	4960.000	PK	51.5	31.8	7.8	37.0	54.1	73.9	19.8	100	174	
Vert.	7440.000	PK	45.1	37.4	9.3	39.4	52.4	73.9	21.5	100	0	Floor noise
Vert.	9920.000	PK	42.3	38.9	10.1	37.5	53.8	73.9	20.1	100	0	Floor noise
Vert.	12400.000	PK	42.8	39.7	11.4	38.2	55.7	73.9	18.2	100	0	Floor noise
Vert.	1750.000	AV	37.5	26.1	14.0	38.6	39.0	53.9	14.9	100	149	
Vert.	2000.000	AV	37.8	26.6	14.3	38.7	40.0	53.9	13.9	100	246	
Vert.	2483.500	AV	36.5	26.9	14.8	38.1	40.1	53.9	13.8	100	178	
Vert.	3000.000	AV	42.2	28.3	6.6	38.1	39.0	53.9	14.9	100	281	
Vert.	7440.000	AV	33.5	37.4	9.3	39.4	40.8	53.9	13.1	100	0	Floor noise
Vert.	9920.000	AV	31.3	38.9	10.1	37.5	42.8	53.9	11.1	100	0	Floor noise
Vert.	12400.000	AV	31.6	39.7	11.4	38.2	44.5	53.9	9.4	100	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

Dwell time factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Dwell Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4960.000	AV	44.5	31.8	7.8	37.0	-24.6	22.5	53.9	31.4	
Vert.	4960.000	AV	44.4	31.8	7.8	37.0	-24.6	22.4	53.9	31.5	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier) + Dwell(time)factor

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet (RBW 100kHz, VBW 300kHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2480.000	PK	92.0	26.9	14.8	38.2	95.5	-	-	
Hori.	193.947	QP	46.0	16.3	7.8	32.1	38.0	75.5	37.5	
Hori.	300.001	QP	49.3	13.8	8.5	32.0	39.6	75.5	35.9	
Hori.	892.165	QP	39.3	21.5	10.8	31.1	40.5	75.5	35.0	
Vert.	2480.000	PK	95.2	26.9	14.8	38.2	98.7	-	-	
Vert.	193.947	QP	48.0	16.3	7.8	32.1	40.0	78.7	38.7	
Vert.	300.001	QP	39.8	13.8	8.5	32.0	30.1	78.7	48.6	
Vert.	892.165	QP	40.8	21.5	10.8	31.1	42.0	78.7	36.7	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

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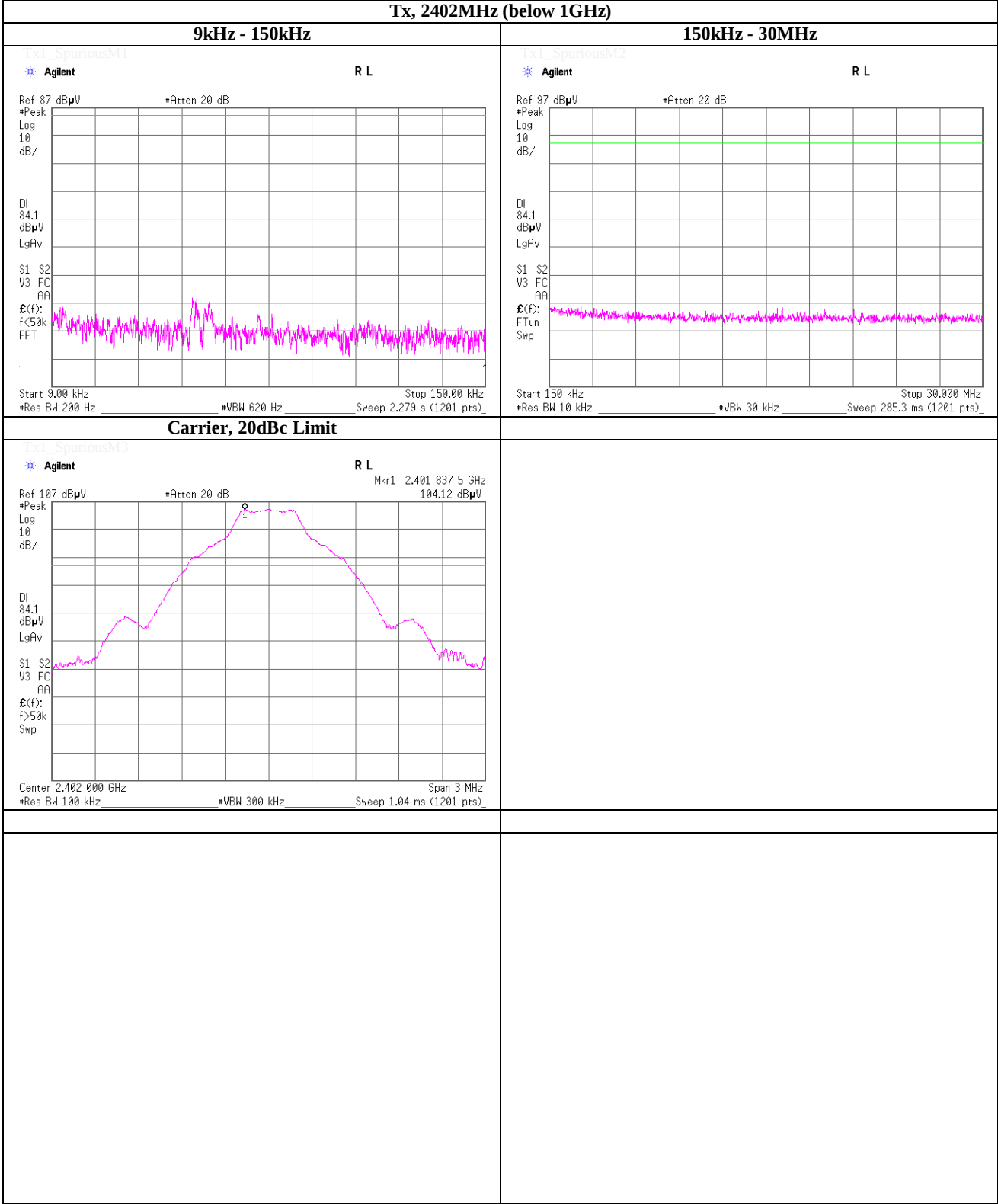
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

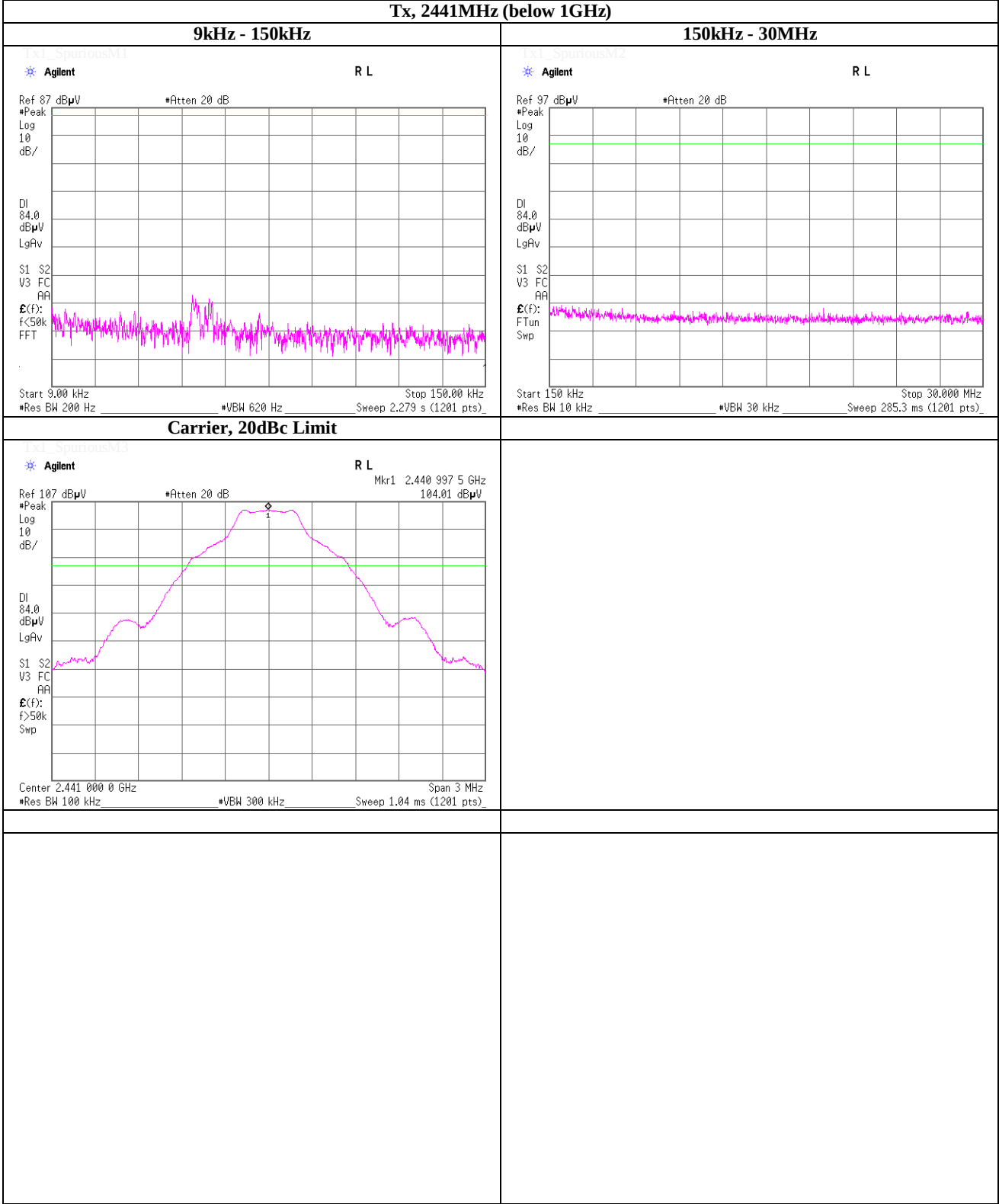
Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (below 1GHz)



Spurious emission (Conducted)

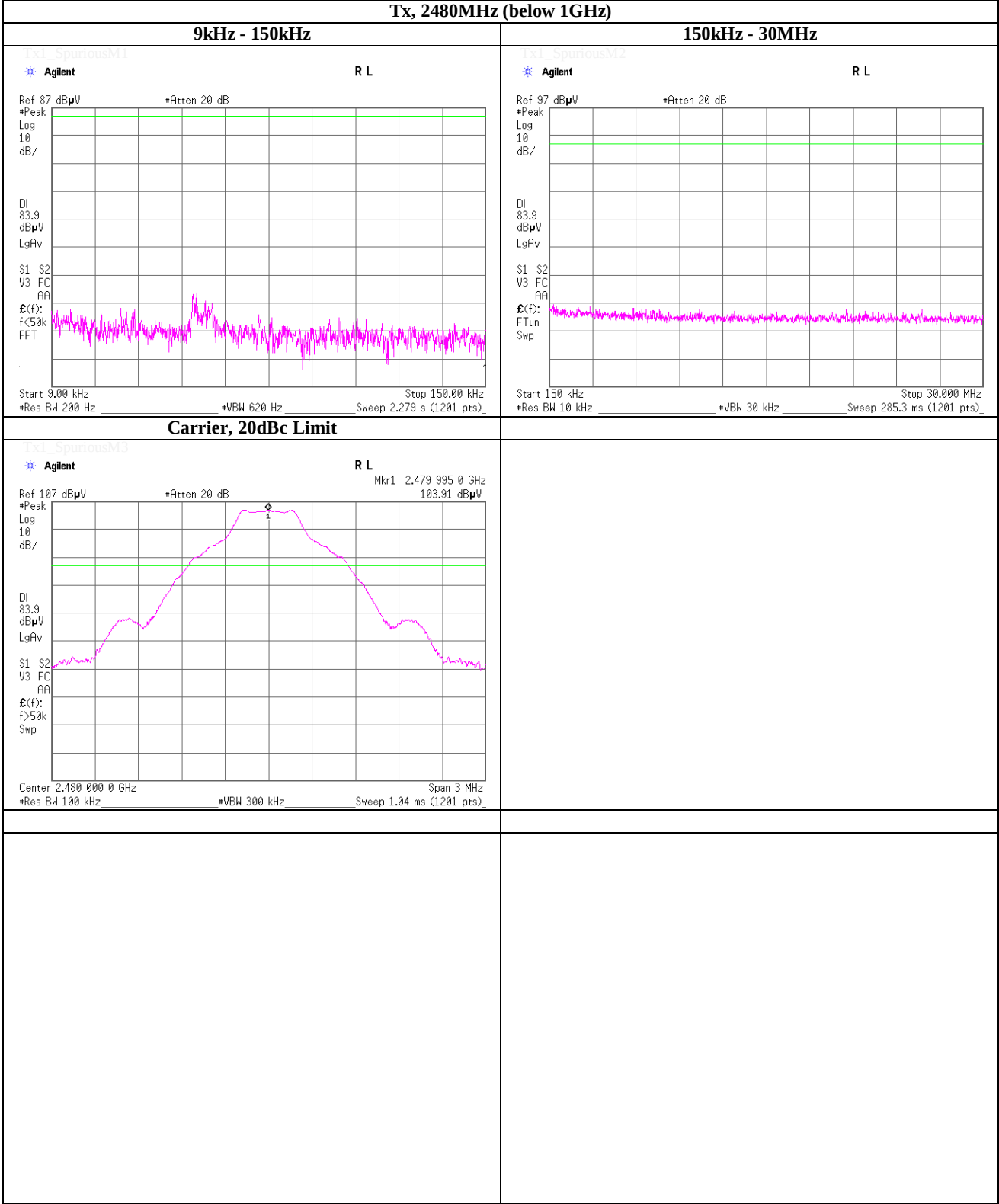
Tx, Bluetooth, BDR, PRBS9
Tx, 2441MHz (below 1GHz)



Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

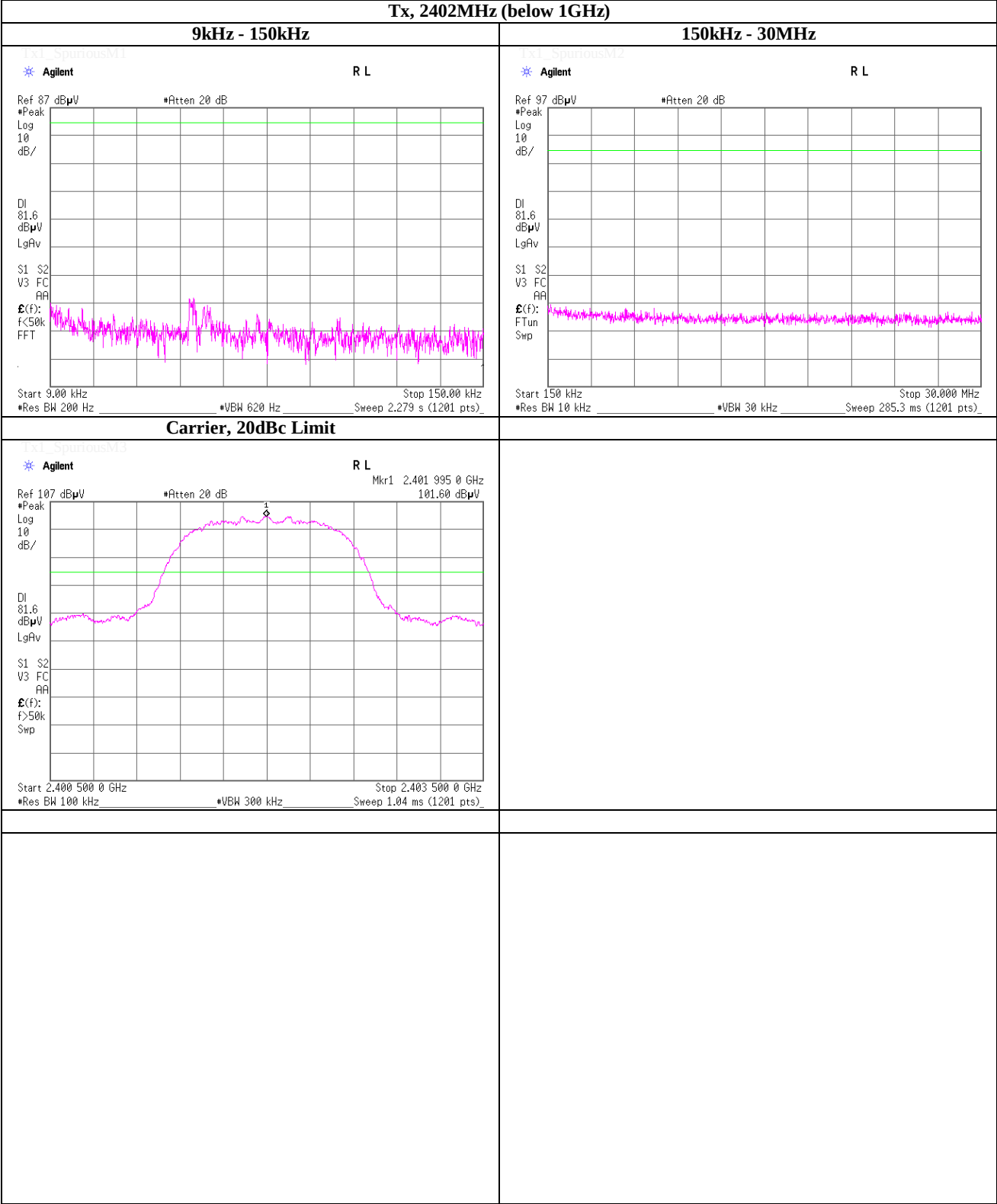
Tx, 2480MHz (below 1GHz)



Spurious emission (Conducted)

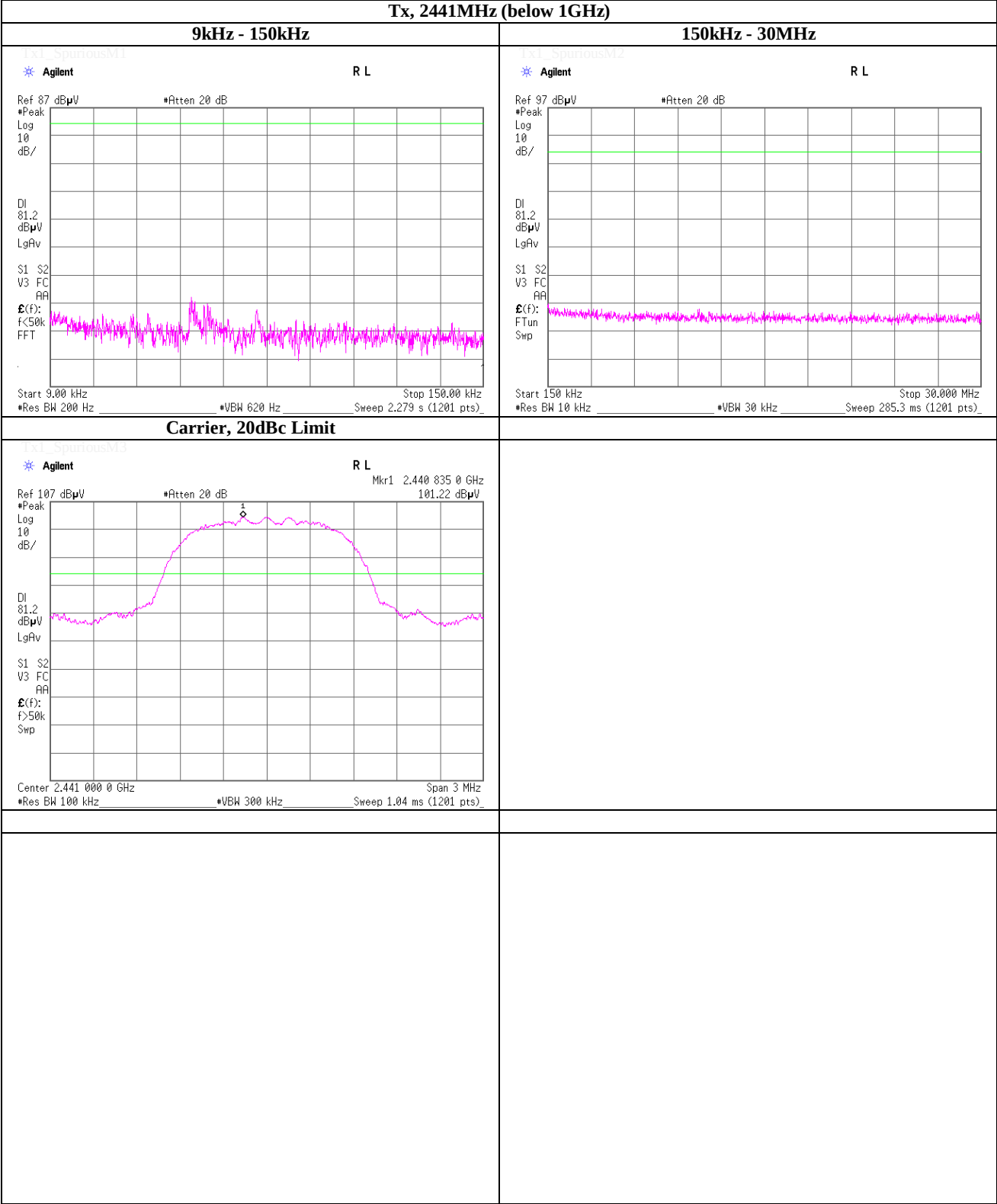
Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (below 1GHz)



Spurious emission (Conducted)

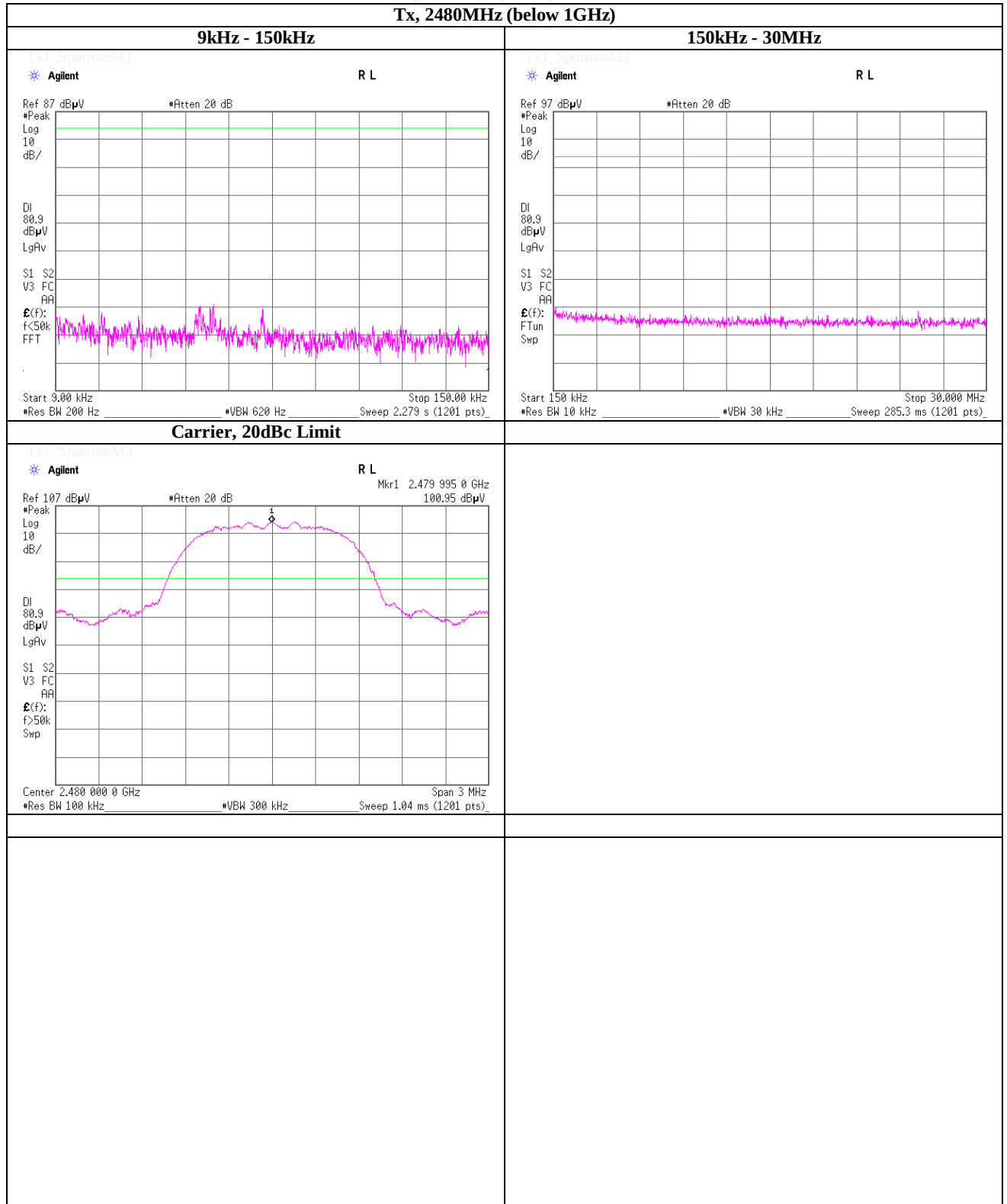
Tx, Bluetooth, EDR, PRBS9
Tx, 2441MHz (below 1GHz)



Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (below 1GHz)



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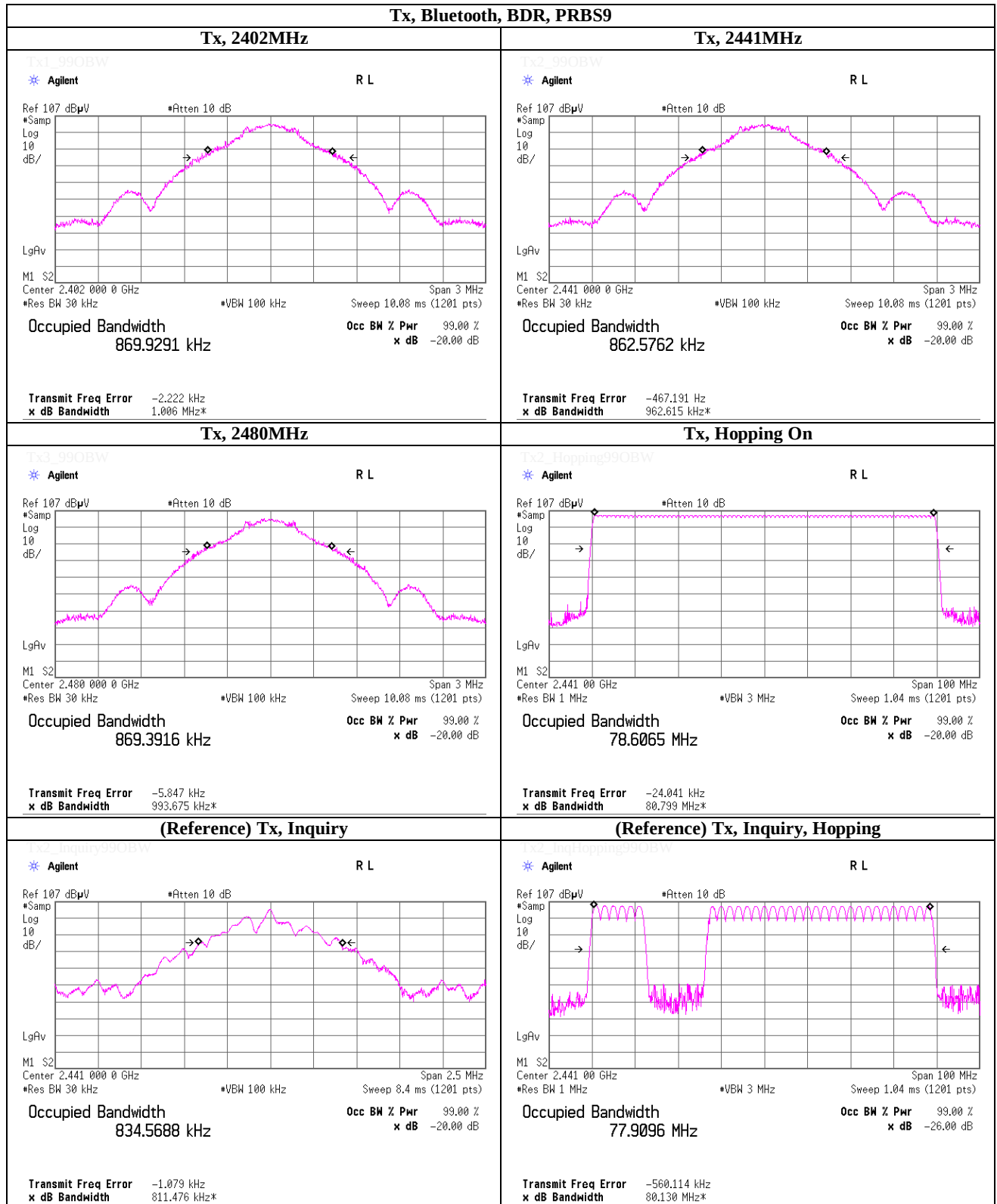
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99% Occupied Bandwidth



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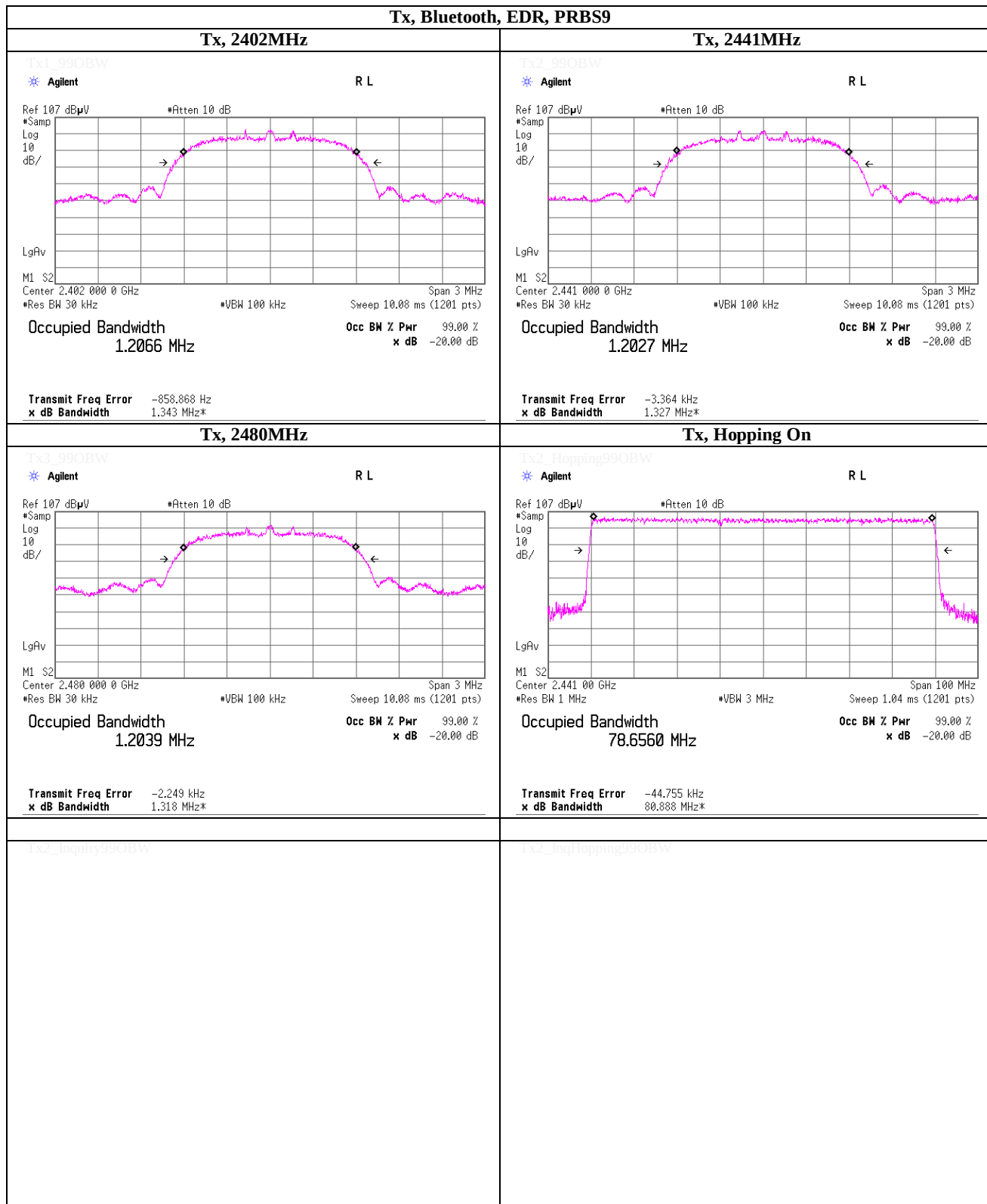
Shonan EMC Lab.

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99% Occupied Bandwidth



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APPENDIX 2

Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SOS-13	Humidity Indicator	Custom	CTH-202	Q.C.17	AT	2013/04/25 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	AT	2014/03/04 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	AT	2014/03/13 * 12
SAT10-11	Attenuator	Weinschel Corp.	54A-10	37588	AT	2013/04/09 * 12
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2013/04/09 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2013/04/09 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2013/07/09 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2013/07/22 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	2013/04/11 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2013/05/22 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2013/08/19 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2014/02/21 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	RE	2014/03/04 * 12
SJM-11	Measure	PROMART	SEN1935	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE, RFI,MF)	-	RE, CE	-
SAT10-06	Attenuator	Agilent	8493C-010	74865	RE	2013/11/22 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	Re	2013/11/22 * 12
SCC-A12/A13/ SRSE-01	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/N S4906	-/0901-269(RF Selector)	CE	2013/04/04 * 12
SLS-01	LISN	Rohde & Schwarz	ENV216	100511	CE	2014/02/14 * 12
SLS-02	LISN	Rohde & Schwarz	ENV216	100512	CE(AE)	2014/03/05 * 12
SAT3-07	Attenuator	JFW	50HF-003N	-	CE	2013/09/04 * 12
SOS-02	Humidity Indicator	A&D	AD-5681	4063343	CE	2014/03/07 * 12
STM-01	Terminator	TME	CT-01 BP	-	CE	2013/12/26 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	CE	2013/11/20 * 12
SJM-08	Measure	PROMART	SEN1935	-	CE	-

The expiration date of the calibration is the end of the expired month .

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

All equipment is calibrated with valid calibrations . Each measurement data is traceable to the national or international standards .

Test Item :

CE: Conducted emission,

RE: Radiated emission,

AT: Antenna terminal conducted test