




RADIO TEST REPORT


Test Report No.: 32GE0206-SH-01-B

Applicant : Ricoh Company, Ltd.
Type of Equipment : Option(s) for Radiocommunications
Model No. : R-CMN-851
FCC ID : BBP-WLCMN01
Test regulation : FCC Part15 Subpart E: 2012
Test result : Complied

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Date of test: August 3 to September 17, 2012

Tested by: 
Hikaru Shirasawa
Engineer of WiSE Japan,
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Approved by : 
Go Ishiwata
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UL Verification Service

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 There is no testing item of "Non-accreditation".



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REVISION HISTORY

Original Test Report No.: 32GE0206-SH-01-B

Revision	Test report No.	Date	Page revised	Contents
- (Original)	32GE0206-SH-01-B	September 20, 2012	-	-
1	32GE0206-SH-01-B	October 3, 2012	1,3 15	P1,3: Update P15: Correction of Notes
2	32GE0206-SH-01-B	October 4, 2012	1,3 6,9-10,15-16	P1,3: Update P6: Addition of the description to 3.1 P6,9-10,15-16: Change of test title P15: Correction of misdescription
3	32GE0206-SH-01-B	October 19, 2012	1,3 10	P1,3: Update P10: Addition of the description to 4.1

SECTION 1: Customer information

Company Name : Ricoh Company, Ltd.
Address : 810, Shimoimaizumi Ebina-Shi Kanagawa 24300460
Telephone Number : +81-46-292-3871
Contact Person : Seiji Nakamura

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

2.1 Identification of E.U.T.

Type of Equipment : Option(s) for Radiocommunications
Model Number : R-CMN-851
Serial Number : Refer to 4.2 in this report.
Rating : DC3.3V
Country of Mass-production : Japan
Condition of EUT : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Receipt Date of Sample : July 24, 2012
Modification of EUT : No modification by the test lab.

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2.2 Product description

Model: R-CMN-851 (referred to as the EUT in this report) is Option(s) for Radiocommunications.

Clock frequency(ies) in the system : 40MHz

<Radio part>

Equipment type : Transceiver
Frequency of operation *1) : 2.4GHz: 2412-2462MHz (IEEE 802.11b, 11g, 11n-HT20)
2422-2452MHz (IEEE 802.11n-HT40)
W52: 5180-5240MHz (IEEE 802.11a, 11n-HT20)
5190-5230MHz (IEEE 802.11n-HT40)
W53: 5260-5320MHz (IEEE 802.11a, 11n-HT20)
5270-5310MHz (IEEE 802.11n-HT40)
W56: 5500-5700MHz (IEEE 802.11a, 11n-HT20)
5510-5670MHz (IEEE 802.11n-HT40)
Bandwidth : 20MHz (IEEE 802.11a/b/g/n), 40MHz (IEEE 802.11n)
Channel spacing : 5MHz (2.4GHz), 20MHz (5GHz)
Type of modulation : DSSS (IEEE 802.11b), OFDM (IEEE 802.11a/g/n)
ITU code : D1D, G1D
Operation temperature range : 0 to +50 deg.C

*1) Refer to the test report 32GE0206-SH-01-A for FCC 15.247.

Antenna list:

Model No.	ANT1431-161C/M-AB-58	ANT1468
Antenna type (quantity)	Inverted F (x2)	Dipole (x2)
Antenna connector type	U.FL-LP	U.FL-LP
Antenna gain with cable loss	2.4GHz: 1.72dBi W52/W53: 5.18dBi, W56: 4.02dBi	2.4GHz: 0.61dBi W52/W53: 0.97dBi, W56: 1.55dBi

FCC 15.31 (e) / 212

The host device provides stable voltage (DC3.3V) constantly to the EUT regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC 15.203 / 212

The EUT has a unique coupling/antenna connector (U.FL-LP). Therefore the equipment complies with the requirement.

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test specification : FCC Part 15 Subpart E: 2012, final revised on August 13, 2012 and effective September 12, 2012
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 15.407 General technical requirements

* The revision on August 13, 2012 does not affect the test specification applied to the EUT.

The EUT will be tested for compliance with FCC Part 15 Subpart B by the customer.

3.2 Procedures & Results

Item	Test Procedure *1)	Specification	Remarks	Deviation	Worst Margin	Results
Conducted emission	ANSI C63.4:2009 7. AC powerline conducted emission measurements	FCC 15.407 (b)(6) & 15.207	-	N/A	5.9dB Freq.: 0.18100MHz Detector: Average Phase: N Mode: Tx 5320MHz IEEE 802.11a Antenna: ANT1468	Complied
26dB emission bandwidth	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.407 (a)(1)(2)(3)	Conducted	N/A	See data	-
Maximum conducted output power	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.407 (a)(1)(2)(3)	Conducted	N/A		Complied
Peak power spectral density	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.407 (a)(1)(2)(3)	Conducted	N/A		Complied
Peak excursion ratio	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.407 (a)(6)	Conducted	N/A		Complied
Spurious emission & Restricted band edges	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.109, 15.407 (b), 15.205 & 15.209	Conducted / Radiated	N/A	0.4dB Freq.: 5350.000 MHz Detector: Average Polarization: Horizontal Mode: Tx 5310MHz IEEE 802.11n-40 Antenna: ANT1431-161C/M-AB-58	Complied
Dynamic frequency selection	FCC 06-96 APPENDIX	FCC 15.407 (h)	Conducted	*2)	N/A	N/A

*1) These tests were also referred to KDB 789033 (FCC), "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E".

*2) Refer to the test report 32GE0206-SH-01-C.

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	4.9 dB	5.1 dB	4.9 dB
	300MHz-1GHz	5.0 dB	5.2 dB	4.9 dB
	1GHz-15GHz	4.8 dB	4.8 dB	4.9 dB
Radiated emission (Measurement distance: 1m)	15GHz-18GHz	5.6 dB	5.6 dB	5.6 dB
	18GHz-40GHz	4.6 dB	4.3 dB	4.4 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 test 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) for this test was: (±) 1.7dB

Spurious emission (Conducted) measurement (1G-3GHz) uncertainty for this test was: (±) 2.3dB

Spurious emission (Conducted) measurement (3G-18GHz) uncertainty for this test was: (±) 3.0dB

Spurious emission (Conducted) measurement (18G-26.5GHz) uncertainty for this test was: (±) 2.9dB

Spurious emission (Conducted) measurement (26.5G-50GHz) uncertainty for this test was: (±) 2.8dB

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
<input type="checkbox"/> No.1 semi-anechoic chamber	697847	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
<input type="checkbox"/> No.2 semi-anechoic chamber	697847	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
<input checked="" type="checkbox"/> No.3 semi-anechoic chamber	697847	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5m
<input type="checkbox"/> No.4 semi-anechoic chamber	-	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
<input type="checkbox"/> No.1 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
<input type="checkbox"/> No.2 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
<input checked="" type="checkbox"/> No.3 shielded room	-	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
<input type="checkbox"/> No.4 shielded room	-	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
<input checked="" type="checkbox"/> No.5 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
<input type="checkbox"/> No.6 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-

3.6 Test setup, Data of EMI & Test instruments

Refer to APPENDIX 3 to 3.

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

4.1 Operating mode

Test item	Mode	Tested frequency	Worst data rate *1)
Conducted emission	Transmitting IEEE 802.11a (W53)	5320MHz	6Mbps, PN9
Radiated emission (below 1GHz) *2)	Transmitting IEEE 802.11a (W52/ W53)	5180MHz, 5240MHz, 5320MHz	6Mbps, PN9
Radiated emission (above 1GHz)	Transmitting IEEE 802.11a (W56)	5500MHz, 5580MHz, 5700MHz	6Mbps, PN9
	Transmitting IEEE 802.11n-20 (W52/ W53)	5180MHz, 5240MHz, 5320MHz	
	Transmitting IEEE 802.11n-20 (W56)	5500MHz, 5580MHz, 5700MHz	Transmitting simultaneously (MIMO): MCS8, PN9
	Transmitting IEEE 802.11n-40 (W52/ W53)	5190MHz, 5230MHz, 5310MHz	
	Transmitting IEEE 802.11n-40 (W56)	5510MHz, 5550MHz, 5670MHz	
	Other items	Transmitting IEEE 802.11a (W52)	5180MHz, 5220MHz, 5240MHz
Transmitting IEEE 802.11a (W53)		5260MHz, 5300MHz, 5320MHz	
Transmitting IEEE 802.11a (W56)		5500MHz, 5580MHz, 5700MHz	
Transmitting IEEE 802.11n-20 (W52)		5180MHz, 5220MHz, 5240MHz	Transmitting simultaneously (MIMO): MCS8, PN9 Transmitting respectively (SISO): MCS0, PN9
Transmitting IEEE 802.11n-20 (W53)		5260MHz, 5300MHz, 5320MHz	
Transmitting IEEE 802.11n-20 (W56)		5500MHz, 5580MHz, 5700MHz	
Transmitting IEEE 802.11n-40 (W52)		5190MHz, 5230MHz	Transmitting simultaneously (MIMO): MCS8, PN9 Transmitting respectively (SISO): MCS0, PN9
Transmitting IEEE 802.11n-40 (W53)		5270MHz, 5310MHz	
Transmitting IEEE 802.11n-40 (W56)		5510MHz, 5550MHz, 5670MHz	

*1) The worst condition was determined based on the test result of Maximum Conducted Output Power.

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

* Power setting: Fixed, Software used for the test: ART v0.9 b34

Test item	Used antenna (port) *3) *4)	Operation
Maximum conducted output power	- (Antenna port 1, 2)	Transmitting respectively (SISO)
Transmitting IEEE 802.11a		
Transmitting IEEE 802.11n-20 Transmitting IEEE 802.11n-40	- (Antenna port 1, 2)	Transmitting respectively (SISO) Transmitting simultaneously (MIMO)
Radiated emission (above 1GHz)	ANT1431-161C/M-AB-58 (Antenna 1) ANT1468 (Antenna 1)	Transmitting respectively (SISO)
Transmitting IEEE 802.11a		
Transmitting IEEE 802.11n-20 Transmitting IEEE 802.11n-40	ANT1431-161C/M-AB-58 (Antenna 1, 2) ANT1468 (Antenna 1, 2)	Transmitting simultaneously (MIMO)
Conducted emission, Radiated emission (below 1GHz) Transmitting IEEE 802.11a	ANT1431-161C/M-AB-58 (Antenna 1) ANT1468 (Antenna 1)	Transmitting respectively (SISO)
Power density	- (Antenna port 1)	Transmitting respectively (SISO)
Transmitting IEEE 802.11a		
Transmitting IEEE 802.11n-20 Transmitting IEEE 802.11n-40	- (Antenna port 1, 2)	Transmitting respectively (SISO) Transmitting simultaneously (MIMO)
Other than above Transmitting IEEE 802.11a Transmitting IEEE 802.11n-20 Transmitting IEEE 802.11n-40	- (Antenna port 1)	Transmitting respectively (SISO) Transmitting simultaneously (MIMO)
*3) The worse antenna port was determined based on the test result of Maximum Conducted Output Power.		
*4) As this module has MIMO mode for only MSC8~MSC15, we need not to consider array gains.		

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

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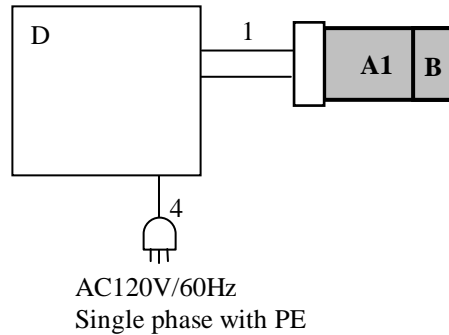
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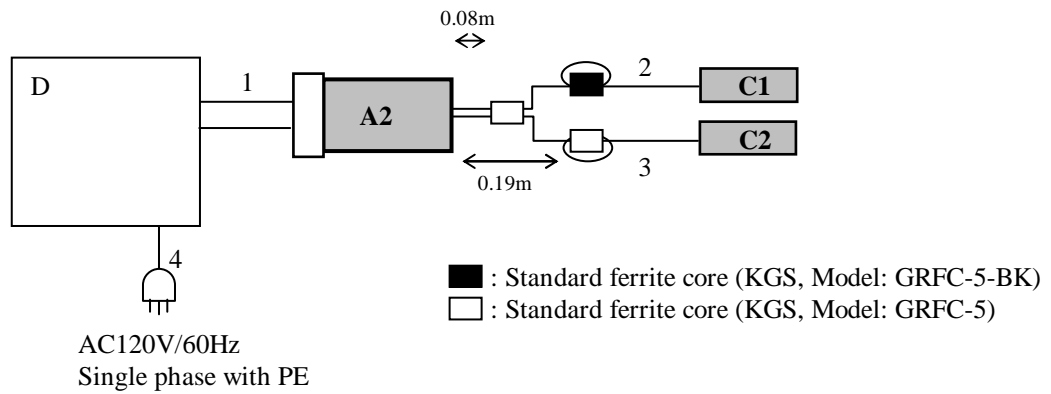
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4.2 Configuration and peripherals

Antenna: ANT1431-161C/M-AB-58



Antenna: ANT1468



* Test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A1	Option(s) for Radiocommunications	R-CMN-851	206S0034	Ricoh	EUT
A2			206S0048		
B	Antenna	ANT1431-161C/M-AB-58	-	NISSEI ELECTRIC	EUT
C1	Antenna	ANT1468	-	NISSEI ELECTRIC	EUT
C2	Antenna	ANT1468	-	NISSEI ELECTRIC	EUT
D	Desktop PC	dc7800	JPA831010C	hp	-

List of cables used

No.	Cable Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Flat	0.15	Unshielded	Unshielded	-
2	Antenna	0.87	Shielded	Shielded	-
3	Antenna	0.87	Shielded	Shielded	-
4	AC	2.1	Unshielded	Unshielded	-

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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 1.5m, 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 EUT, including peripherals 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 via host device within a Shielded room. The EUT was connected to a Line Impedance Stabilization Network (LISN) via host device.

An overview sweep with peak detection has been performed.

The measurements had been performed with a quasi-peak detector and if required, an average detector.

The conducted emission measurements were made with the following detection of the test receiver.

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

5.5 Results

Summary of the test results : Pass
Refer to APPENDIX 1

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SECTION 6: Radiated emission

6.1 Operating environment

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

6.2 Test configuration

EUT was placed on a urethane platform of nominal size, 0.5m by 0.5m, raised 0.8m above the conducting ground plane. The rear of EUT was aligned and flushed with rear of tabletop.
Photographs of the set up are shown in APPENDIX 3.

6.3 Test conditions

Frequency range : 30MHz - 40GHz
EUT position : Table top

6.4 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	1-40GHz	
Detection type	Quasi-Peak	Peak	Average *1)
IF Bandwidth	120kHz	RBW: 1MHz VBW: 3MHz	RBW: 1MHz VBW: 10Hz *2)

*1) When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

*2) When duty cycle ≥ 98 percent (or duty cycle < 98 percent when a video trigger with the trigger level set to enable triggering only on full power pulse is used), VBW was set at 10Hz.

Below 1GHz

The result also satisfied with the general limits specified in FCC 15.209 (a).

Above 1GHz

Inside of restricted bands (FCC 15.205): Limit in FCC 15.209 (a)

Outside of the restricted bands: Limit 68.2dBuV/m (-27dBm e.i.r.p.*) in FCC 15.407(b)(1)(2)(3)

Restricted band edge: Limit in FCC 15.209(a)

Since this limit is severer than the limit of the inside of restricted bands.

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

$$P \text{ [dBm]} = E \text{ [dBuV/m]} - 95.2 \text{ [dB]}$$

$$P \text{ [dBm]} = 10 \times \text{LOG} \left(\left(10^{\left(E \text{ [dBuV/m]} / 20 \right)} \times 10^{-6} \right) \times \left(\text{Distance} = 3\text{[m]} \right)^2 / 30 \right) \times 10^3 \text{ (uV/m):}$$

P is the e.i.r.p. (Watts)

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

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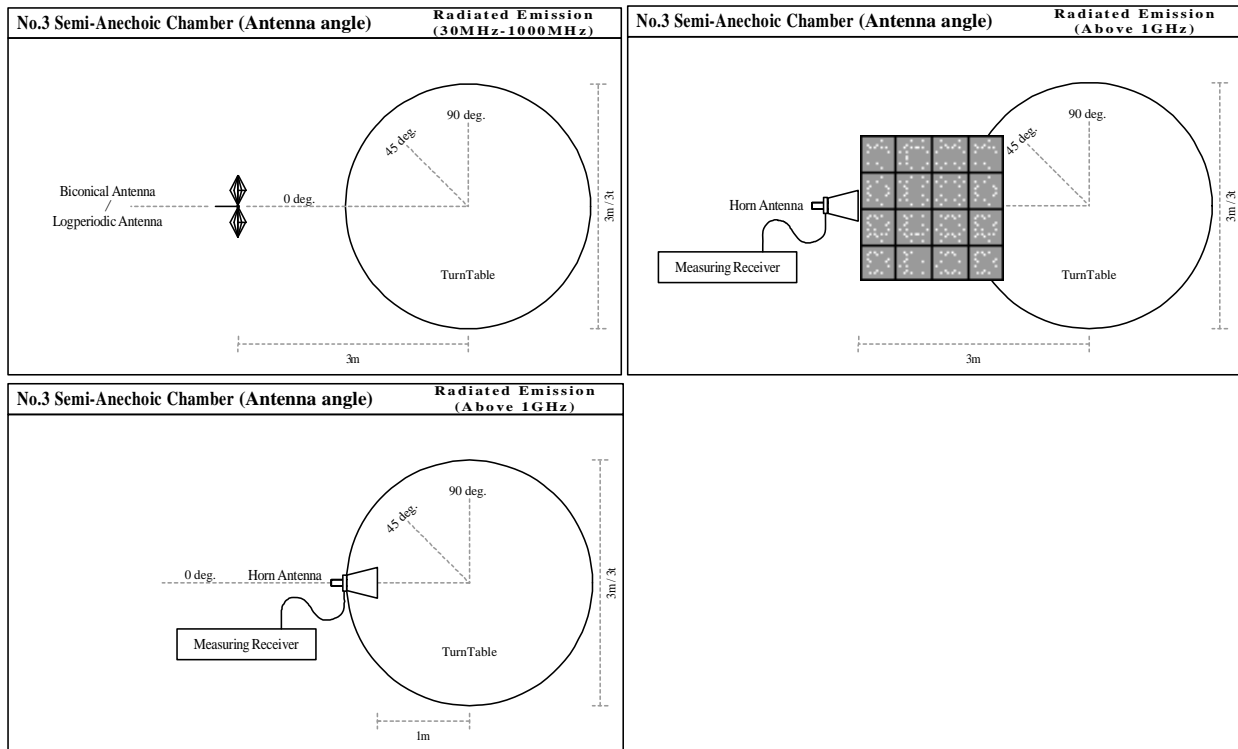
The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Combinations of the worst case

Subject	Antenna polarization	Carrier (Band edge)	Spurious	
			Below 1GHz	Above 1GHz
Antenna type of the EUT: ANT1431-161C/M-AB-58				
Module & Antenna	Horizontal	X	X	X
Module & Antenna	Vertical	Y	Y	Y
Antenna type of the EUT: ANT1468				
Module	Horizontal	X	X	X
Antenna 1		X	X	X
Antenna 2		X	X	X
Module	Vertical	Y	Y	Y
Antenna 1		Y	Y	Y
Antenna 2		Y	Y	Y

* The definition of the axis was listed in a 'Pre-check of the worst position' in APPENDIX.

Figure 1. Antenna angle



6.5 Band edge

Band edge level at 5150MHz and 5350MHz is below the limits of FCC 15.209. Refer to the data.

6.6 Results

Summary of the test results : Pass
* No noise was detected other than listed points.

Refer to APPENDIX 1

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SECTION 7: Antenna terminal conducted tests

Test Procedure

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

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used and Test method
26dB bandwidth	30MHz , 60MHz	Close to 1% of EBW	Greater than RBW	Auto	Peak	Max Hold	Spectrum Analyzer
99% occupied bandwidth	Enough width to display 20dB Bandwidth	Close to 1% of Span	Three times of RBW	Auto	Peak	Max Hold	Spectrum Analyzer
Maximum conducted output power *1)	40MHz, 80MHz	1MHz	3MHz	Auto	RMS Power Averaging (100 times)	Clear Write	Spectrum Analyzer method SA-2
Peak power spectral density *2)	40MHz, 80MHz	1MHz	3MHz	Auto	RMS Power Averaging (100 times)	Clear Write	Spectrum Analyzer method SA-2
Peak excursion ratio	Enough width to view the entire emission bandwidth	1MHz	3MHz	Auto	Peak RMS Power Averaging (100 times)	Max Hold Clear Write	Spectrum Analyzer method SA-1
Conducted spurious emission *4)*5) (below 1GHz) *3)	9kHz to 150kHz, 150kHz to 30MHz, 30MHz to 1GHz	100kHz	300kHz	Auto	Peak	Max Hold	Spectrum Analyzer
Conducted spurious emission *4)*5) (above 1GHz)	Less or equal to 5GHz (Range: 1GHz-40GHz)	1MHz	3MHz	Auto	Peak	Max Hold	Spectrum Analyzer

*EBW: Emission Bandwidth

*1) Maximum Conducted Output Power was measured based on Method SA-2 of "Guidance for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E".

*2) PSD was measured based on Method SA-2 of "Guidance for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E".

*3) 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 low enough as shown in the chart (9kHz-150kHz: RBW=200Hz, 150kHz-30MHz: RBW=10kHz). Since the margin is more than about 40dB, the EUT complies with the limit of FCC15.209 if the measurement is performed with RBW=100kHz.

*4) The conducted measurement is reference data and the radiated emission measurement is the data for the compliance.

*5) There is no limit line in data of conducted measurement, since the floor noise exceeds the limit in some points. However, the noise has been confirmed to be the floor noise with Radiated emission measurement.

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

Summary of the test results : Pass

Refer to APPENDIX 1

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Pre-check of worst position

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APPENDIX 1: Data of Radio tests

DATA OF CONDUCTED EMISSION TEST

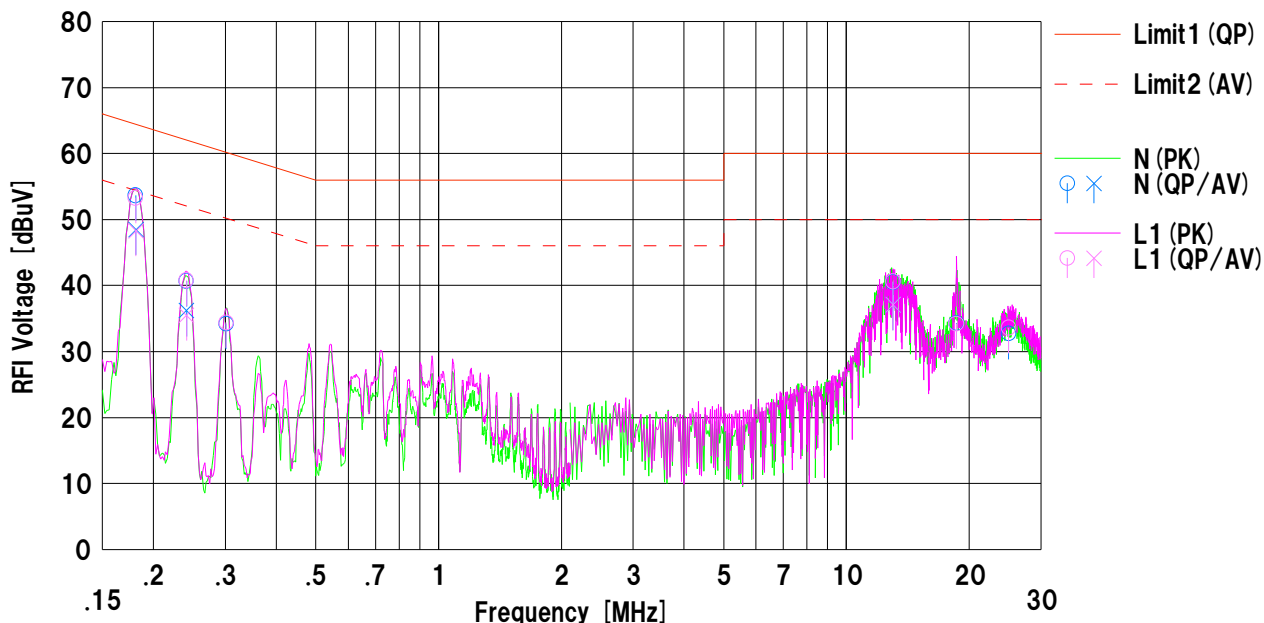
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/09/17

Mode : Tx 11a 5320MHz
 Report No. : 32GE0206-SH-01-B
 Power : DC3.3V (Host: AC 120V/60Hz)
 Temp./Humi. : 26deg.C. / 68%RH

Remarks : ANT1468

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

Engineer : Makoto Hosaka



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	0.18100	41.0	35.8	12.7	53.7	48.5	64.4	54.4	10.7	5.9	N	
2	0.24101	28.0	23.5	12.7	40.7	36.2	62.0	52.0	21.3	15.8	N	
3	0.30160	21.5	---	12.7	34.2	---	60.1	50.1	25.9	---	N	
4	13.01960	27.2	23.8	13.3	40.5	37.1	60.0	50.0	19.5	12.9	N	
5	18.62440	20.8	---	13.5	34.3	---	60.0	50.0	25.7	---	N	
6	25.01305	19.0	---	13.7	32.7	---	60.0	50.0	27.3	---	N	
7	0.18100	40.6	35.6	12.7	53.3	48.3	64.4	54.4	11.1	6.1	L1	
8	0.24101	28.1	22.8	12.7	40.8	35.5	62.0	52.0	21.2	16.5	L1	
9	0.30160	21.7	---	12.7	34.4	---	60.1	50.1	25.7	---	L1	
10	13.01960	27.3	23.8	13.3	40.6	37.1	60.0	50.0	19.4	12.9	L1	
11	18.62440	20.7	---	13.5	34.2	---	60.0	50.0	25.8	---	L1	
12	25.01305	19.9	---	13.7	33.6	---	60.0	50.0	26.4	---	L1	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]
 LISN:SLS-05

DATA OF CONDUCTED EMISSION TEST

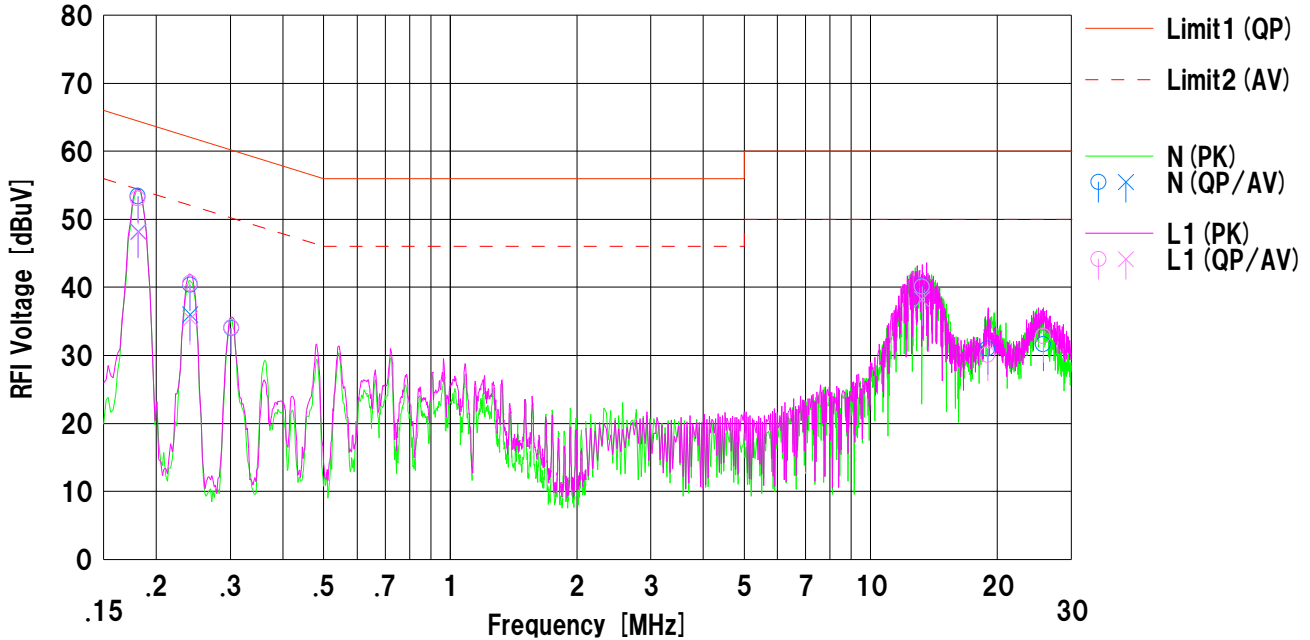
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/09/17

Mode : Tx 11a 5320MHz
 Report No. : 32GE0206-SH-01-B
 Power : DC3.3V (Host: AC 120V/60Hz)
 Temp./Humi. : 26deg.C. / 68%RH

Remarks : ANT1431-161C/M-AB-58

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

Engineer : Makoto Hosaka



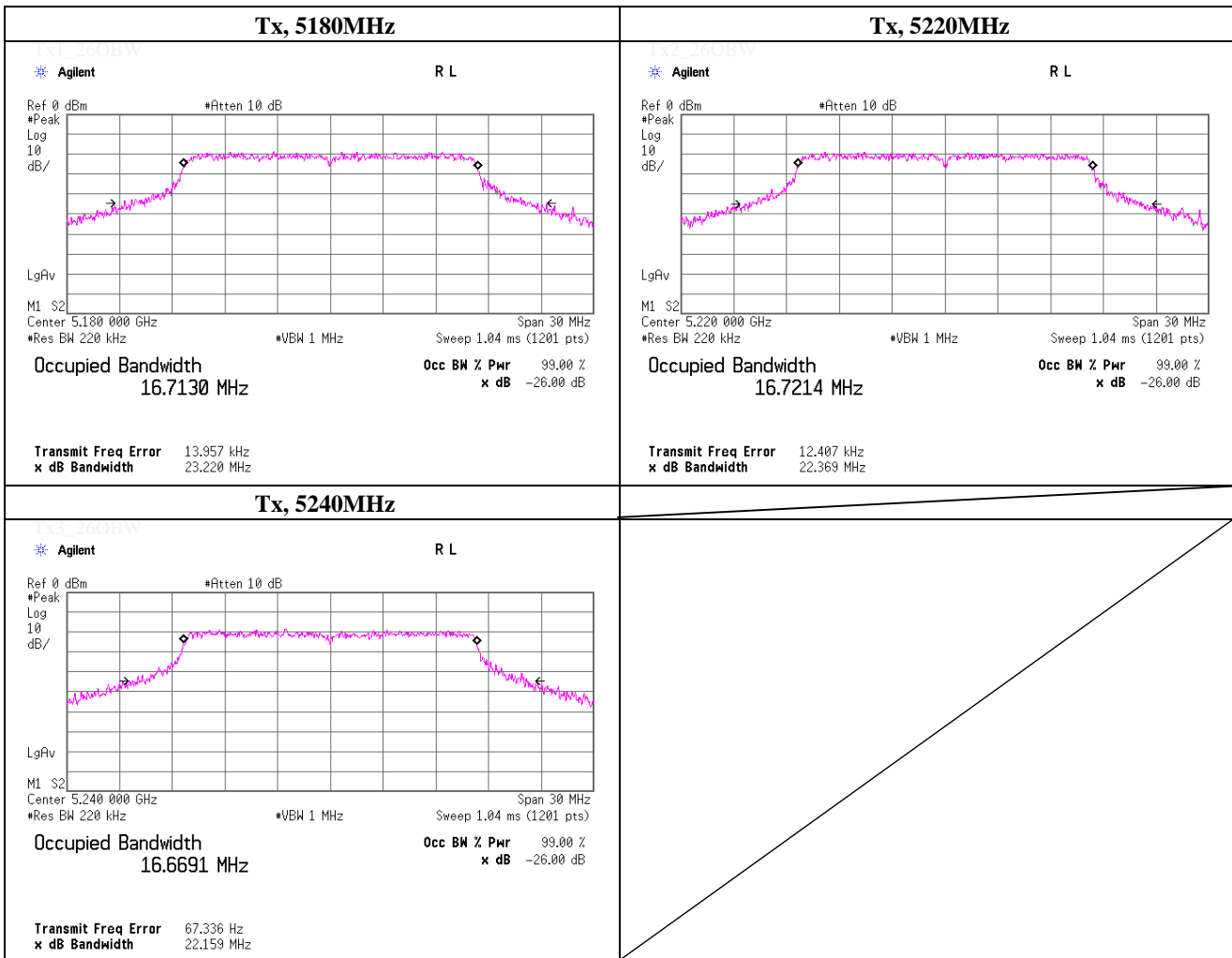
No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.18095	40.7	35.5	12.7	53.4	48.2	64.4	54.4	11.0	6.2	N	
2	0.24077	27.7	23.3	12.7	40.4	36.0	62.0	52.0	21.6	16.0	N	
3	0.30148	21.3	---	12.7	34.0	---	60.2	50.2	26.2	---	N	
4	13.26030	26.9	24.9	13.3	40.2	38.2	60.0	50.0	19.8	11.8	N	
5	18.99100	17.5	---	13.5	31.0	---	60.0	50.0	29.0	---	N	
6	25.73441	17.8	---	13.8	31.6	---	60.0	50.0	28.4	---	N	
7	0.18095	40.4	35.4	12.7	53.1	48.1	64.4	54.4	11.3	6.3	L1	
8	0.24077	27.9	22.7	12.7	40.6	35.4	62.0	52.0	21.4	16.6	L1	
9	0.30148	21.4	---	12.7	34.1	---	60.2	50.2	26.1	---	L1	
10	13.26030	26.8	24.9	13.3	40.1	38.2	60.0	50.0	19.9	11.8	L1	
11	18.99100	16.6	---	13.5	30.1	---	60.0	50.0	29.9	---	L1	
12	25.73441	19.0	---	13.8	32.8	---	60.0	50.0	27.2	---	L1	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]
 LISN:SLS-05

-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 3, 2012	
Temperature / Humidity	26 deg.C , 50 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11a, PN9, worst antenna port 1, worst data mode 6Mbps	

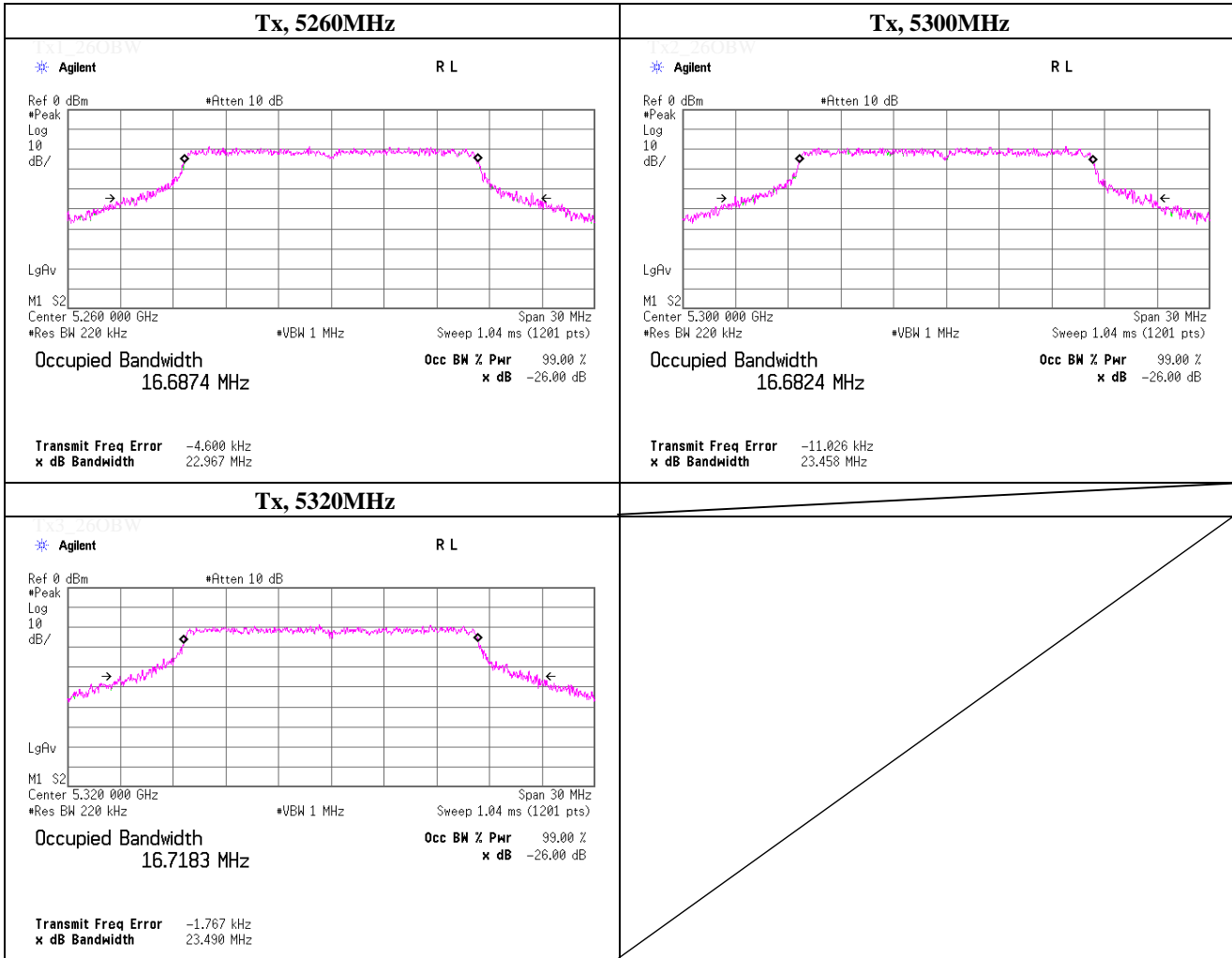
Freq. [MHz]	-26dB Bandwidth [MHz]
5180.0000	23.220
5220.0000	22.369
5240.0000	22.159



-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 21, 2012	
Temperature / Humidity	27 deg.C , 54 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11a, PN9, worst antenna port 1, worst data mode 6Mbps	

Freq. [MHz]	-26dB Bandwidth [MHz]
5260.0000	22.967
5300.0000	23.458
5320.0000	23.490

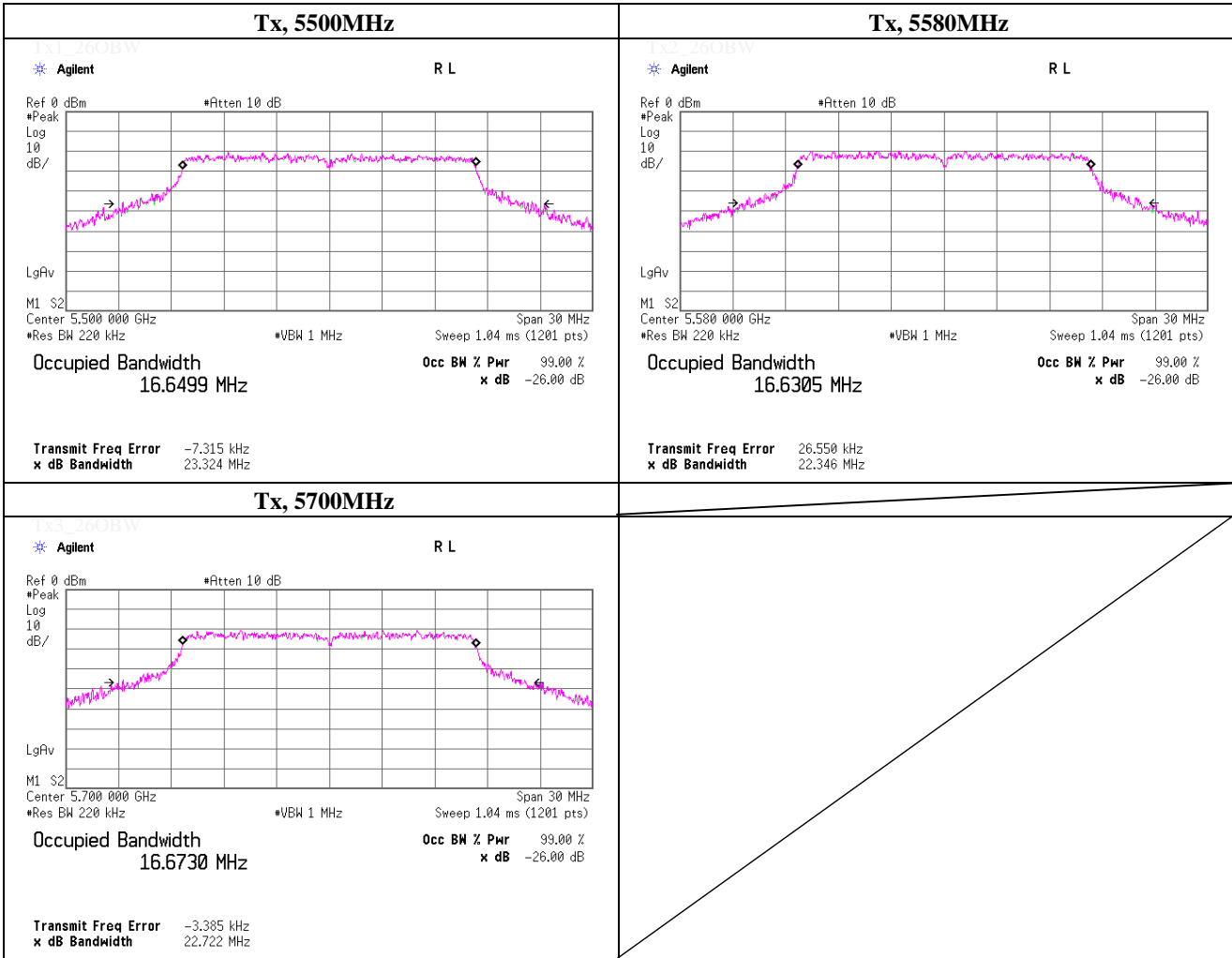


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-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25 deg.C , 50%RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11a, PN9, worst antenna port 1, worst data mode 6Mbps	

Freq. [MHz]	-26dB Bandwidth [MHz]
5500.0000	23.324
5580.0000	22.346
5700.0000	22.722

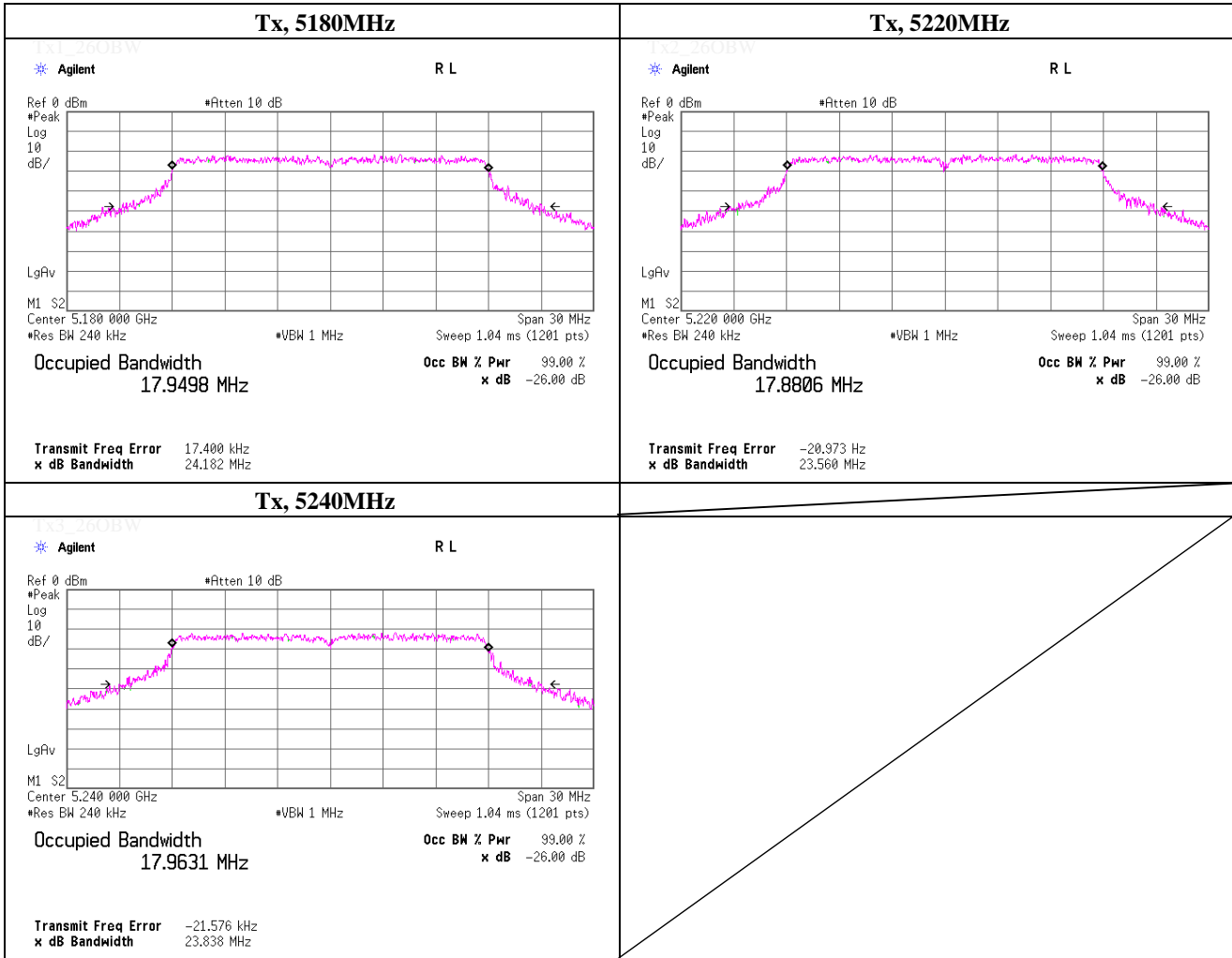


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-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 3, 2012	
Temperature / Humidity	26 deg.C , 50 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT20), PN9, worst antenna port 1, worst data mode 0(MCS)	

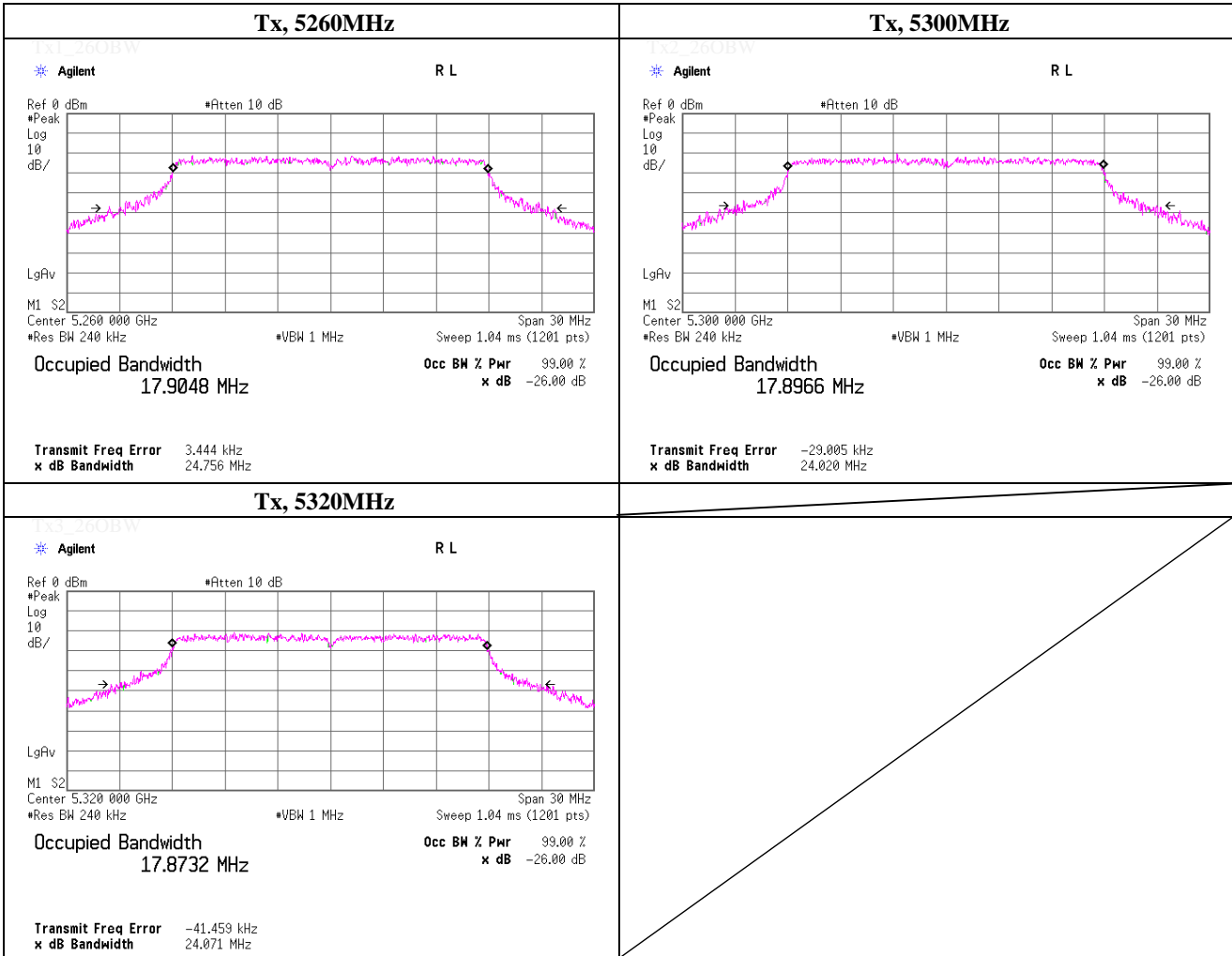
Freq. [MHz]	-26dB Bandwidth [MHz]
5180.0000	24.182
5220.0000	23.560
5240.0000	23.838



-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 21, 2012	
Temperature / Humidity	27 deg.C , 54 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT20), PN9, worst antenna port 1, worst data mode 0(MCS)	

Freq. [MHz]	-26dB Bandwidth [MHz]
5260.0000	24.756
5300.0000	24.020
5320.0000	24.071

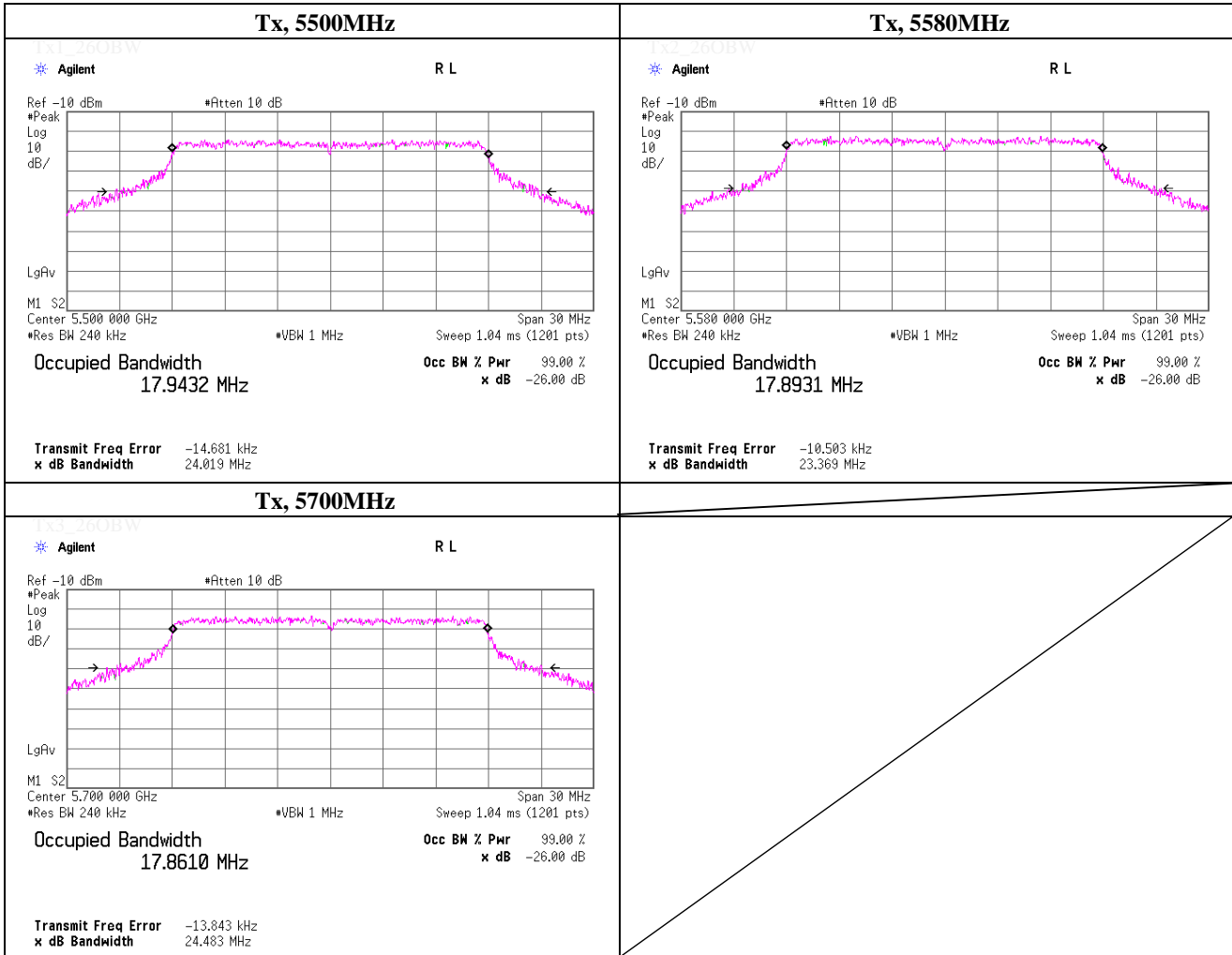


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-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25 deg.C , 50 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT20), PN9, worst antenna port 1, worst data mode 0(MCS)	

Freq. [MHz]	-26dB Bandwidth [MHz]
5500.0000	24.019
5580.0000	23.369
5700.0000	24.483

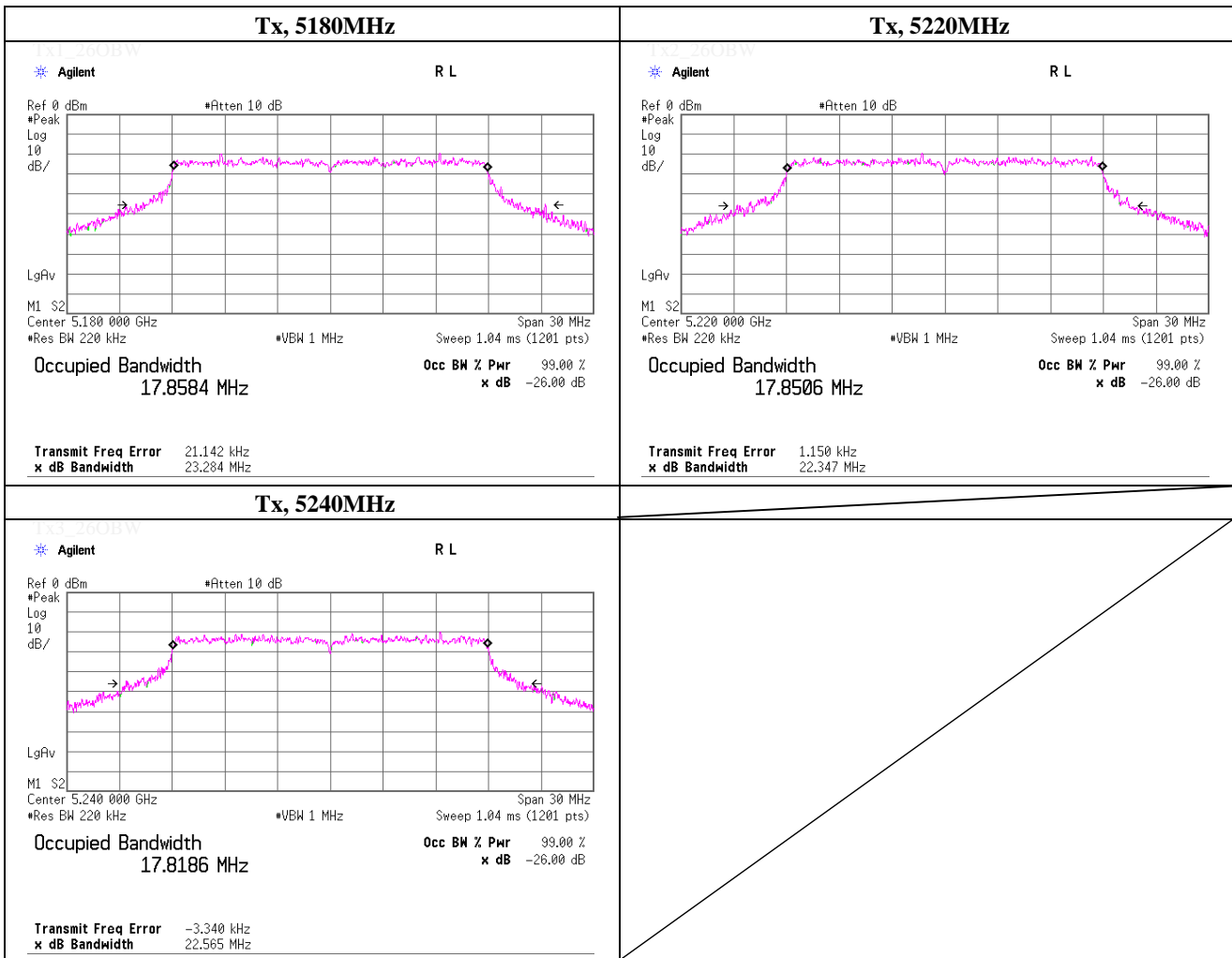


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-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 30, 2012	
Temperature / Humidity	25deg.C , 45%RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT20), PN9, worst antenna port 1, worst data mode 8(MCS)	

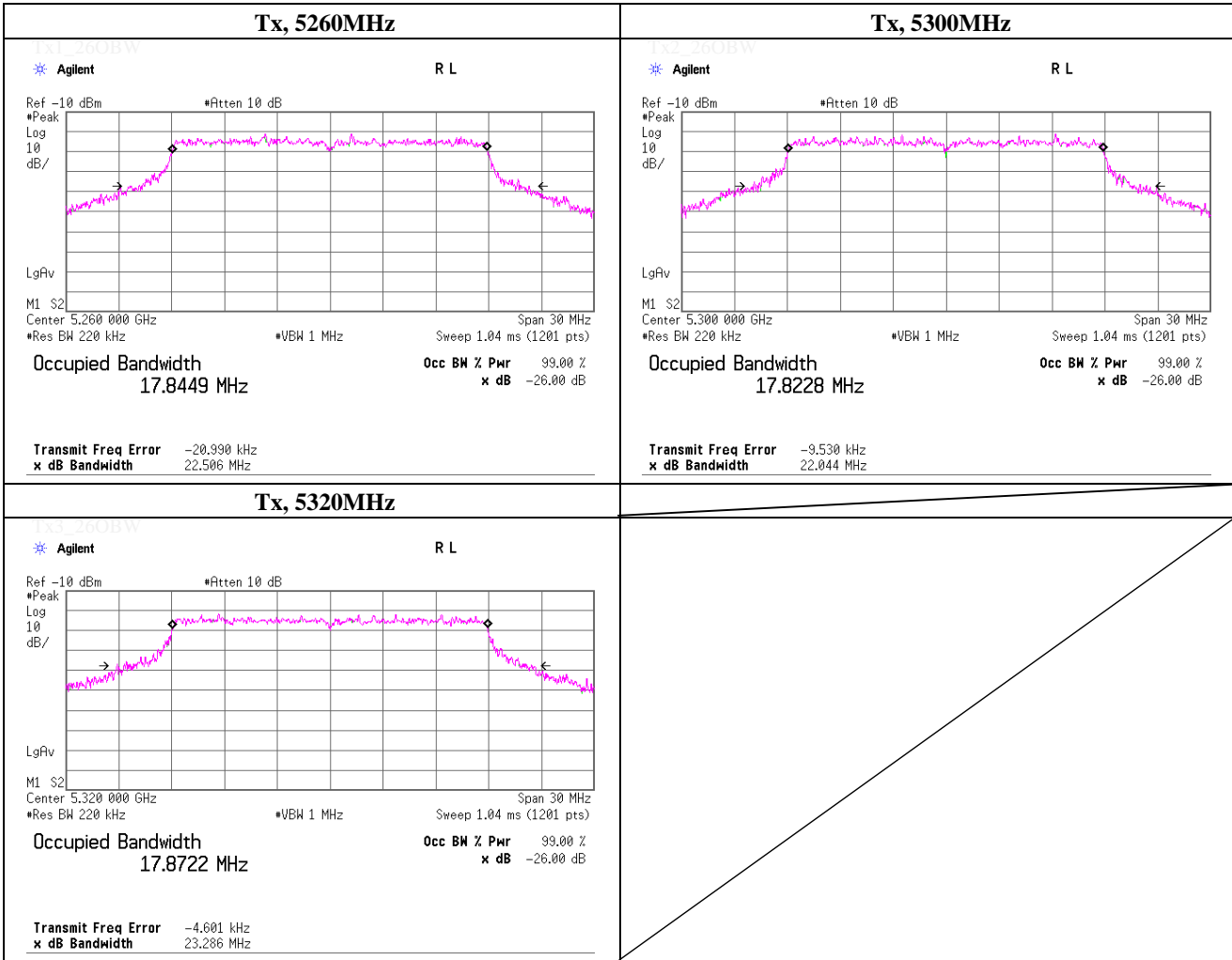
Freq. [MHz]	-26dB Bandwidth [MHz]
5180.0000	23.284
5220.0000	22.347
5240.0000	22.565



-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 24, 2012	
Temperature / Humidity	28 deg.C , 50 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT20), PN9, worst antenna port 1, worst data mode 8(MCS)	

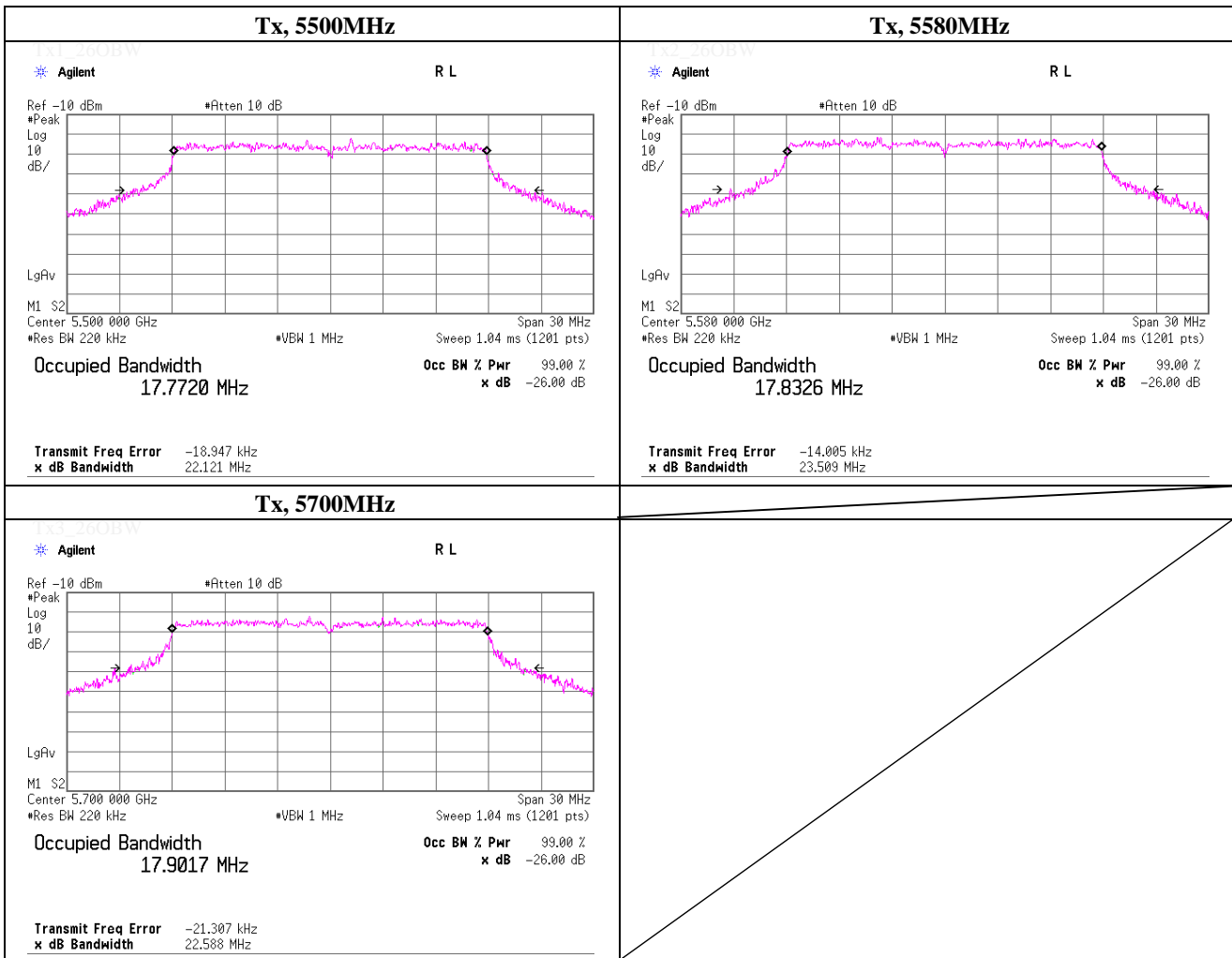
Freq. [MHz]	-26dB Bandwidth [MHz]
5260.0000	22.506
5300.0000	22.044
5320.0000	23.286



-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 30, 2012	
Temperature / Humidity	25 deg.C , 45 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT20), PN9, worst antenna port 1, worst data mode 8(MCS)	

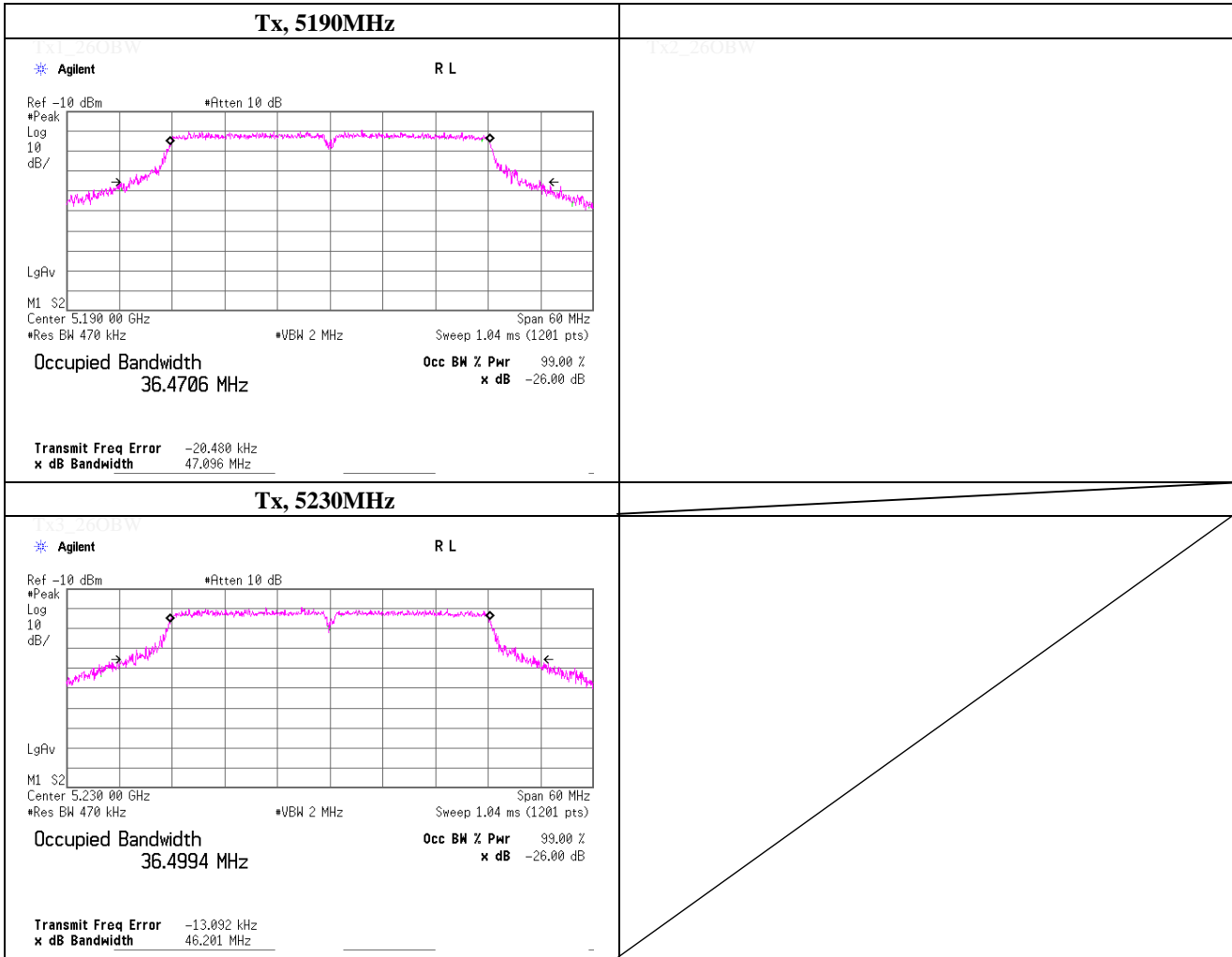
Freq. [MHz]	-26dB Bandwidth [MHz]
5500.0000	22.121
5580.0000	23.509
5700.0000	22.588



-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 3, 2012	
Temperature / Humidity	26 deg.C , 50 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT40), PN9, worst antenna port 1, worst data mode 0(MCS)	

Freq. [MHz]	-26dB Bandwidth [MHz]
5190.0000	47.096
5230.0000	46.201

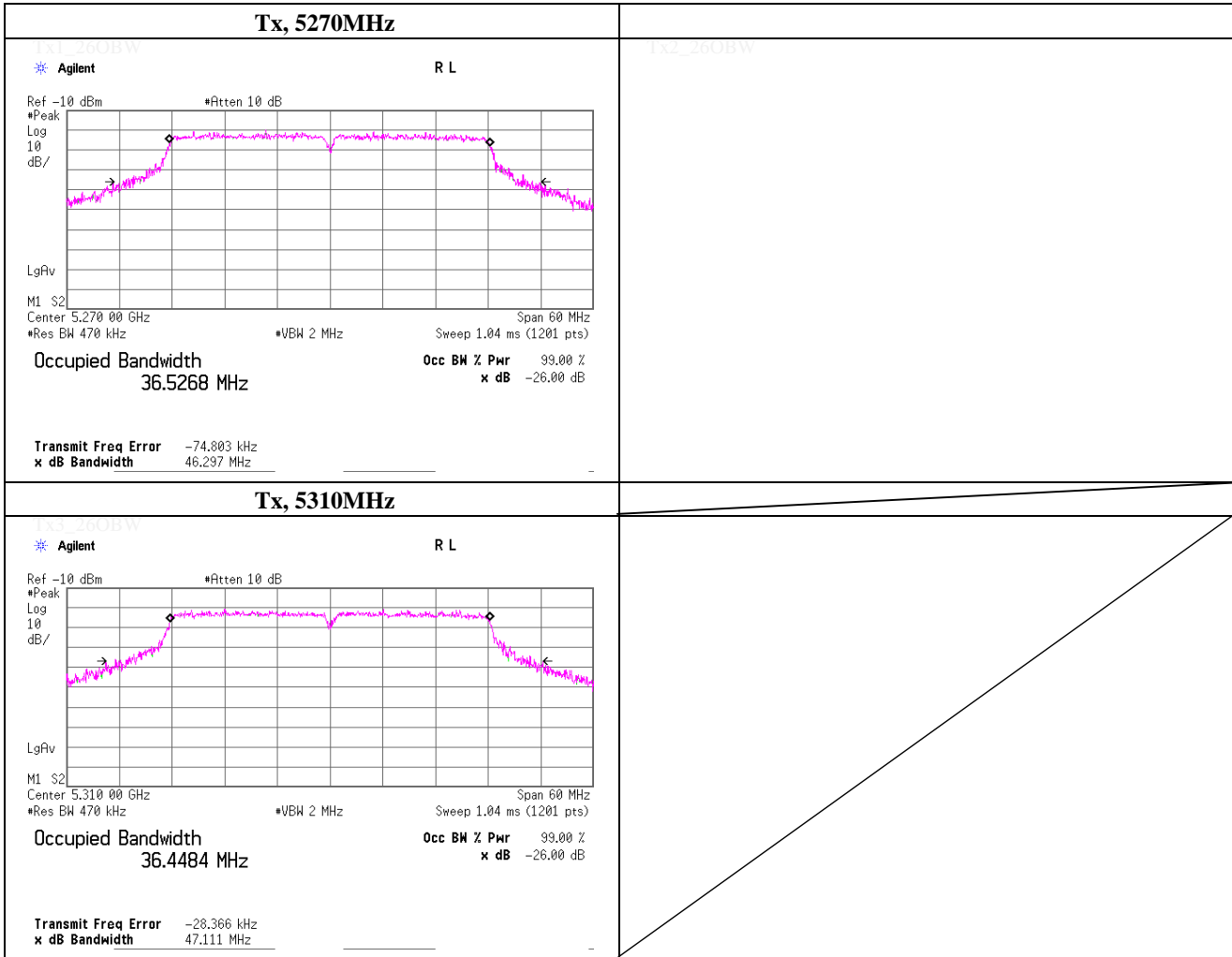


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-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 21, 2012	
Temperature / Humidity	27 deg.C , 54 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT40), PN9, worst antenna port 1, worst data mode 0(MCS)	

Freq. [MHz]	-26dB Bandwidth [MHz]
5270.0000	46.297
5310.0000	47.111

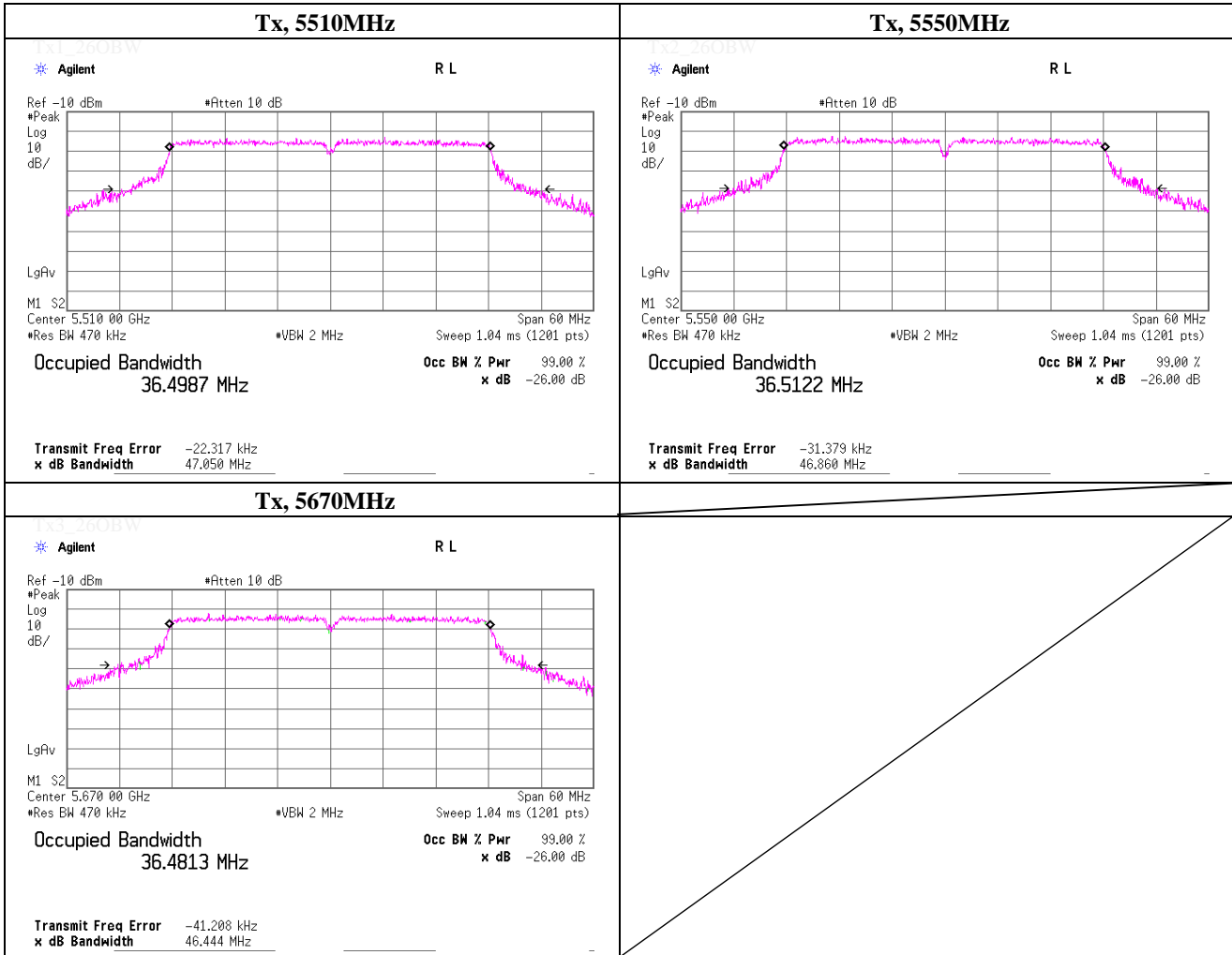


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-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25 deg.C , 50 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT40), PN9, worst antenna port 1, worst data mode 0(MCS)	

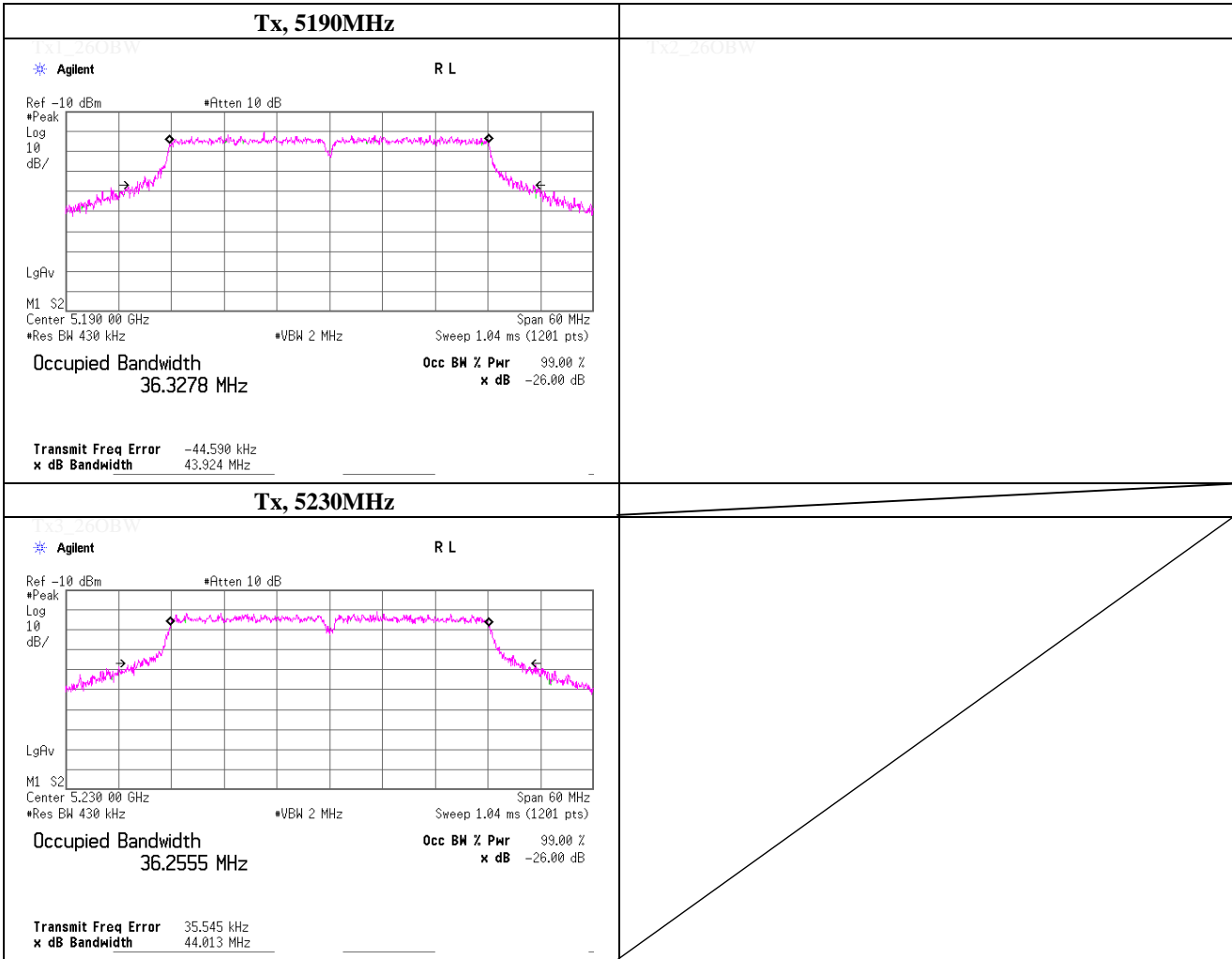
Freq. [MHz]	-26dB Bandwidth [MHz]
5510.0000	47.050
5550.0000	46.860
5670.0000	46.444



-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 24, 2012	
Temperature / Humidity	28 deg.C , 50 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT40), PN9, worst antenna port 1, worst data mode 8(MCS)	

Freq. [MHz]	-26dB Bandwidth [MHz]
5190.0000	43.924
5230.0000	44.013



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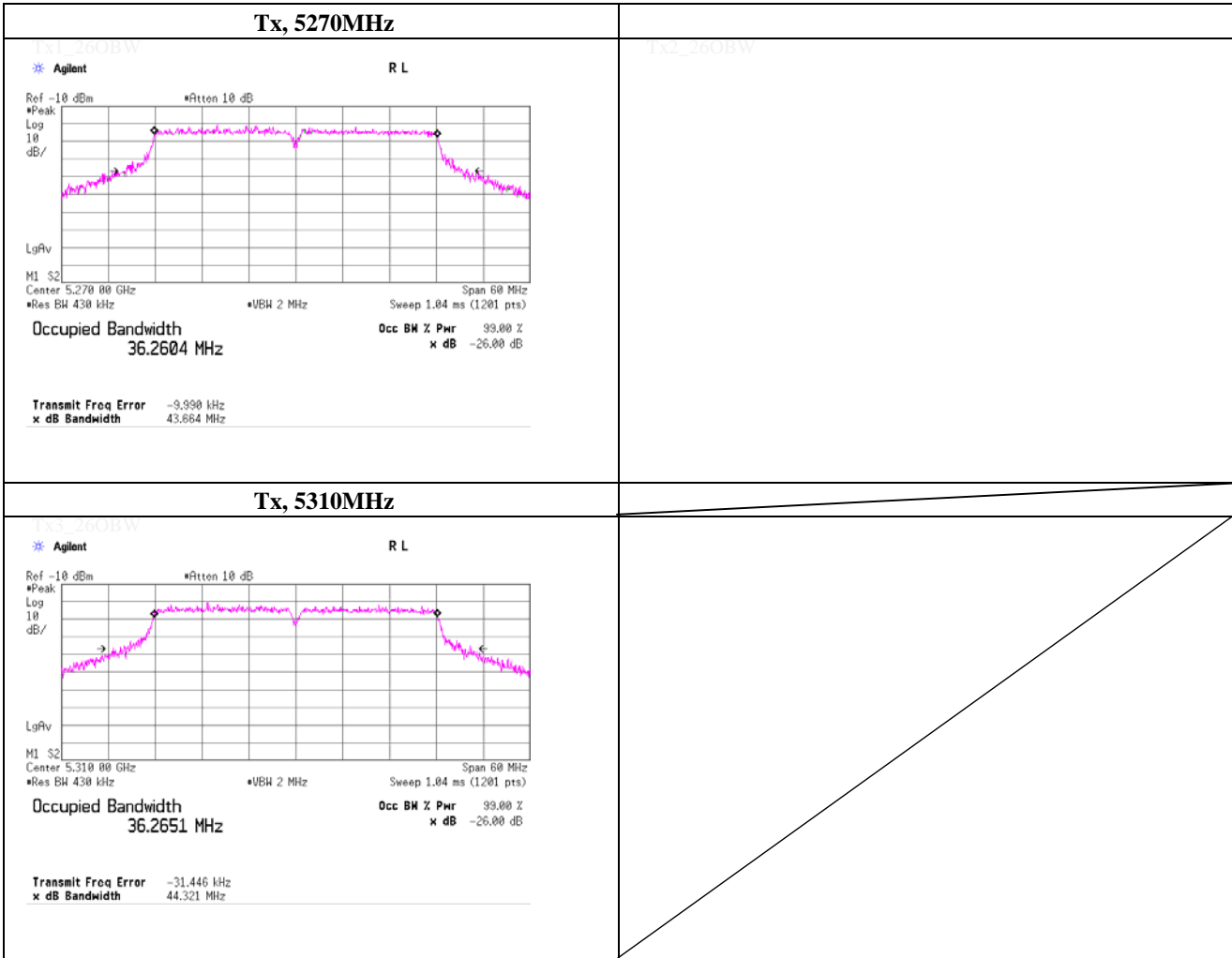
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-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 24, 2012	
Temperature / Humidity	28 deg.C , 50 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT40), PN9, worst antenna port 1, worst data mode 8(MCS)	

Freq. [MHz]	-26dB Bandwidth [MHz]
5270.0000	43.664
5310.0000	44.321

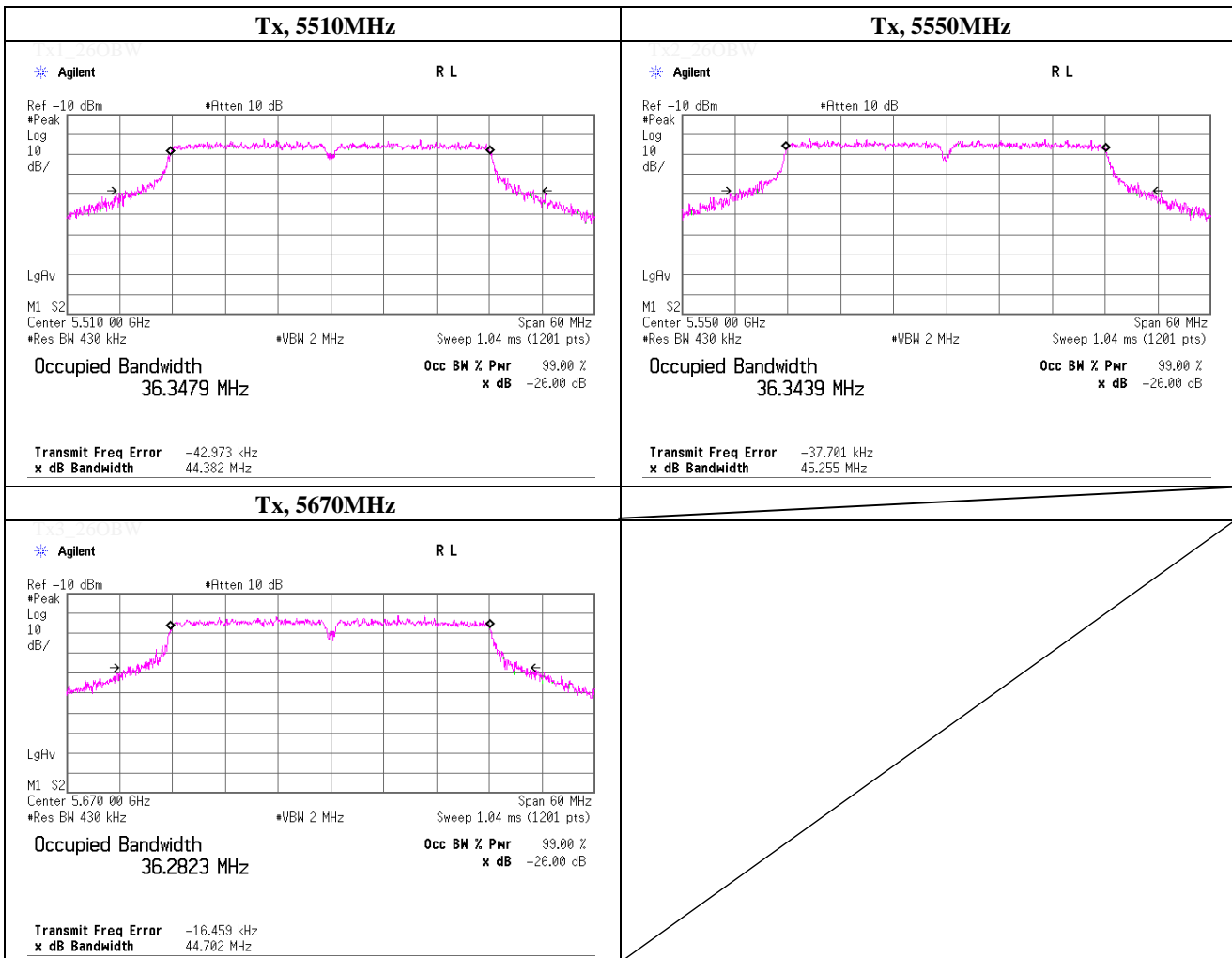


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-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 30, 2012	
Temperature / Humidity	25 deg.C , 45 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT40), PN9, worst antenna port 1, worst data mode 8(MCS)	

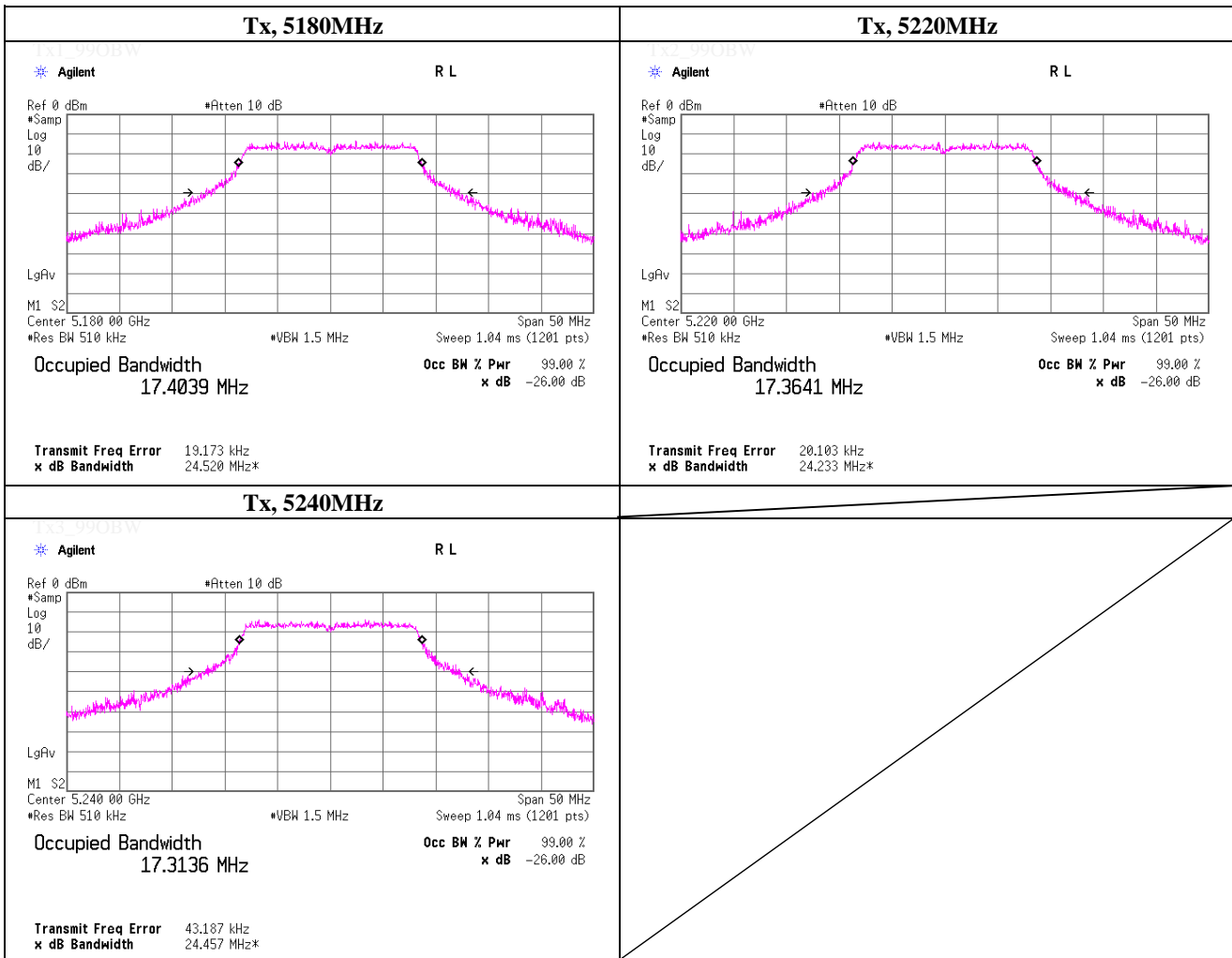
Freq. [MHz]	-26dB Bandwidth [MHz]
5510.0000	44.382
5550.0000	45.255
5670.0000	44.702



99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 3, 2012	
Temperature / Humidity	26 deg.C , 50 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11a, PN9, worst antenna port 1, worst data mode 6Mbps	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5180.0000	17.404
5220.0000	17.364
5240.0000	17.314

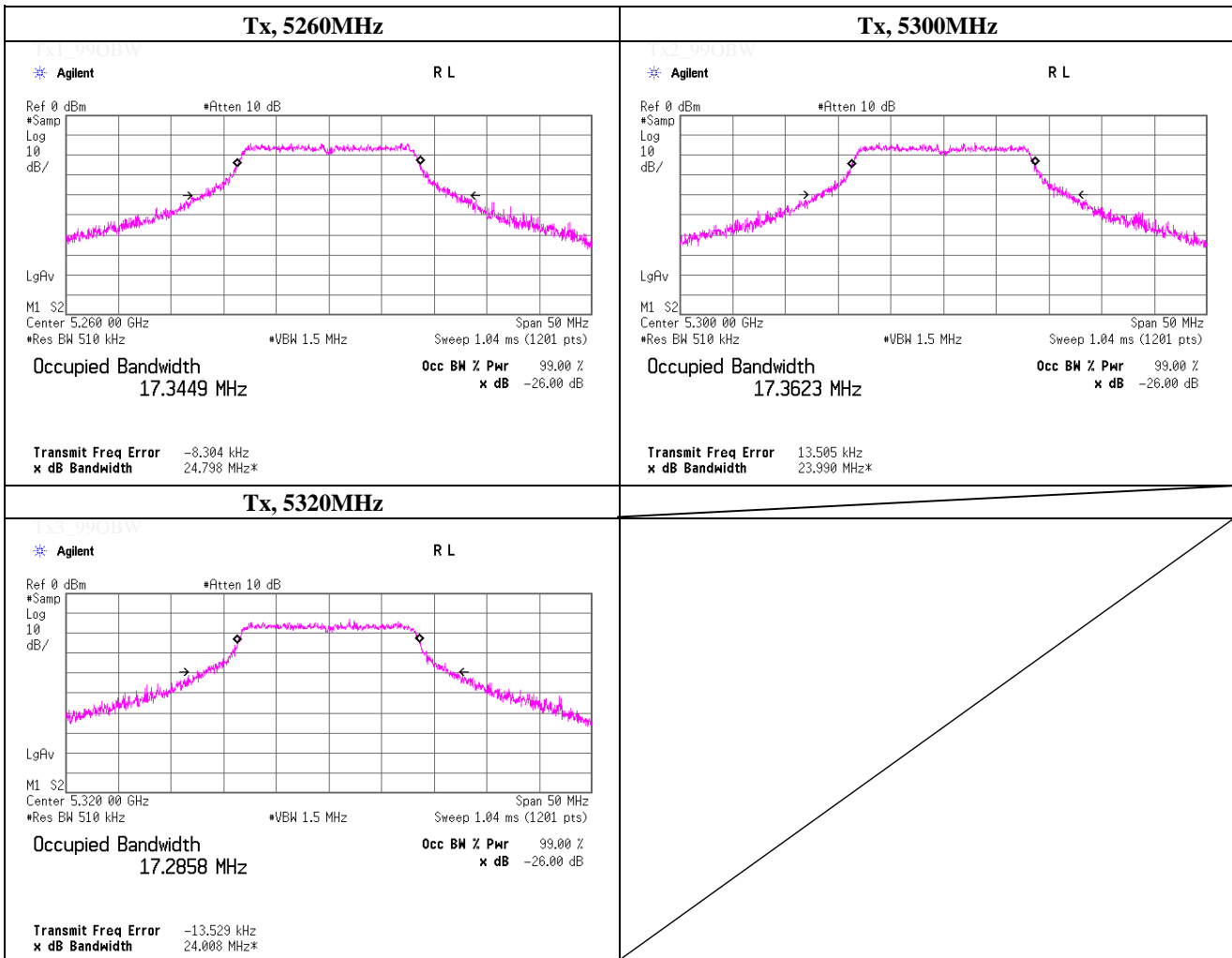


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99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 21, 2012	
Temperature / Humidity	27 deg.C , 54 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11a, PN9, worst antenna port 1, worst data mode 6Mbps	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5260.0000	17.345
5300.0000	17.362
5320.0000	17.286

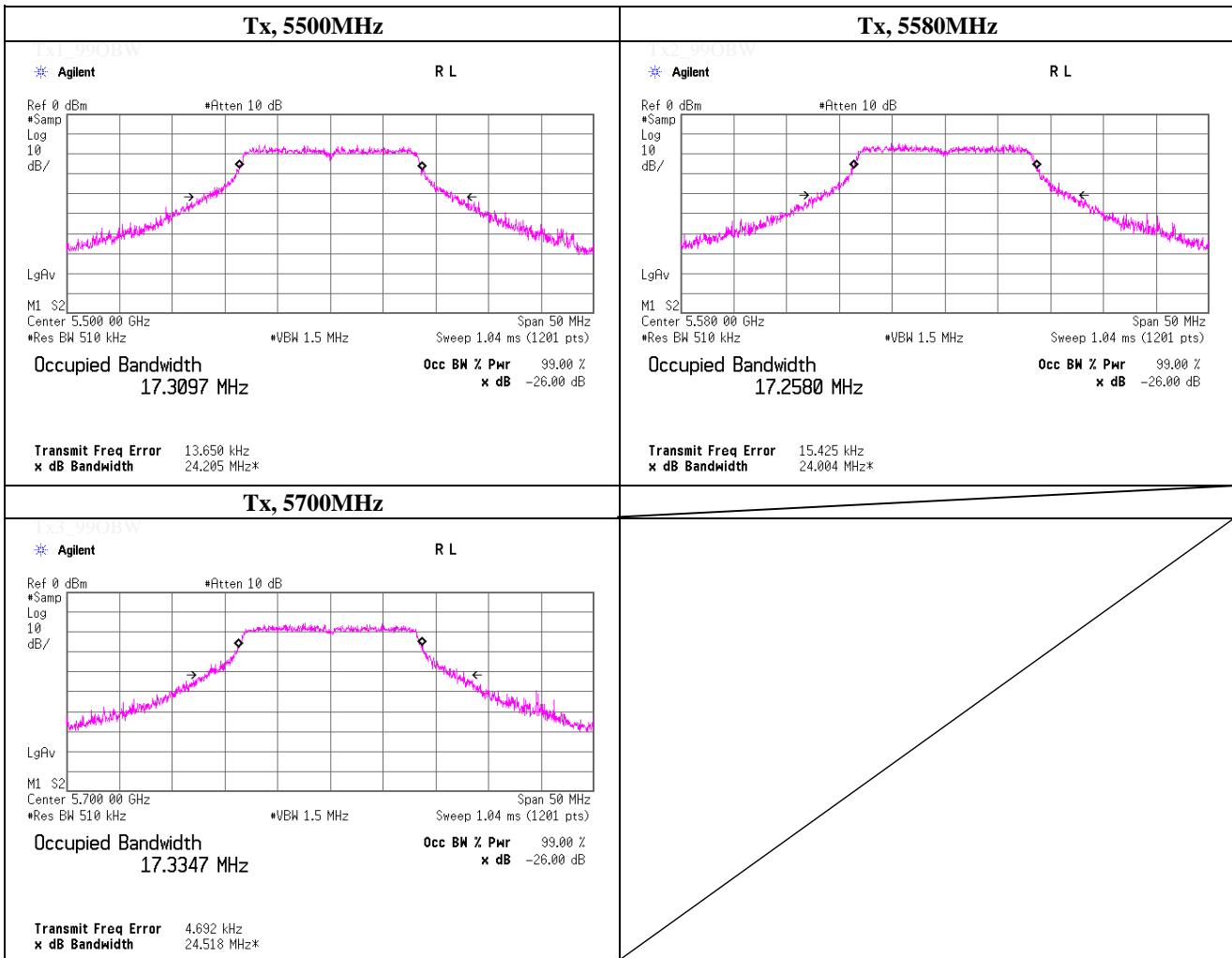


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99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25 deg.C , 50%RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11a, PN9, worst antenna port 1, worst data mode 6Mbps	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5500.0000	17.310
5580.0000	17.258
5700.0000	17.335

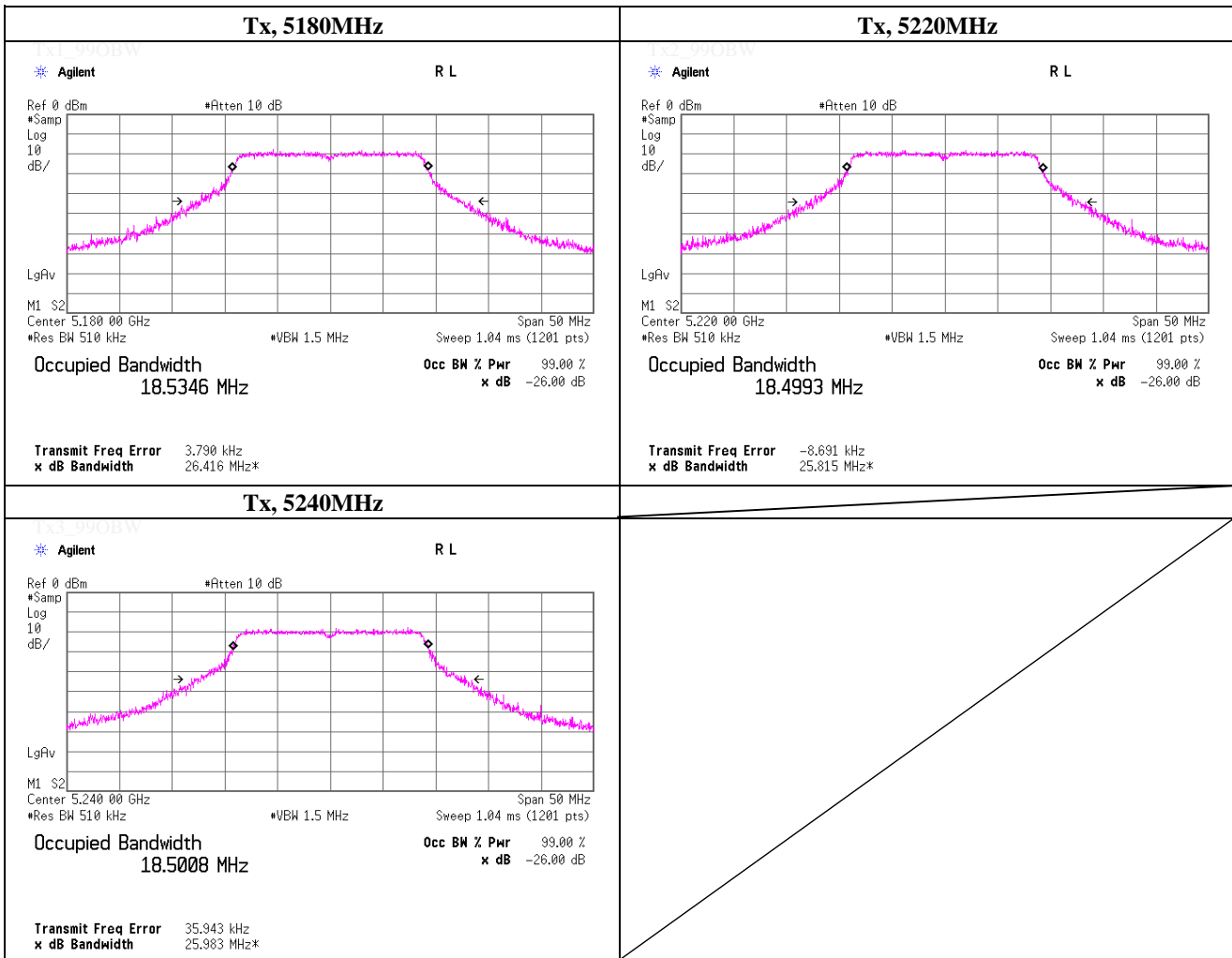


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99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 3, 2012	
Temperature / Humidity	26 deg.C , 50 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT20), PN9, worst antenna port 1, worst data mode 0(MCS)	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5180.0000	18.535
5220.0000	18.499
5240.0000	18.501

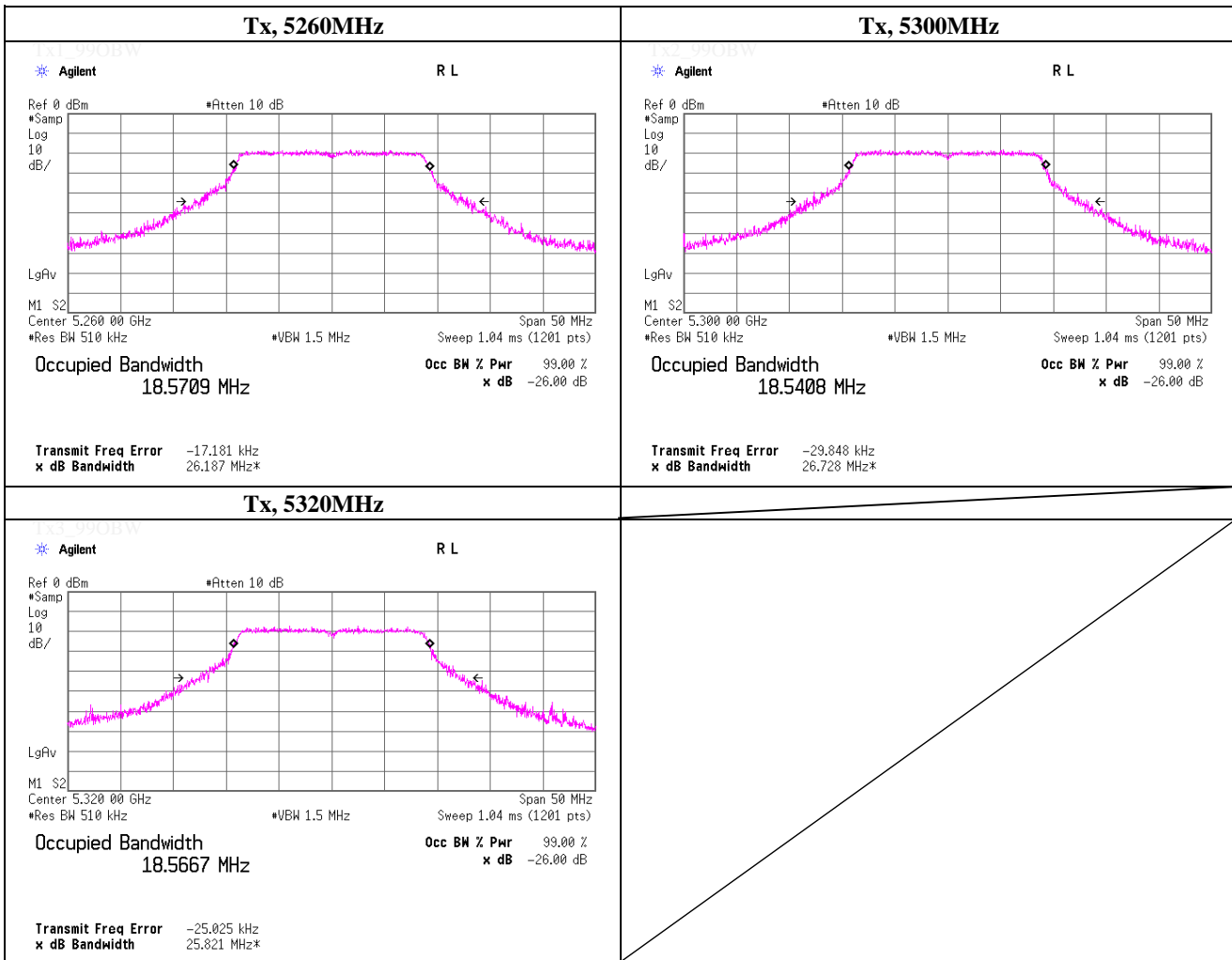


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99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 21, 2012	
Temperature / Humidity	27 deg.C , 54 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT20), PN9, worst antenna port 1, worst data mode 0(MCS)	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5260.0000	18.571
5300.0000	18.541
5320.0000	18.567

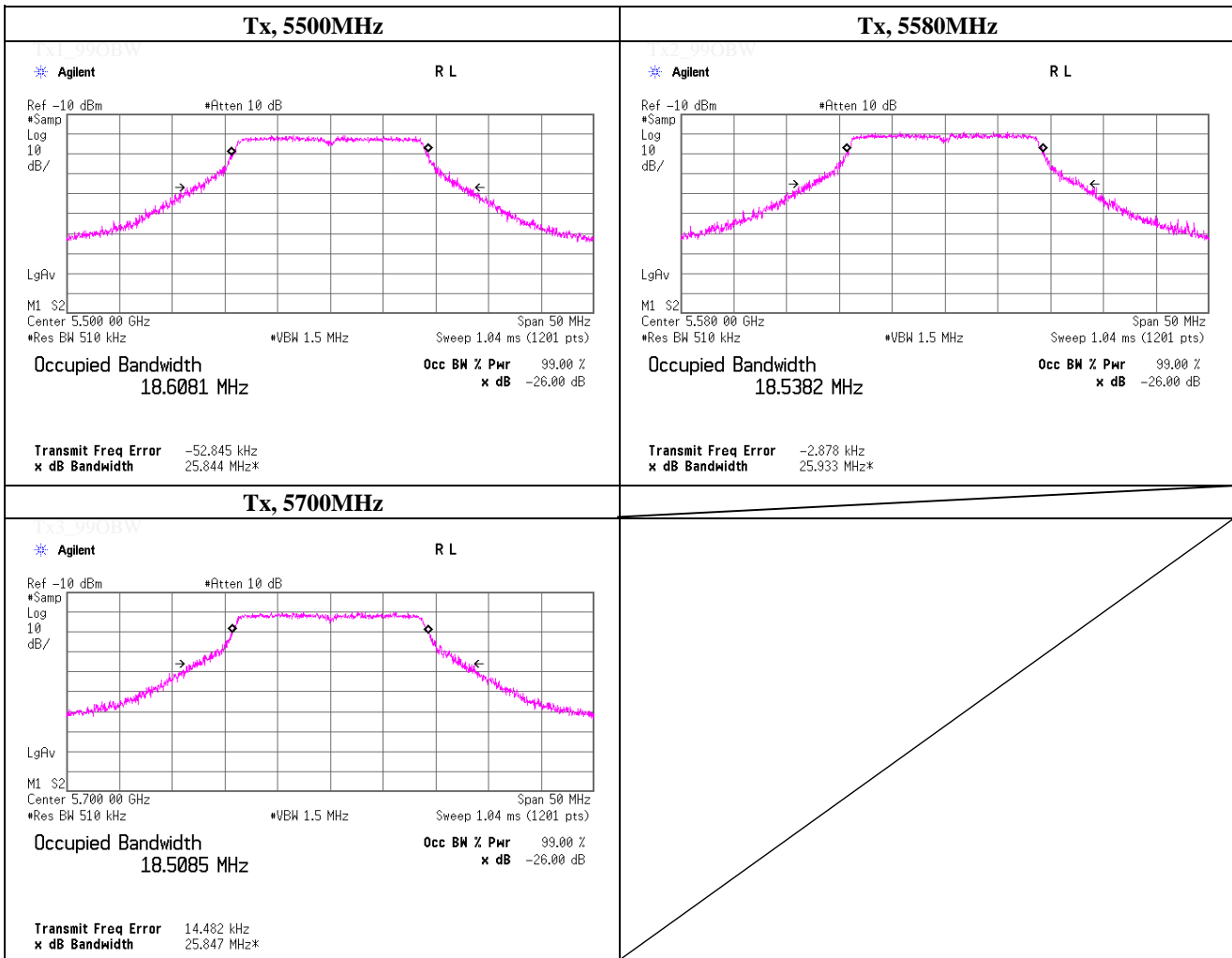


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99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25 deg.C , 50%RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT20), PN9, worst antenna port 1, worst data mode 0(MCS)	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5500.0000	18.608
5580.0000	18.538
5700.0000	18.509

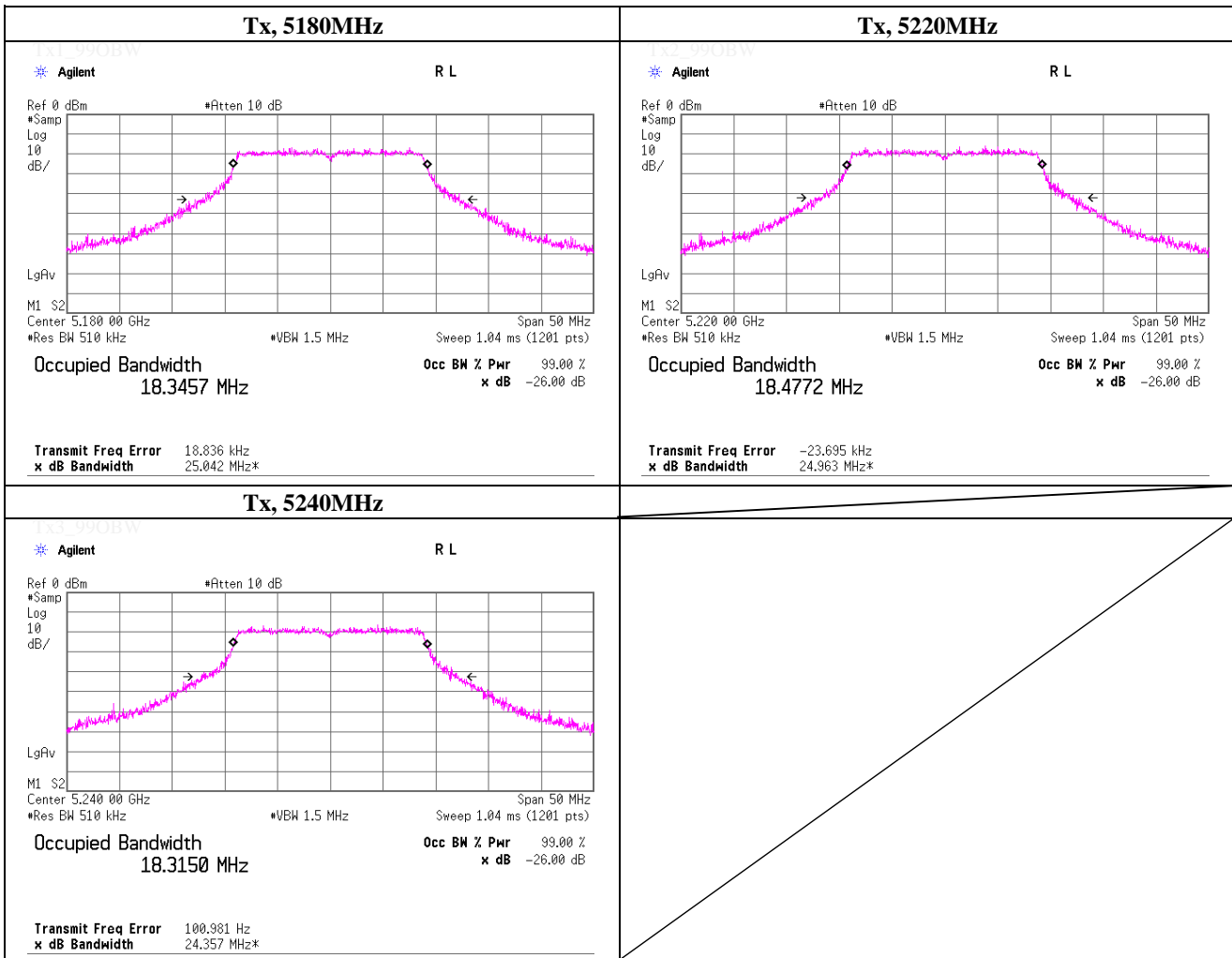


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99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 30, 2012	
Temperature / Humidity	25deg.C , 45%RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT20), PN9, worst antenna port 1, worst data mode 8(MCS)	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5180.0000	18.346
5220.0000	18.477
5240.0000	18.315

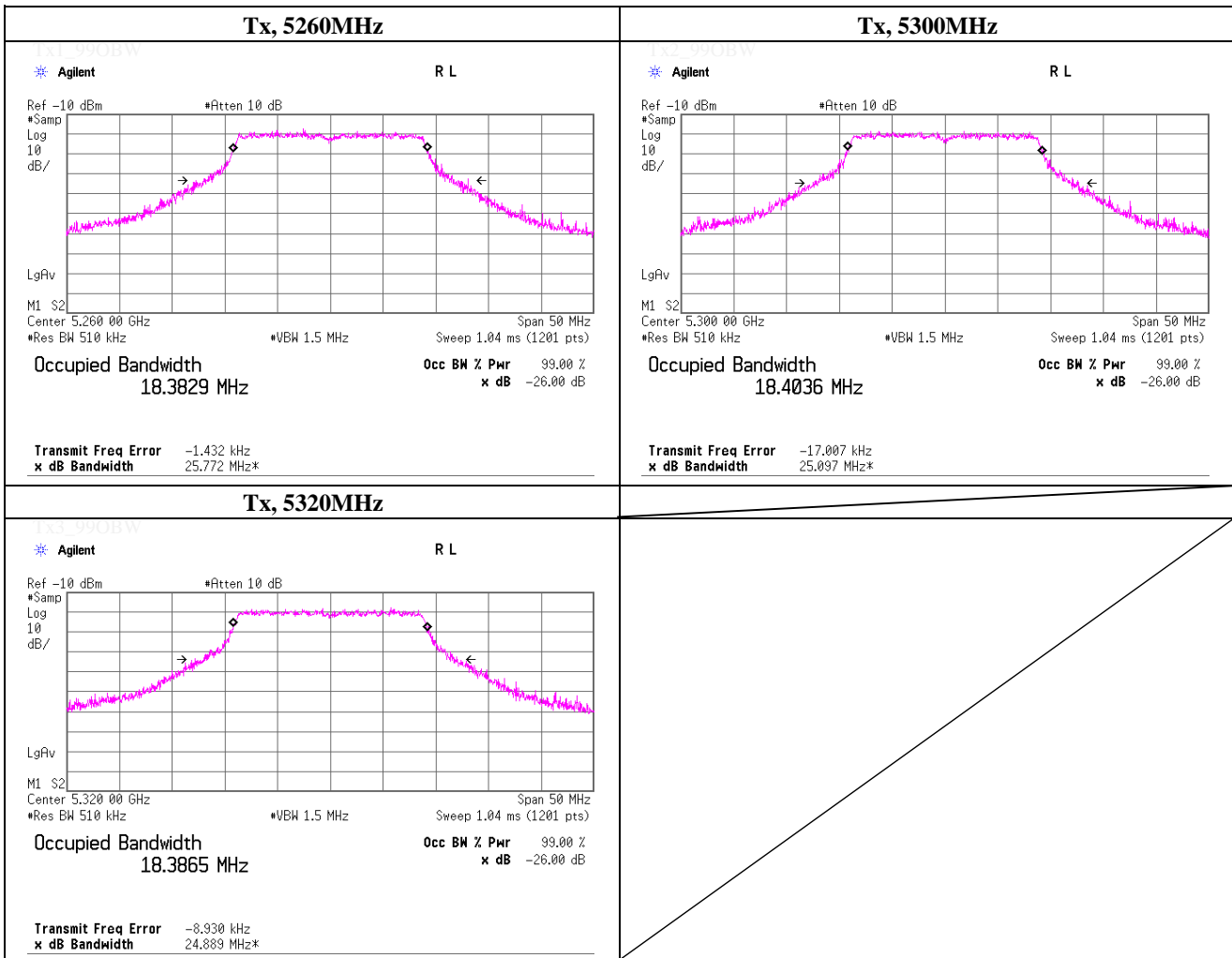


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99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 24, 2012	
Temperature / Humidity	28 deg.C , 50 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT20), PN9, worst antenna port 1, worst data mode 8(MCS)	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5260.0000	18.383
5300.0000	18.404
5320.0000	18.387

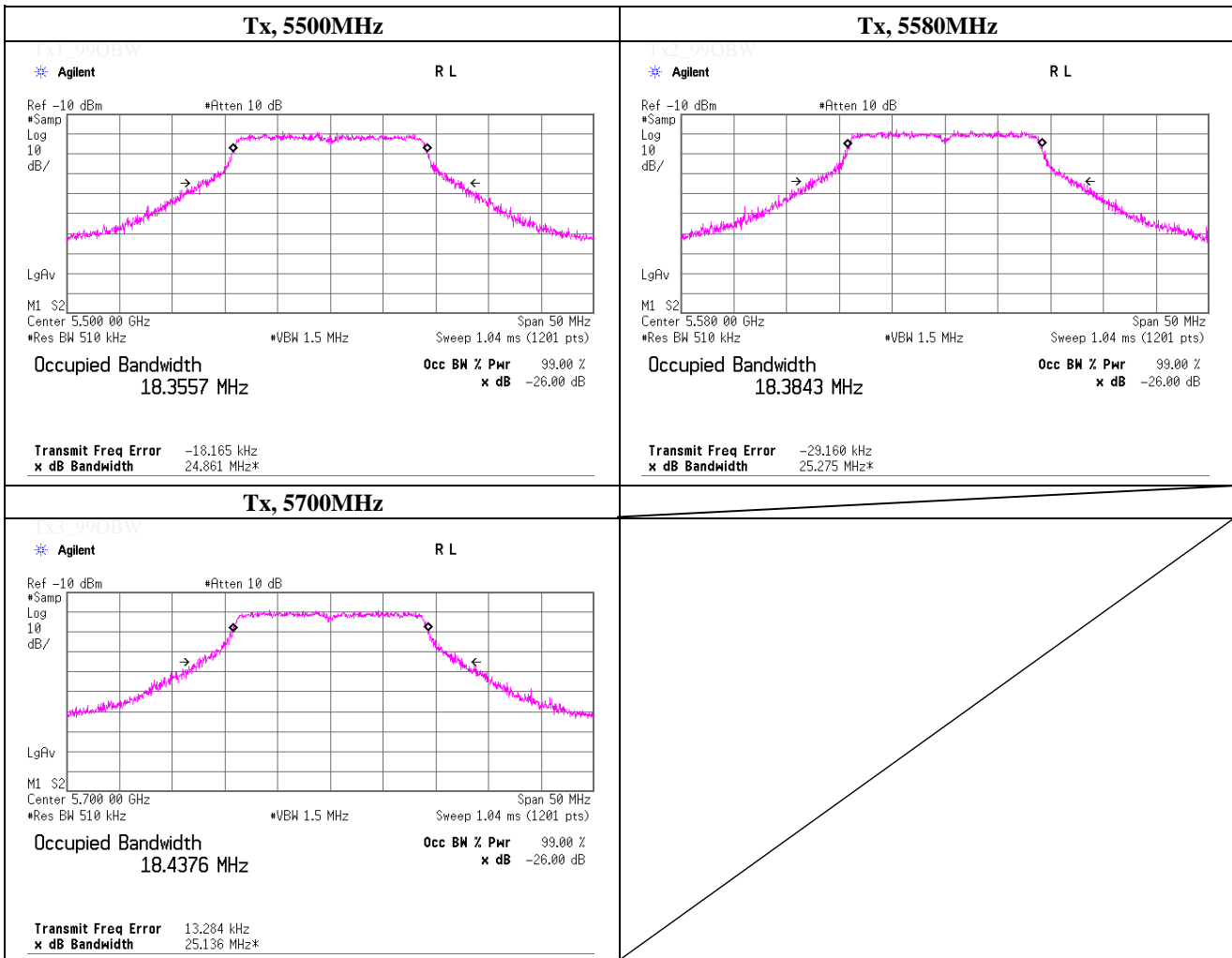


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99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 30, 2012	
Temperature / Humidity	25 deg.C , 45 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT20), PN9, worst antenna port 1, worst data mode 8(MCS)	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5500.0000	18.356
5580.0000	18.384
5700.0000	18.438

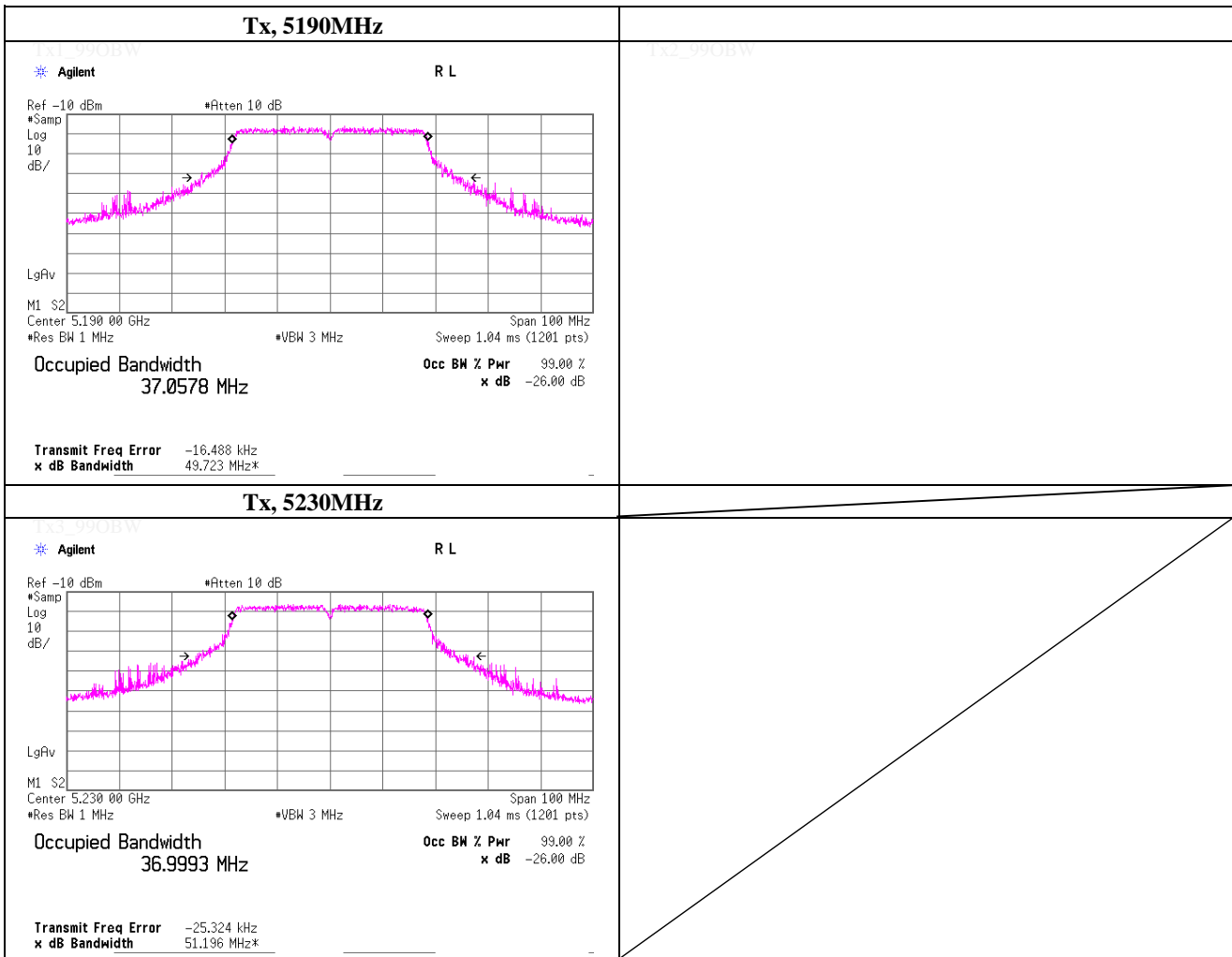


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99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 3, 2012	
Temperature / Humidity	26 deg.C , 50 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT40), PN9, worst antenna port 1, worst data mode 0(MCS)	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5190.0000	37.058
5230.0000	36.999

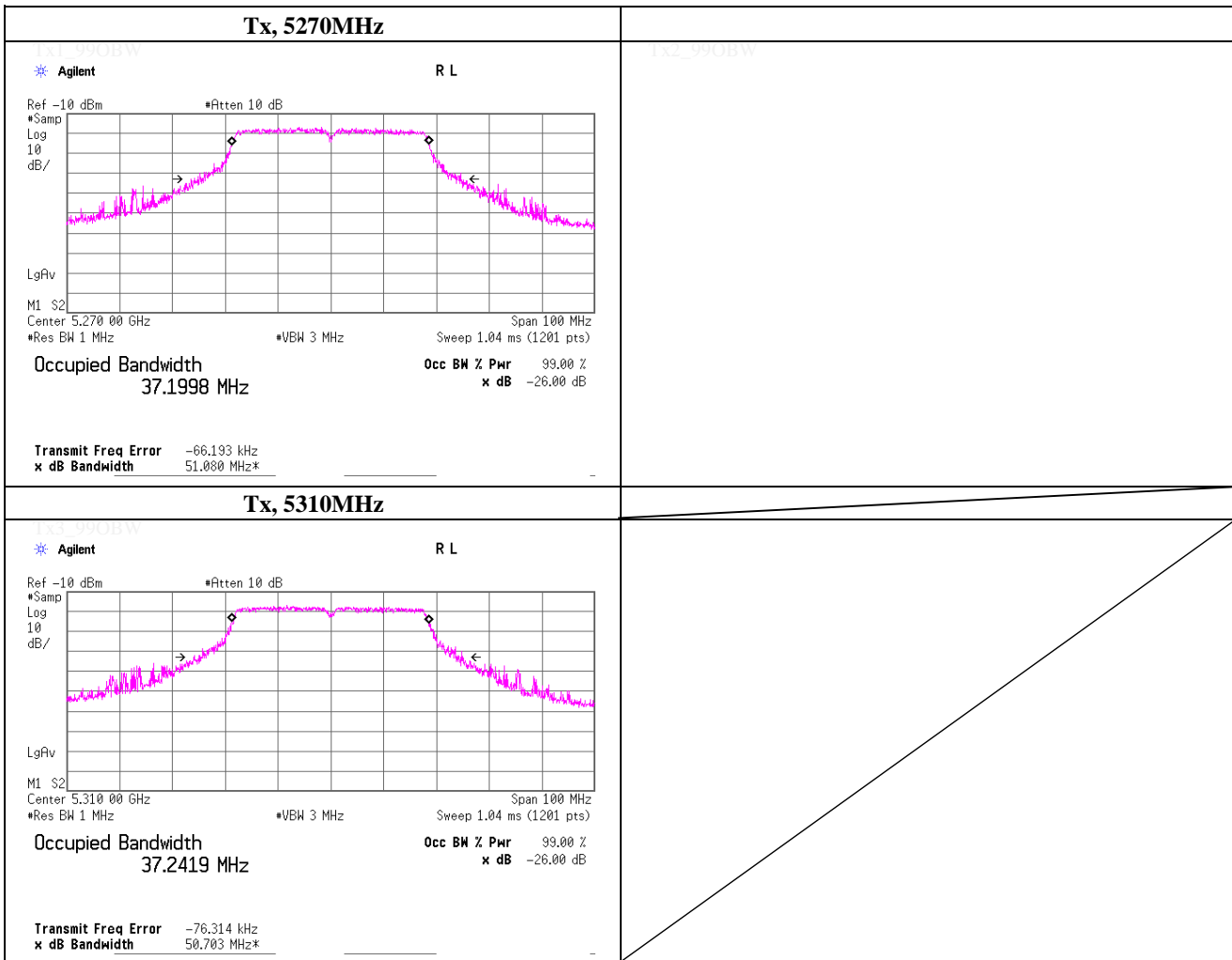


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99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 21, 2012	
Temperature / Humidity	27 deg.C , 54 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT40), PN9, worst antenna port 1, worst data mode 0(MCS)	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5270.0000	37.200
5310.0000	37.242

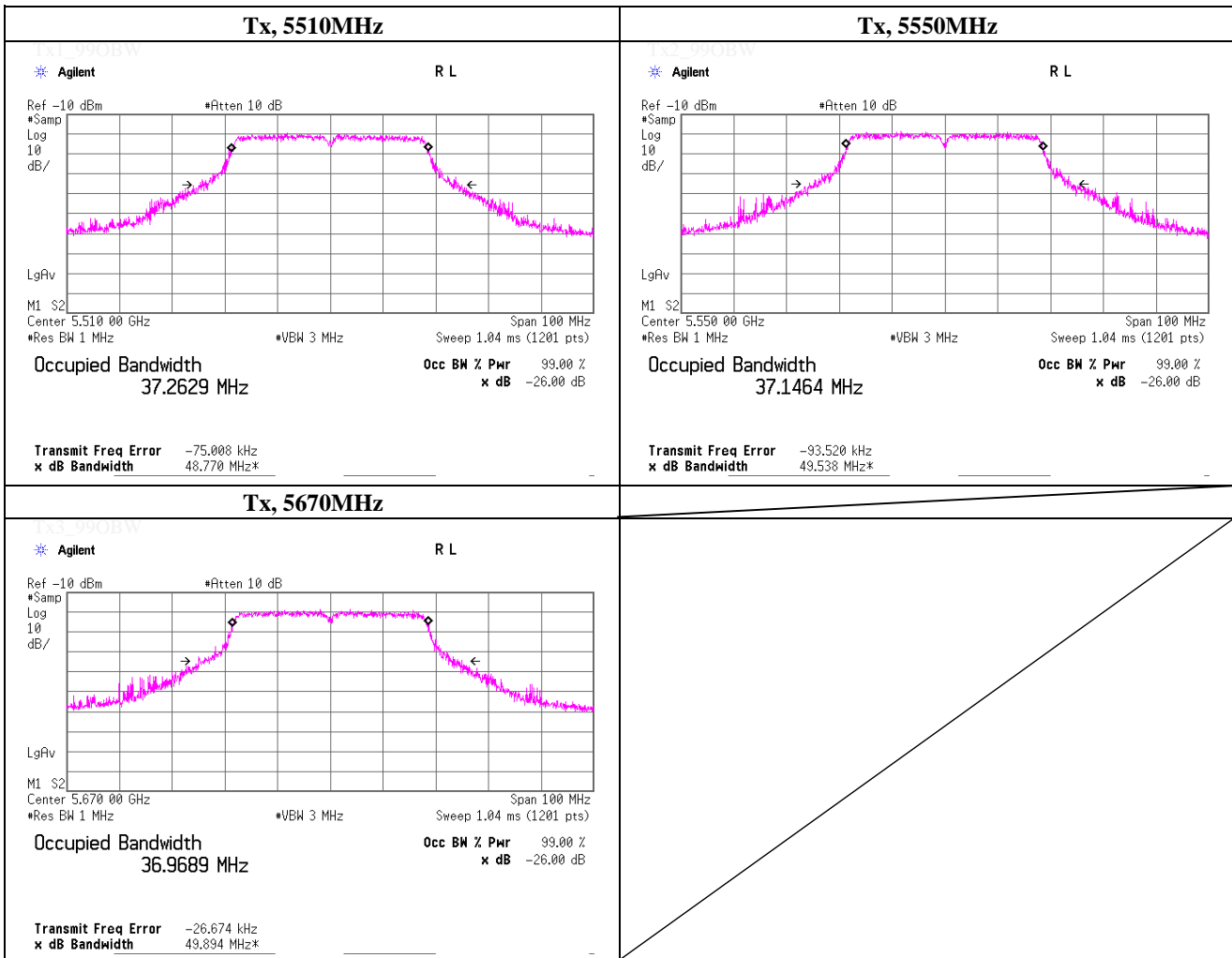


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99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25 deg.C , 50 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT40), PN9, worst antenna port 1, worst data mode 0(MCS)	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5510.0000	37.263
5550.0000	37.146
5670.0000	36.969

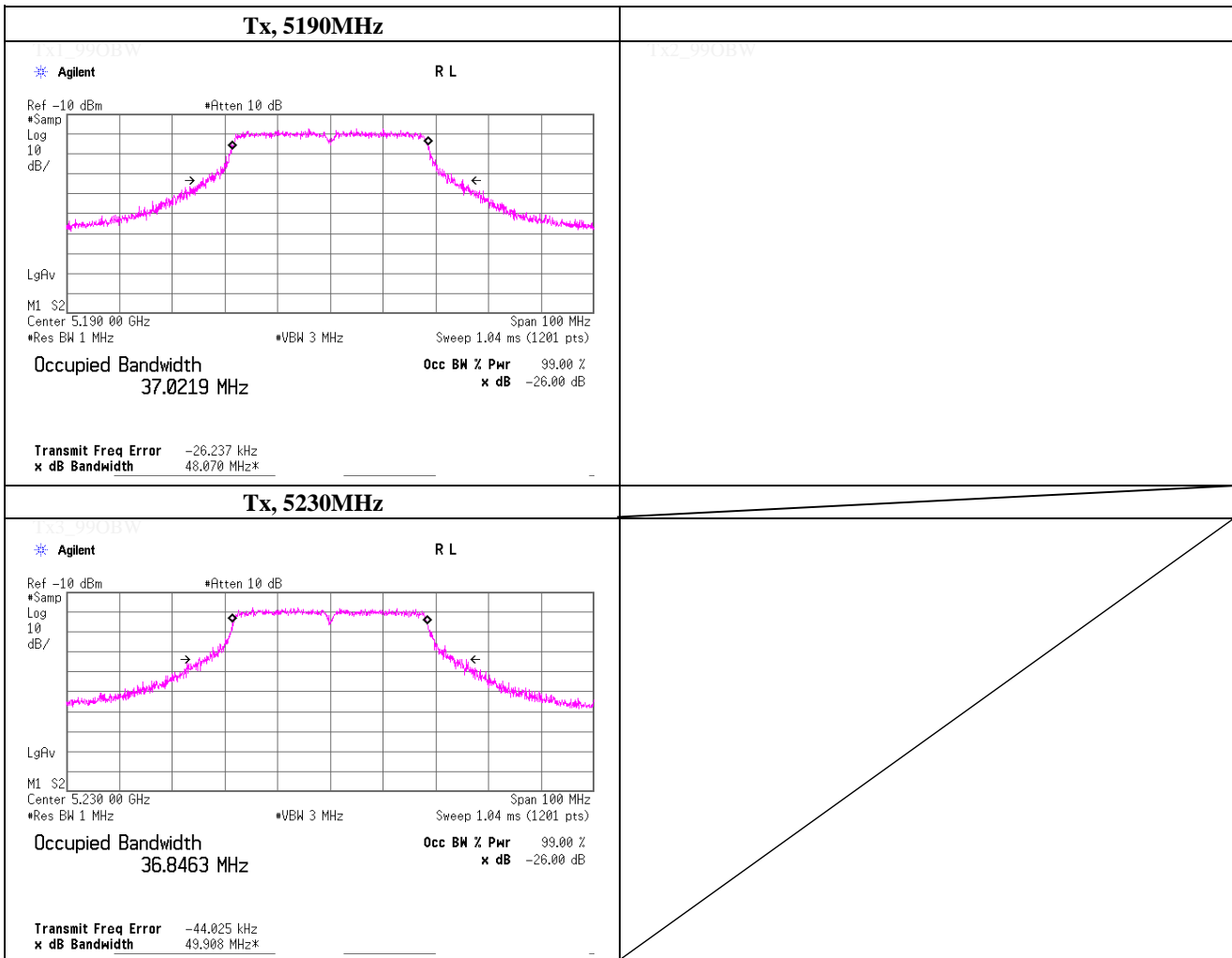


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99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 24, 2012	
Temperature / Humidity	28 deg.C , 50 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT40), PN9, worst antenna port 1, worst data mode 8(MCS)	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5190.0000	37.022
5230.0000	36.846

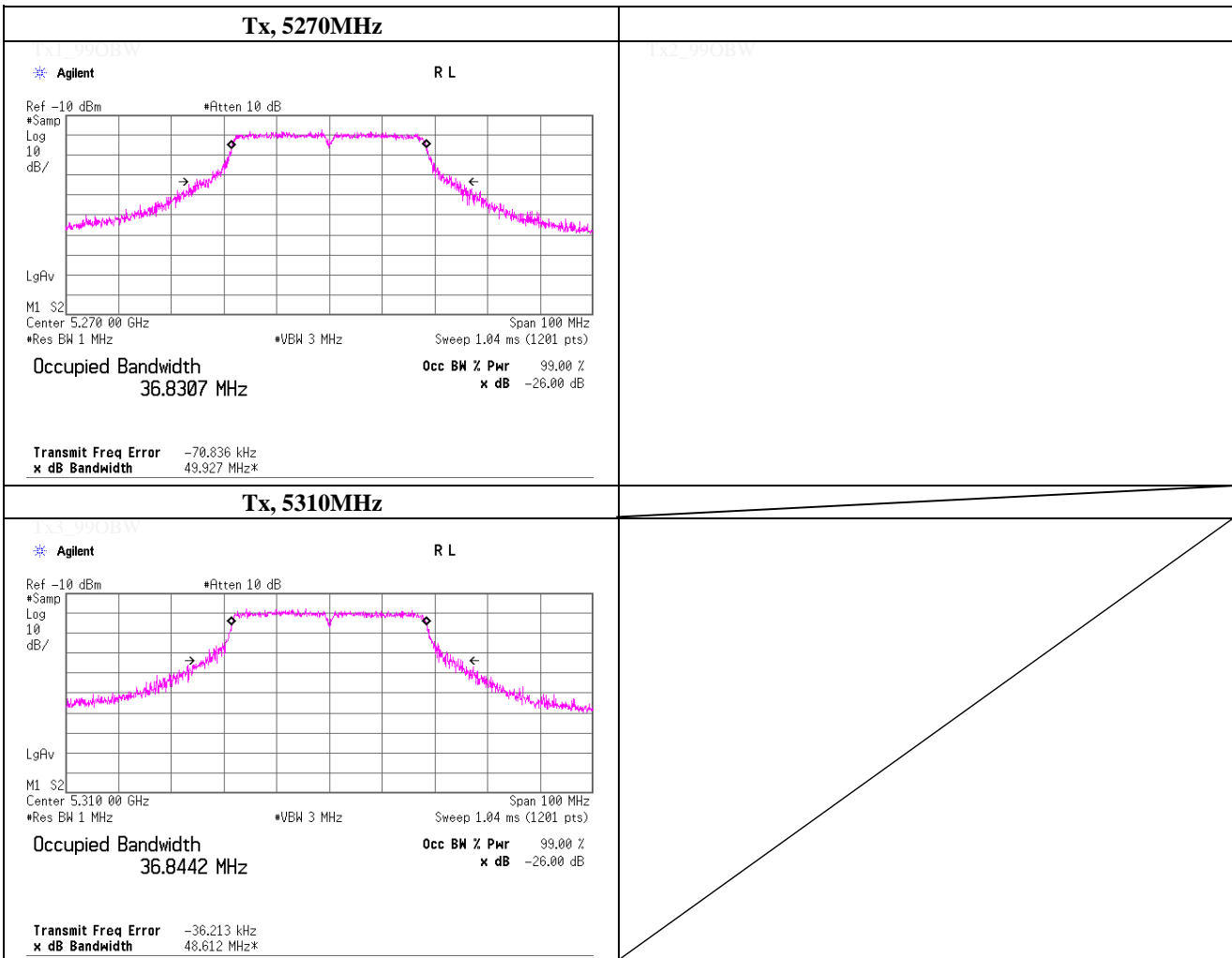


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99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 24, 2012	
Temperature / Humidity	28 deg.C , 50 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT40), PN9, worst antenna port 1, worst data mode 8(MCS)	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5270.0000	36.831
5310.0000	36.844



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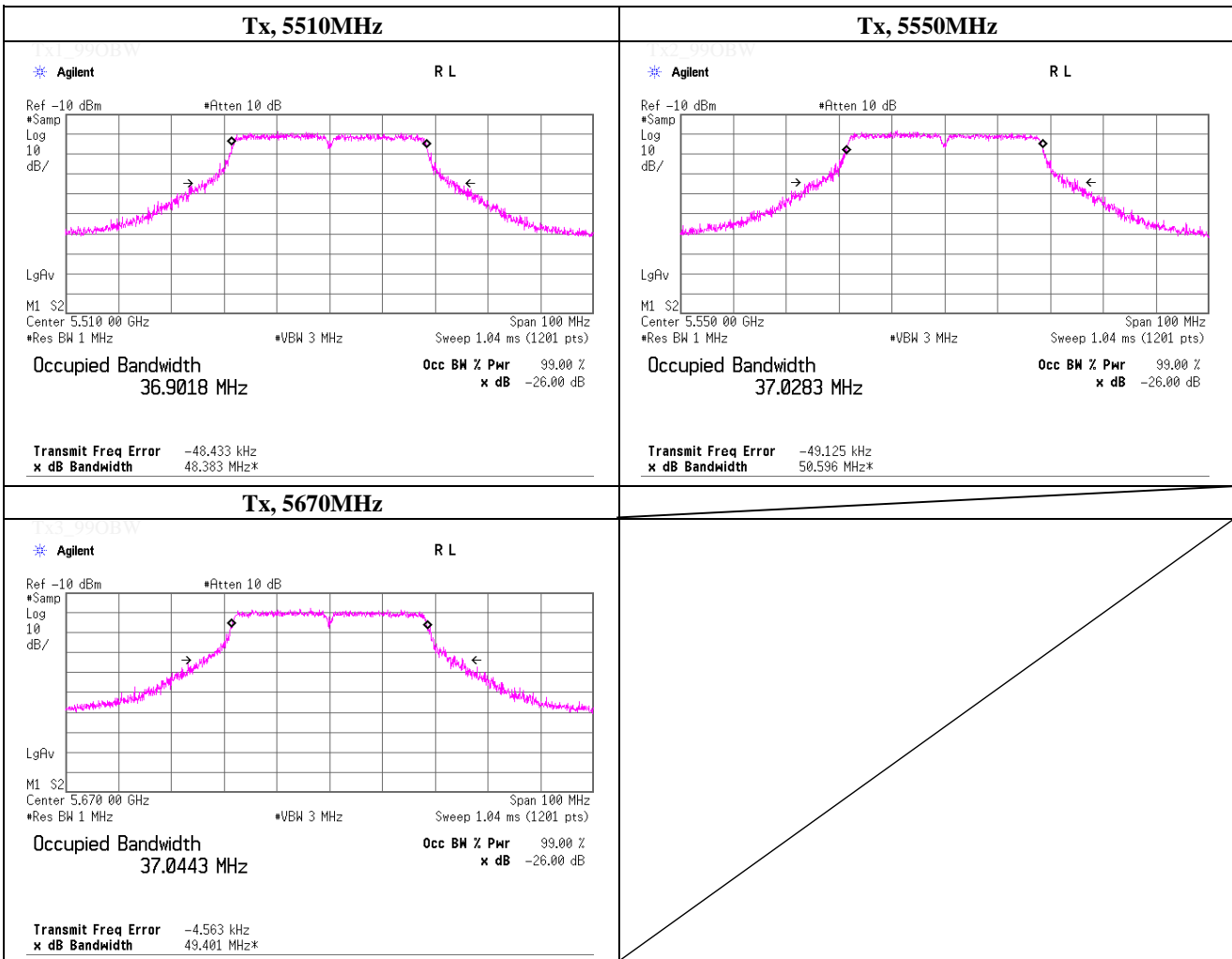
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Facsimile : +81 463 50 6401

99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 30, 2012	
Temperature / Humidity	25 deg.C , 45 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, IEEE802.11n (HT40), PN9, worst antenna port 1, worst data mode 8(MCS)	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5510.0000	36.902
5550.0000	37.028
5670.0000	37.044



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Maximum Conducted Output Power (Conducted)

Test place: UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date: August 3, 2012
 Temperature / Humidity: 26 deg.C , 50 %RH
 Engineer: Hikaru Shirasawa
 Mode: Tx, IEEE802.11a, PN9, worst antenna : 1 worst data mode : 6 Mbps

Antena terminal power (* S/A: Spectrum Analyzer)

Ch	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result		Limit		Margin [dB]
						[dBm]	[mW]	[dBm]	[mW]	
Low	5180.0	-7.37	2.21	20.24	0.02	15.10	32.36	16.99	50.00	1.89
Mid	5220.0	-7.42	2.22	20.24	0.02	15.06	32.06	16.99	50.00	1.93
High	5240.0	-7.44	2.39	20.24	0.02	15.21	33.19	16.99	50.00	1.78

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss

EIRP (* S/A: Spectrum Analyzer) **Reference Data**

Ch	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
							(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	
Low	5180.0	-7.37	2.21	20.24	0.02	5.18	20.28	106.66	-	-	-
Mid	5220.0	-7.42	2.22	20.24	0.02	5.18	20.24	105.68	-	-	-
High	5240.0	-7.44	2.39	20.24	0.02	5.18	20.39	109.40	-	-	-

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss + Antenna Gain

[Pre check]

Antenna 1

	Data rate [Mbps]	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
1	6	5180.0	-7.37	2.21	20.24	0.02	15.10
1	9	5180.0	-7.60	2.21	20.24	0.03	14.88
1	12	5180.0	-7.56	2.21	20.24	0.03	14.92
1	18	5180.0	-7.56	2.21	20.24	0.05	14.94
1	24	5180.0	-7.62	2.21	20.24	0.07	14.90
1	36	5180.0	-7.61	2.21	20.24	0.10	14.94
1	48	5180.0	-7.61	2.21	20.24	0.14	14.98
1	54	5180.0	-11.96	2.21	20.24	0.15	10.64

Worst

Antenna 2

	Data rate [Mbps]	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
2	6	5180.0	-7.81	2.21	20.24	0.02	14.66
2	9	5180.0	-7.91	2.21	20.24	0.03	14.57
2	12	5180.0	-7.87	2.21	20.24	0.03	14.61
2	18	5180.0	-7.90	2.21	20.24	0.05	14.60
2	24	5180.0	-7.88	2.21	20.24	0.07	14.64
2	36	5180.0	-7.90	2.21	20.24	0.10	14.65
2	48	5180.0	-7.88	2.21	20.24	0.14	14.71
2	54	5180.0	-11.68	2.21	20.24	0.15	10.92

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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11a, antenna port 1, (Tx 5180MHz)



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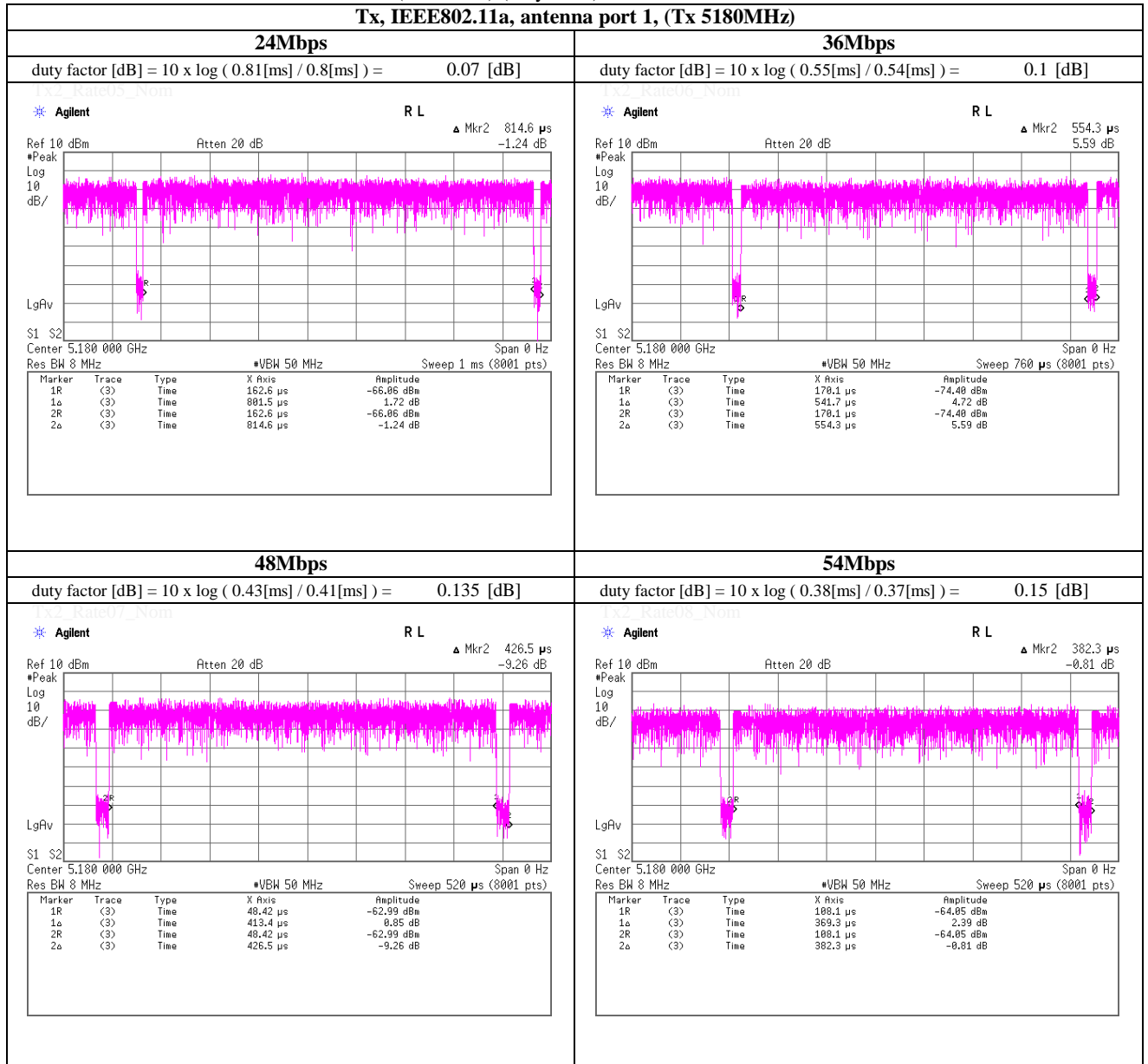
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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11a, antenna port 1, (Tx 5180MHz)



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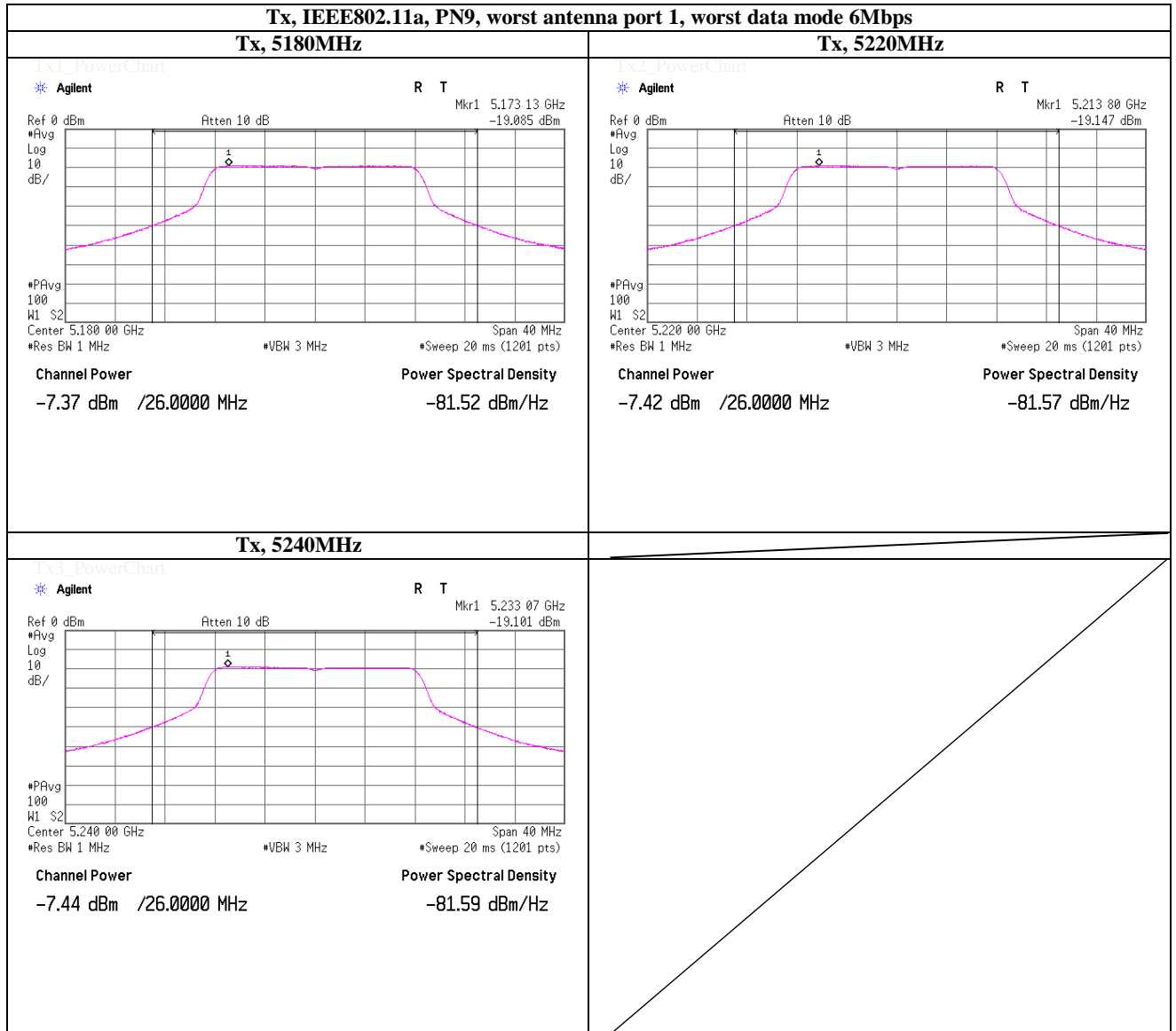
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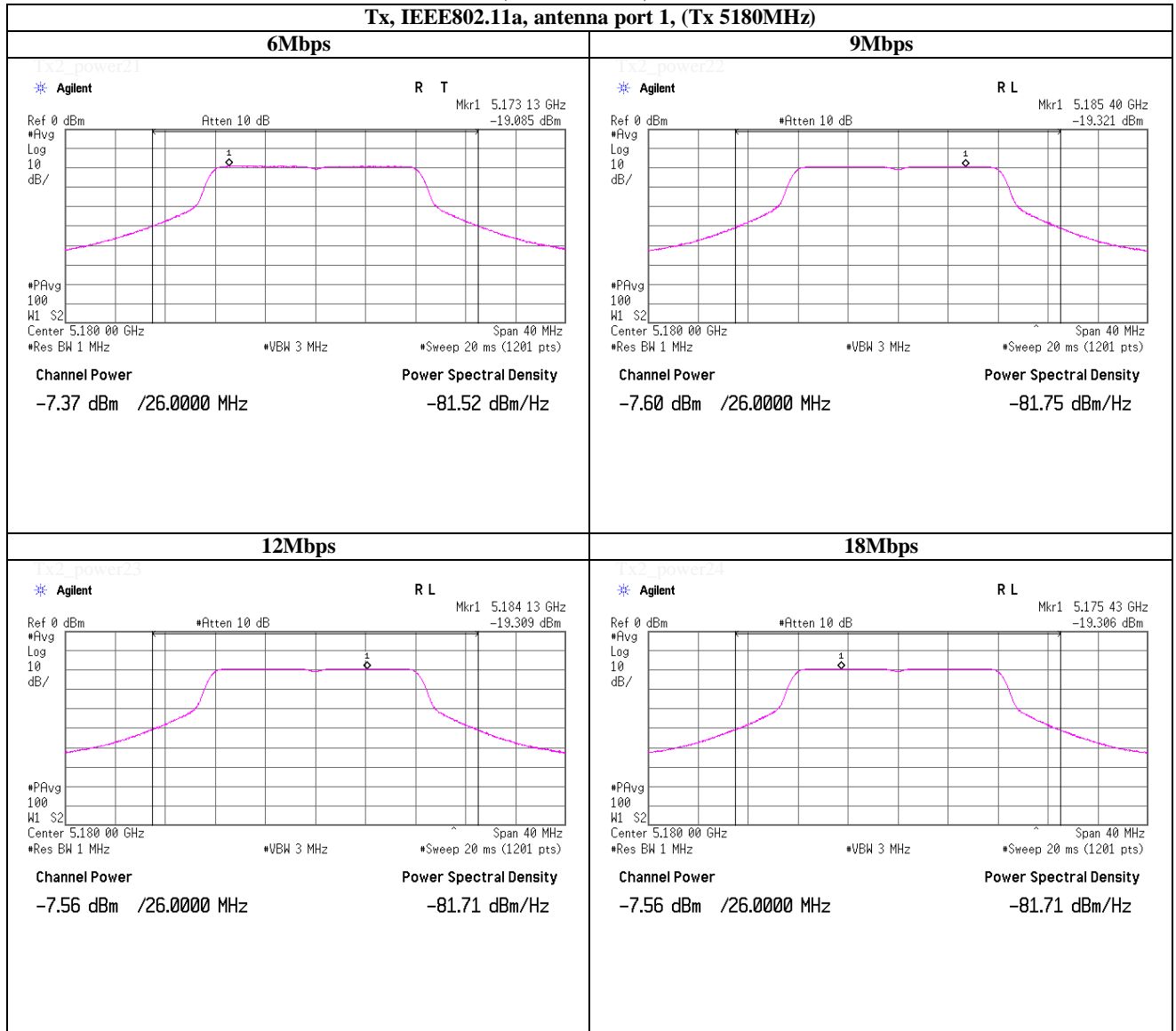
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Maximum Conducted Output Power (Conducted)



Maximum Conducted Output Power (Conducted)

(Reference chart)



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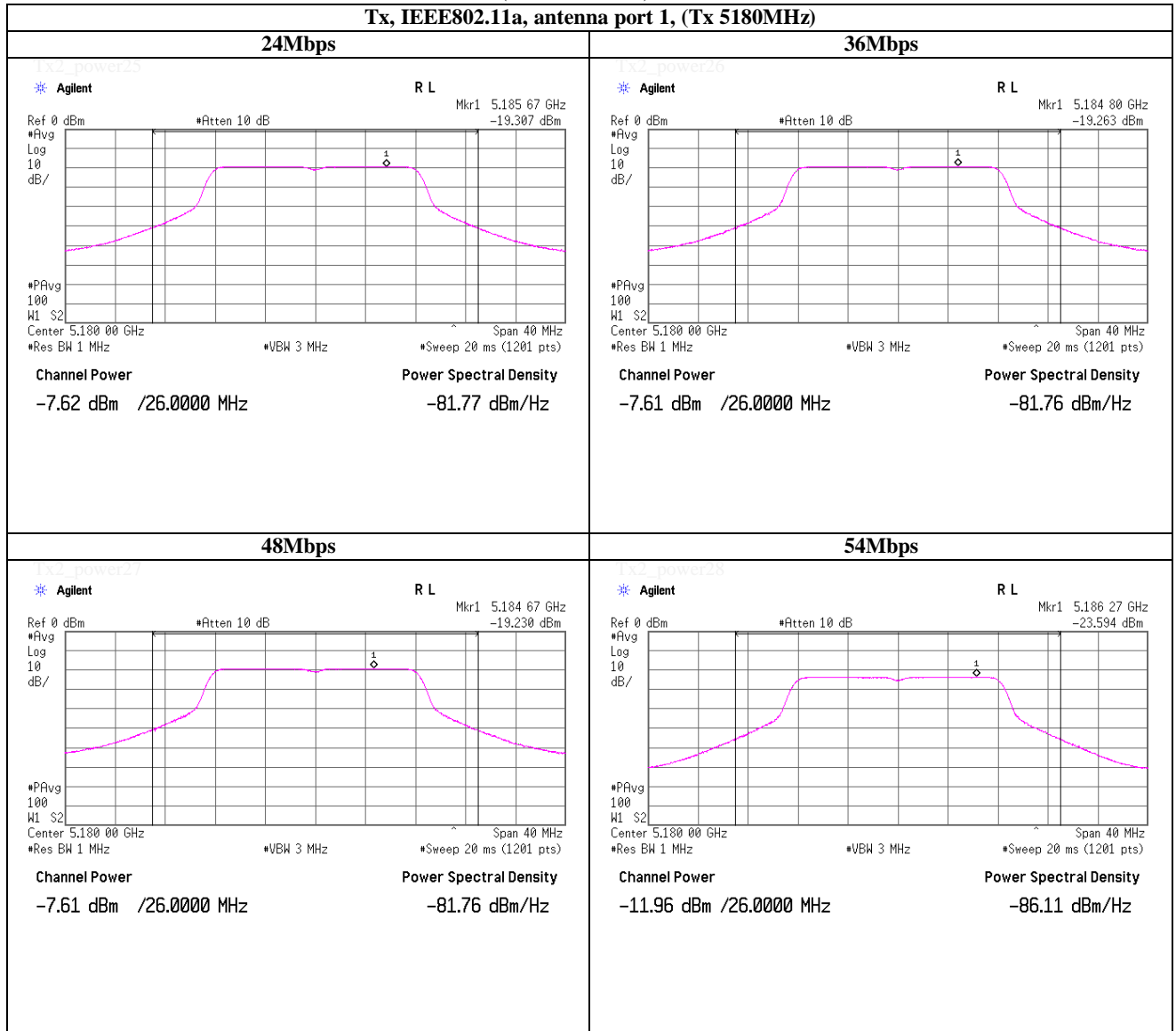
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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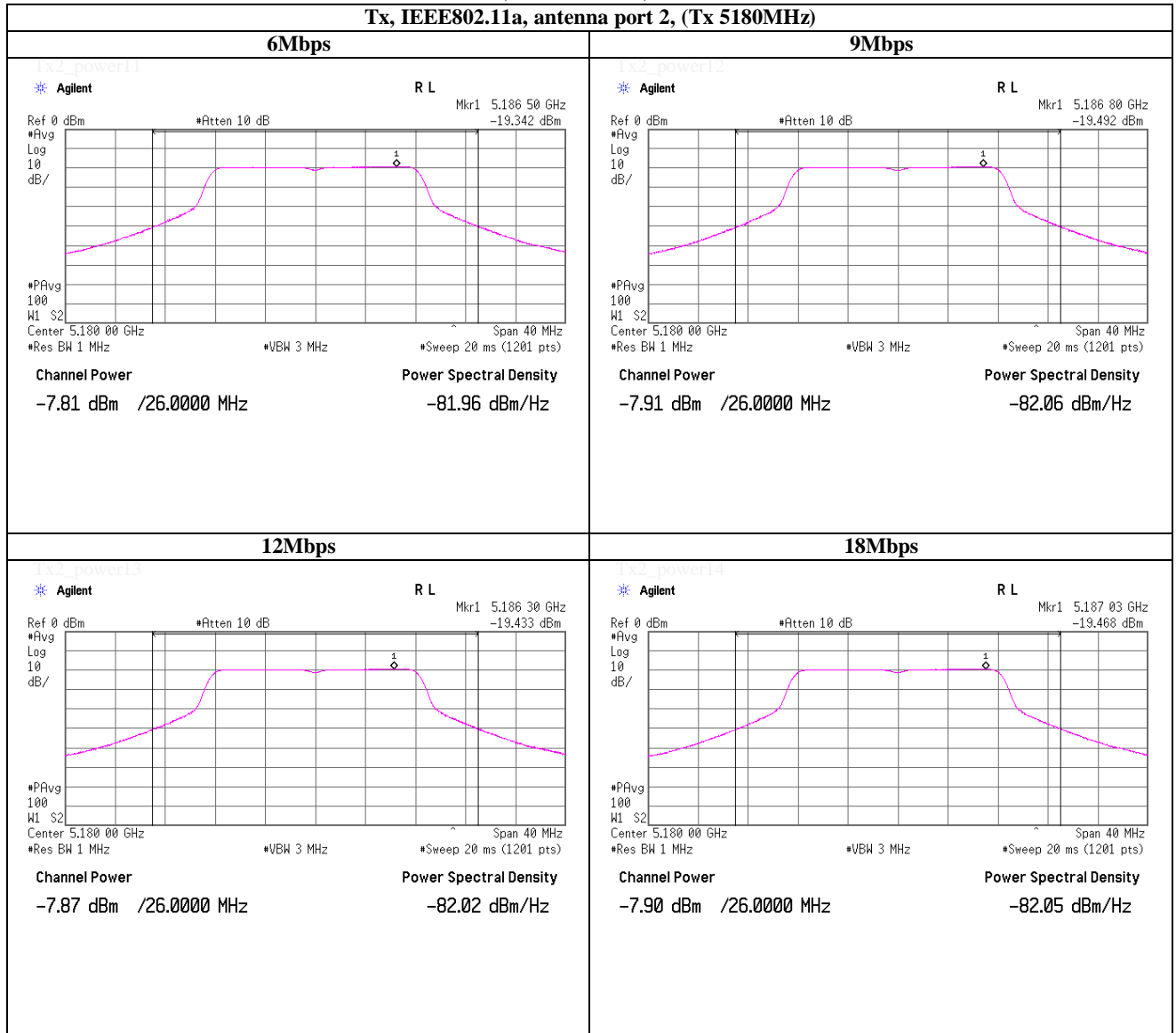
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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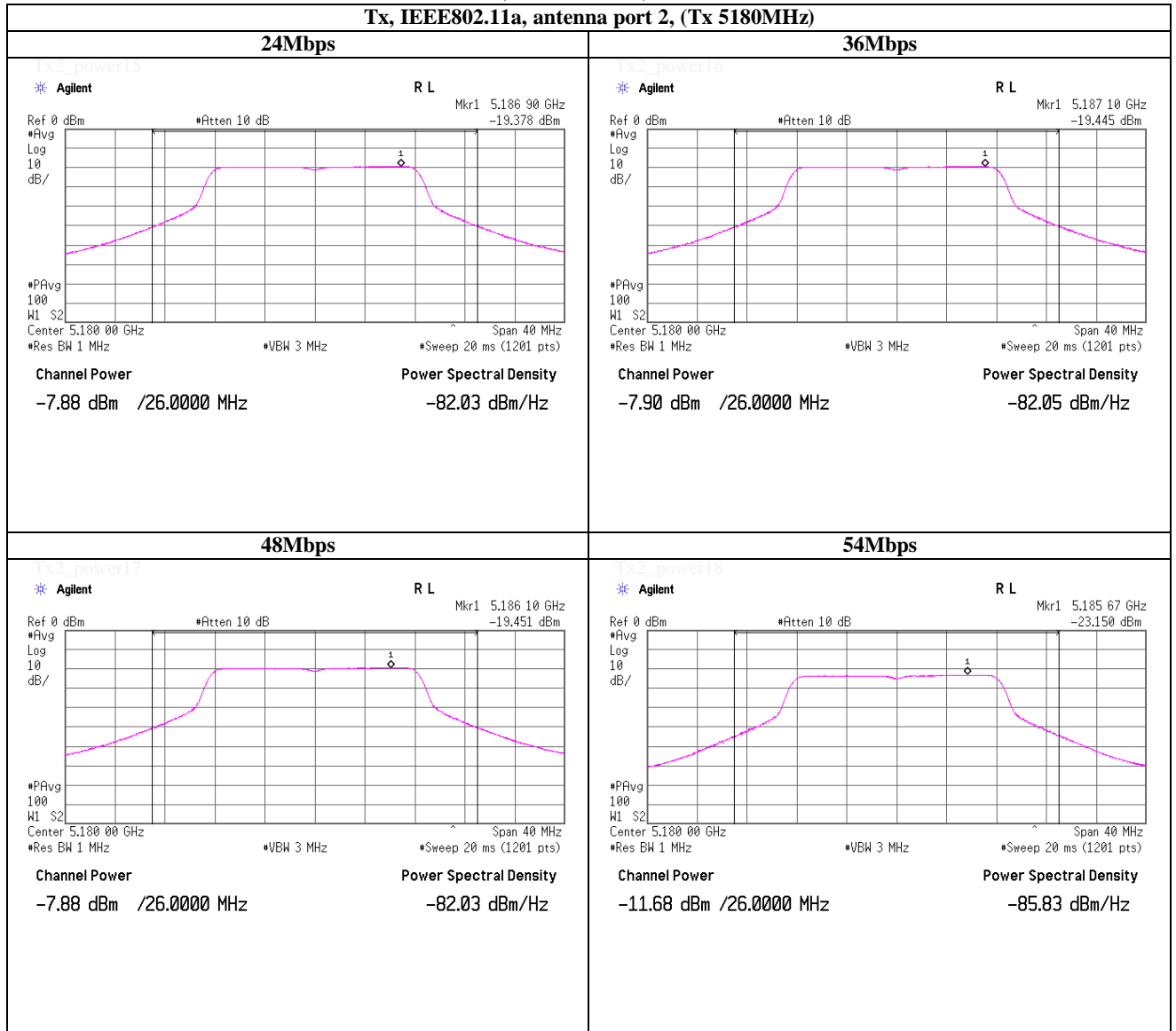
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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Maximum Conducted Output Power (Conducted)

Test place: UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date: August 7, 2012
 Temperature / Humidity: 25deg.C , 52%RH
 Engineer: Kenichi Adachi
 Mode: Tx, IEEE802.11a, PN9, worst antenna : 1 worst data mode : 6 Mbps

Antena terminal power (* S/A: Spectrum Analyzer)

Ch	Freq. [MHz]	S/A (RMS) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result		Limit		Margin [dB]
						[dBm]	[mW]	[dBm]	[mW]	
Low	5260.0	-7.89	3.15	20.23	0.03	15.52	35.68	23.98	250.00	8.46
Mid	5300.0	-8.09	3.16	20.23	0.03	15.33	34.15	23.98	250.00	8.65
High	5320.0	-7.94	3.25	20.23	0.03	15.57	36.09	23.98	250.00	8.41

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss

EIRP (* S/A: Spectrum Analyzer) **Reference Data**

Ch	Freq. [MHz]	S/A (RMS) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
							(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	
Low	5260.0	-7.89	3.15	20.23	0.03	5.18	20.70	117.60	-	-	-
Mid	5300.0	-8.09	3.16	20.23	0.03	5.18	20.51	112.56	-	-	-
High	5320.0	-7.94	3.25	20.23	0.03	5.18	20.75	118.96	-	-	-

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss + Antenna Gain

[Pre check]

Antenna 1

	Data rate [Mbps]	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
Worst	6	5260.0	-7.89	3.15	20.23	0.03	15.52
	9	5260.0	-7.98	3.15	20.23	0.05	15.45
	12	5260.0	-8.03	3.15	20.23	0.07	15.42
	18	5260.0	-8.10	3.15	20.23	0.06	15.34
	24	5260.0	-8.14	3.15	20.23	0.08	15.32
	36	5260.0	-8.21	3.15	20.23	0.12	15.29
	48	5260.0	-8.23	3.15	20.23	0.15	15.30
	54	5260.0	-12.27	3.15	20.23	0.17	11.28

Antenna 2

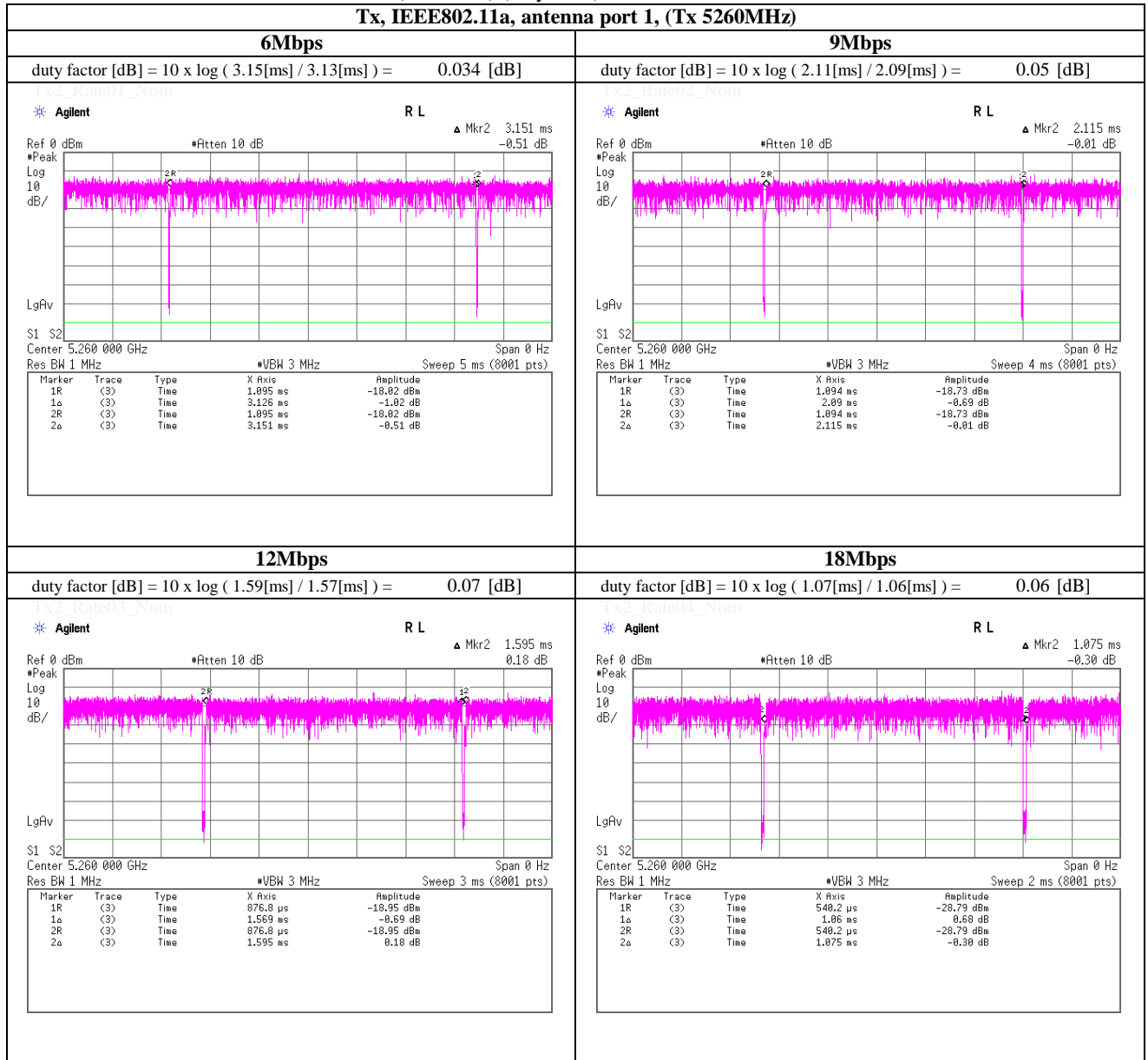
	Data rate [Mbps]	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
2	6	5260.0	-8.52	3.15	20.23	0.03	14.89
2	9	5260.0	-8.65	3.15	20.23	0.05	14.78
2	12	5260.0	-8.64	3.15	20.23	0.07	14.81
2	18	5260.0	-8.66	3.15	20.23	0.06	14.78
2	24	5260.0	-8.60	3.15	20.23	0.08	14.86
2	36	5260.0	-8.62	3.15	20.23	0.12	14.88
2	48	5260.0	-8.65	3.15	20.23	0.15	14.88
2	54	5260.0	-13.05	3.15	20.23	0.17	10.50

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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



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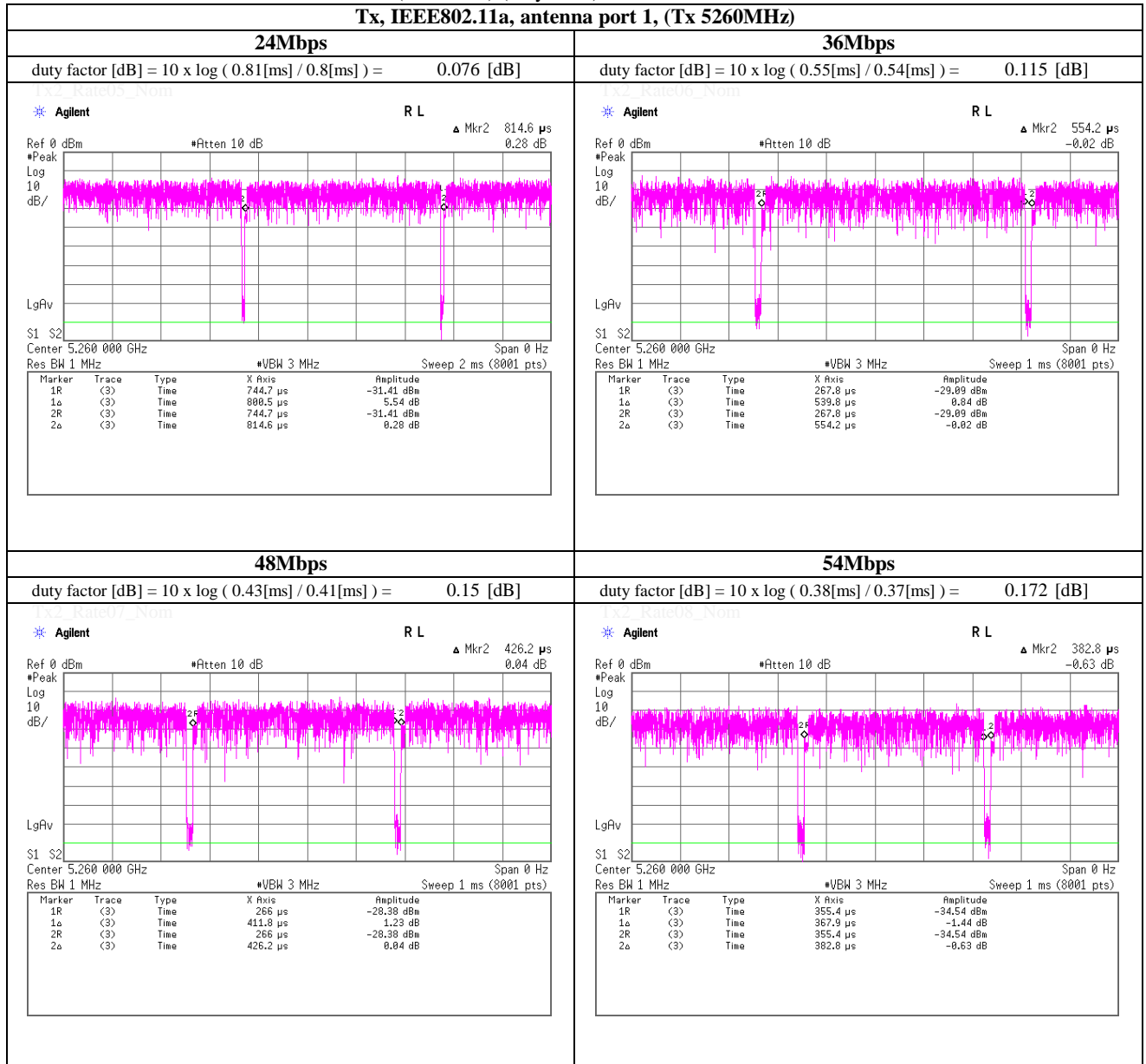
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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



UL Japan, Inc.

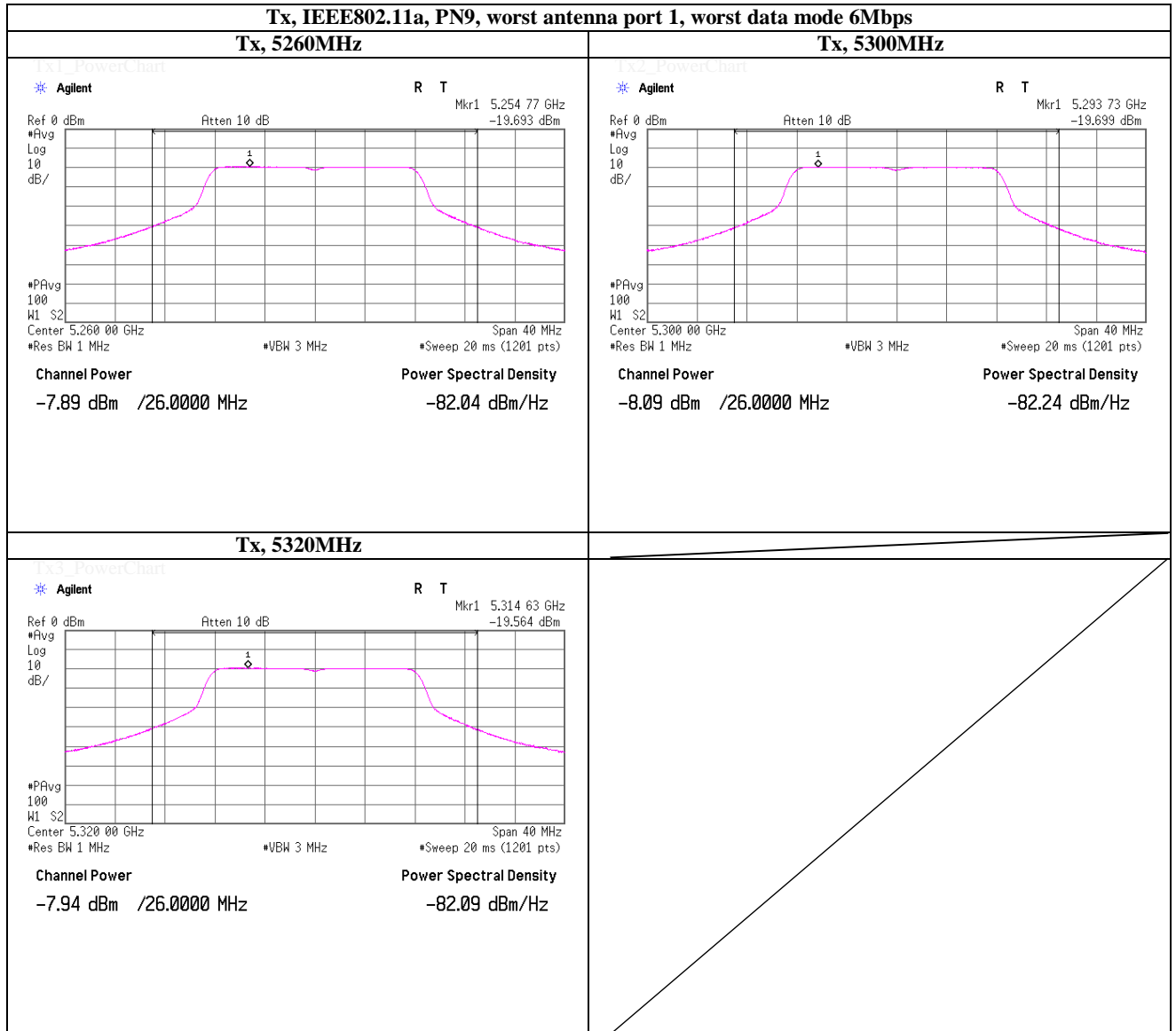
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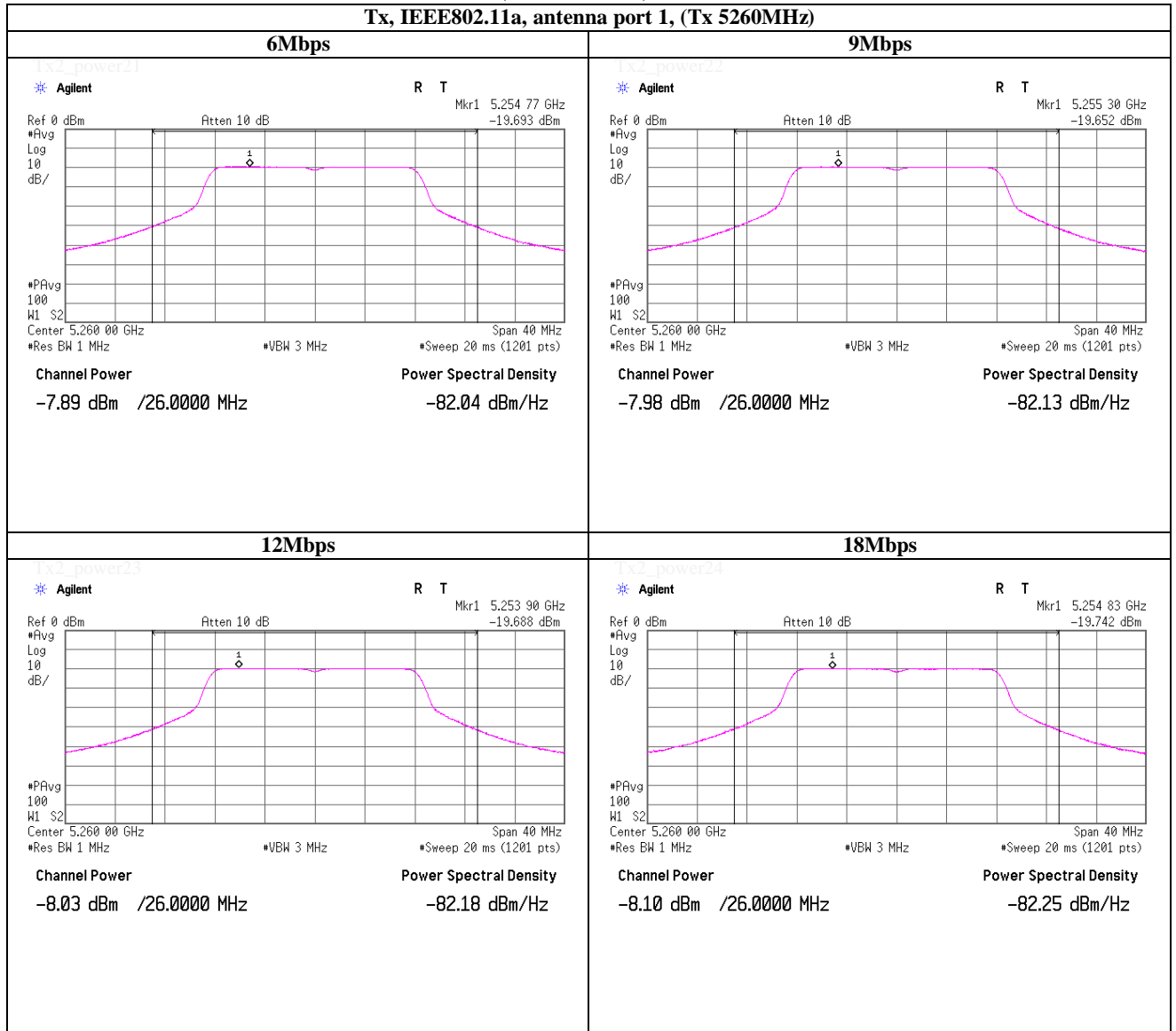
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Maximum Conducted Output Power (Conducted)



Maximum Conducted Output Power (Conducted)

(Reference chart)



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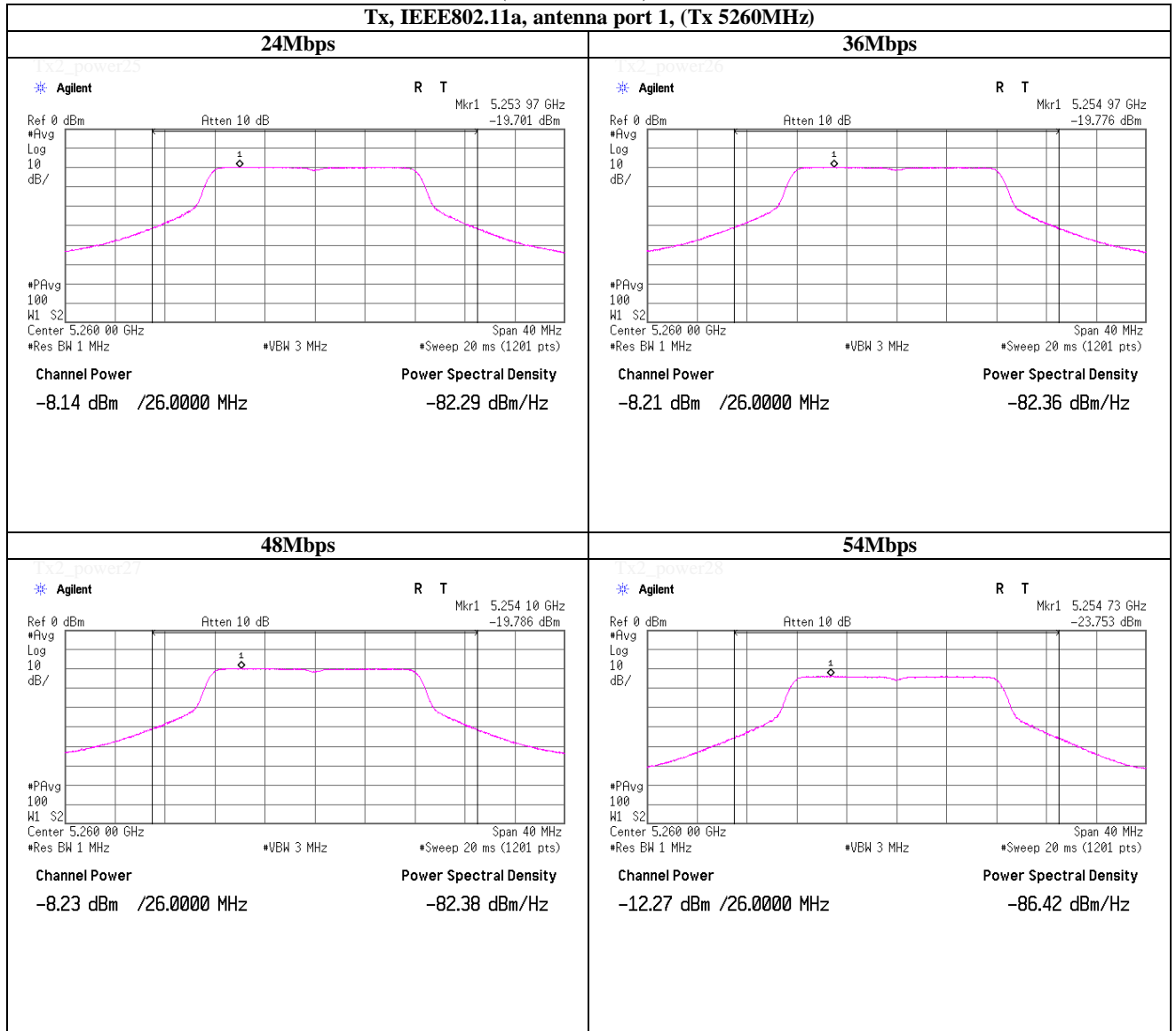
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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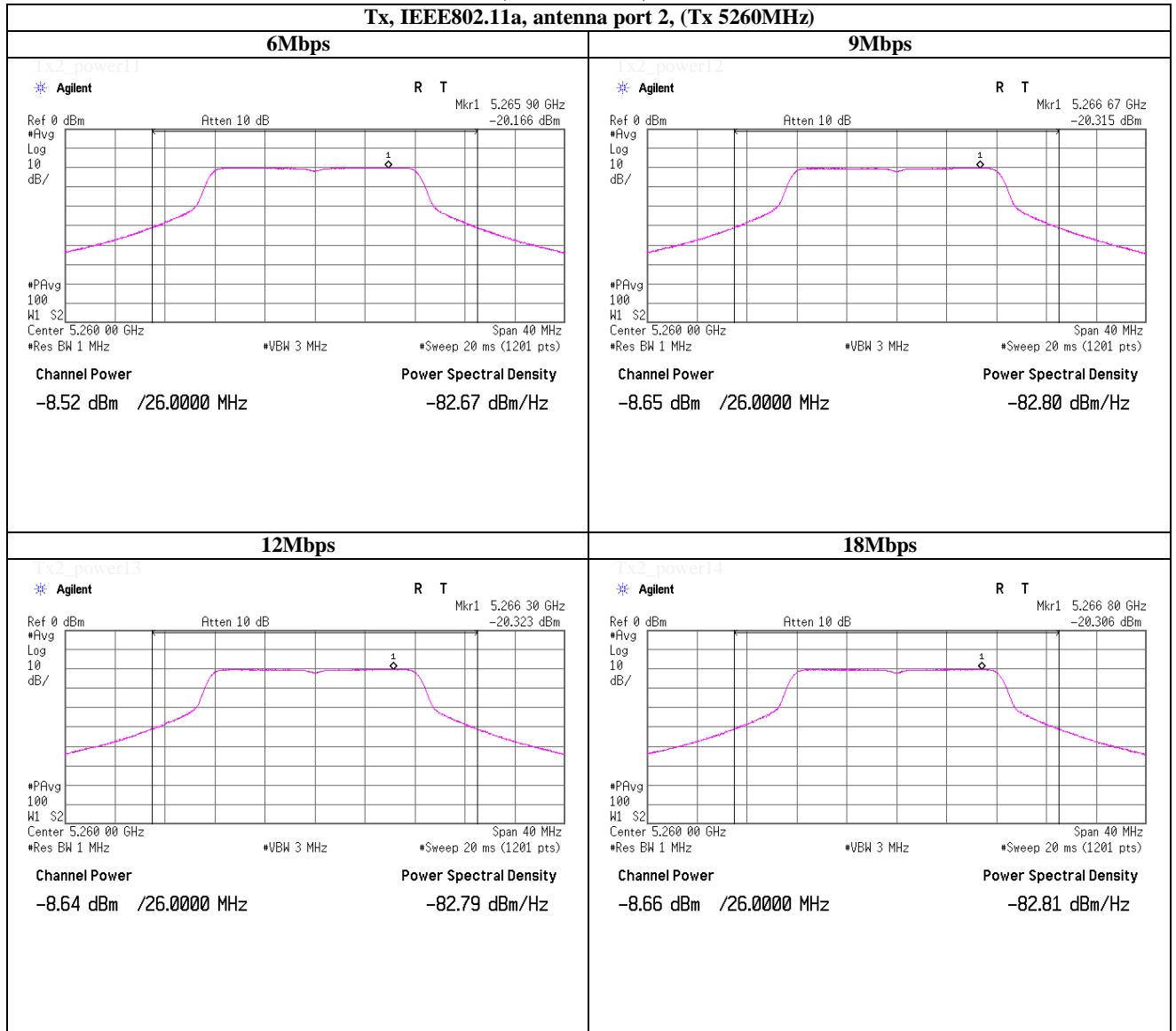
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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Shonan EMC Lab.

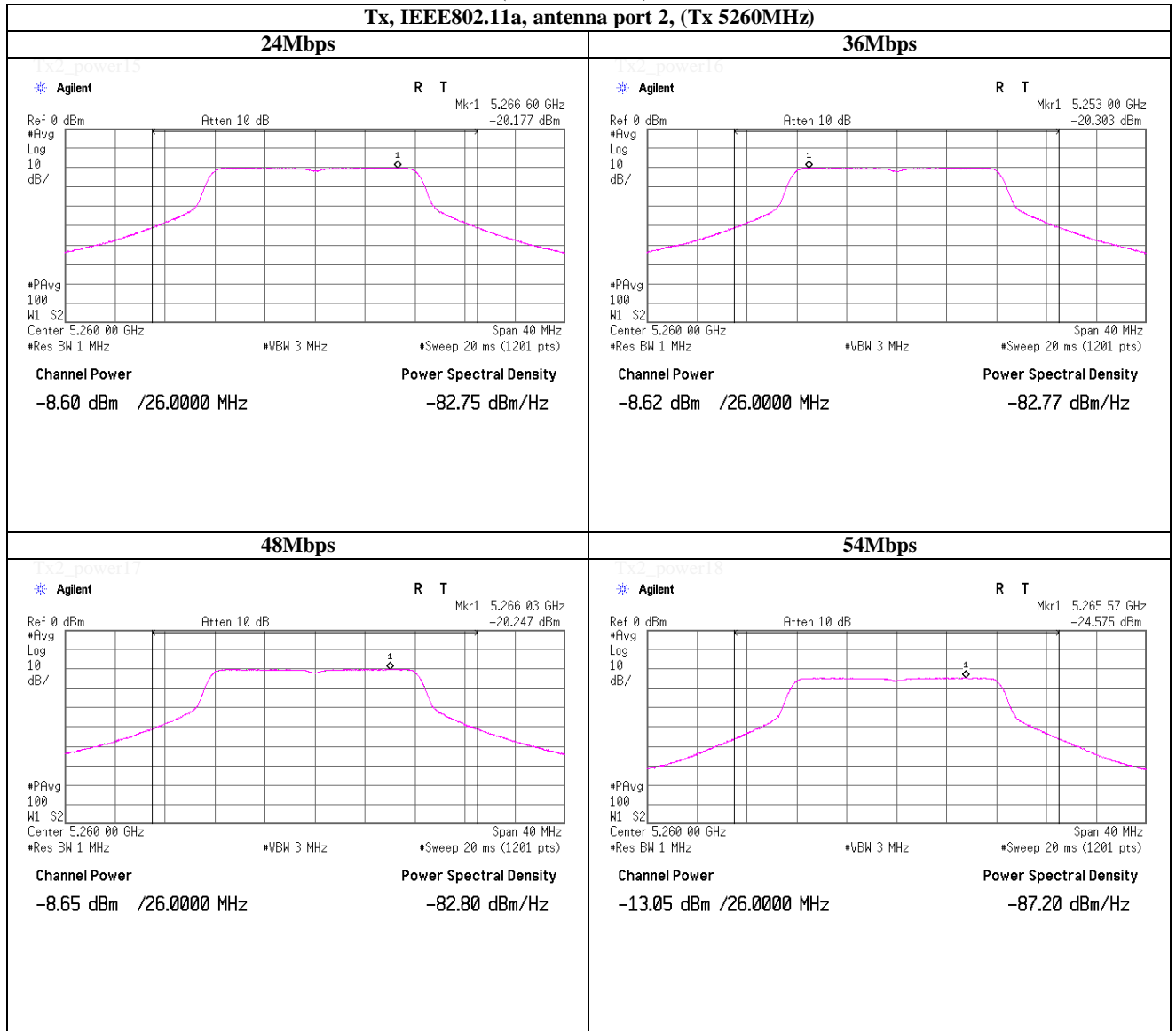
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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Maximum Conducted Output Power (Conducted)

Test place: UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date: August 21, 2012
 Temperature / Humidity: 27 deg.C , 54 %RH
 Engineer: Hikaru Shirasawa
 Mode: Tx, IEEE802.11a, PN9, worst antenna : 1 worst data mode : 6 Mbps

Antena terminal power (* S/A: Spectrum Analyzer)

Ch	Freq. [MHz]	S/A (RMS) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result		Limit		Margin [dB]
						[dBm]	[mW]	[dBm]	[mW]	
Low	5500.0	-9.70	3.31	20.21	0.02	13.84	24.22	23.98	250.00	10.14
Mid	5580.0	-8.98	3.33	20.21	0.02	14.58	28.71	23.98	250.00	9.40
High	5700.0	-9.81	3.16	20.21	0.02	13.58	22.81	23.98	250.00	10.40

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss

EIRP (* S/A: Spectrum Analyzer) **Reference Data**

Ch	Freq. [MHz]	S/A (RMS) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
							(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	
Low	5500.0	-9.70	3.31	20.21	0.02	4.02	17.86	61.11	-	-	-
Mid	5580.0	-8.98	3.33	20.21	0.02	4.02	18.60	72.46	-	-	-
High	5700.0	-9.81	3.16	20.21	0.02	4.02	17.60	57.56	-	-	-

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss + Antenna Gain

[Pre check]

Antenna 1

	Data rate [Mbps]	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
Worst	6	5500.0	-9.70	3.31	20.21	0.02	13.84
	9	5500.0	-9.98	3.31	20.21	0.03	13.57
	12	5500.0	-9.88	3.31	20.21	0.04	13.68
	18	5500.0	-9.89	3.31	20.21	0.06	13.69
	24	5500.0	-9.87	3.31	20.21	0.08	13.73
	36	5500.0	-10.08	3.31	20.21	0.11	13.55
	48	5500.0	-9.88	3.31	20.21	0.15	13.79
	54	5500.0	-14.18	3.31	20.21	0.17	9.51

Antenna 2

	Data rate [Mbps]	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
2	6	5500.0	-10.29	3.31	20.21	0.02	13.25
2	9	5500.0	-10.37	3.31	20.21	0.03	13.18
2	12	5500.0	-10.40	3.31	20.21	0.04	13.16
2	18	5500.0	-10.46	3.31	20.21	0.06	13.12
2	24	5500.0	-10.41	3.31	20.21	0.08	13.19
2	36	5500.0	-10.49	3.31	20.21	0.11	13.14
2	48	5500.0	-10.57	3.31	20.21	0.15	13.10
2	54	5500.0	-14.98	3.31	20.21	0.17	8.71

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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



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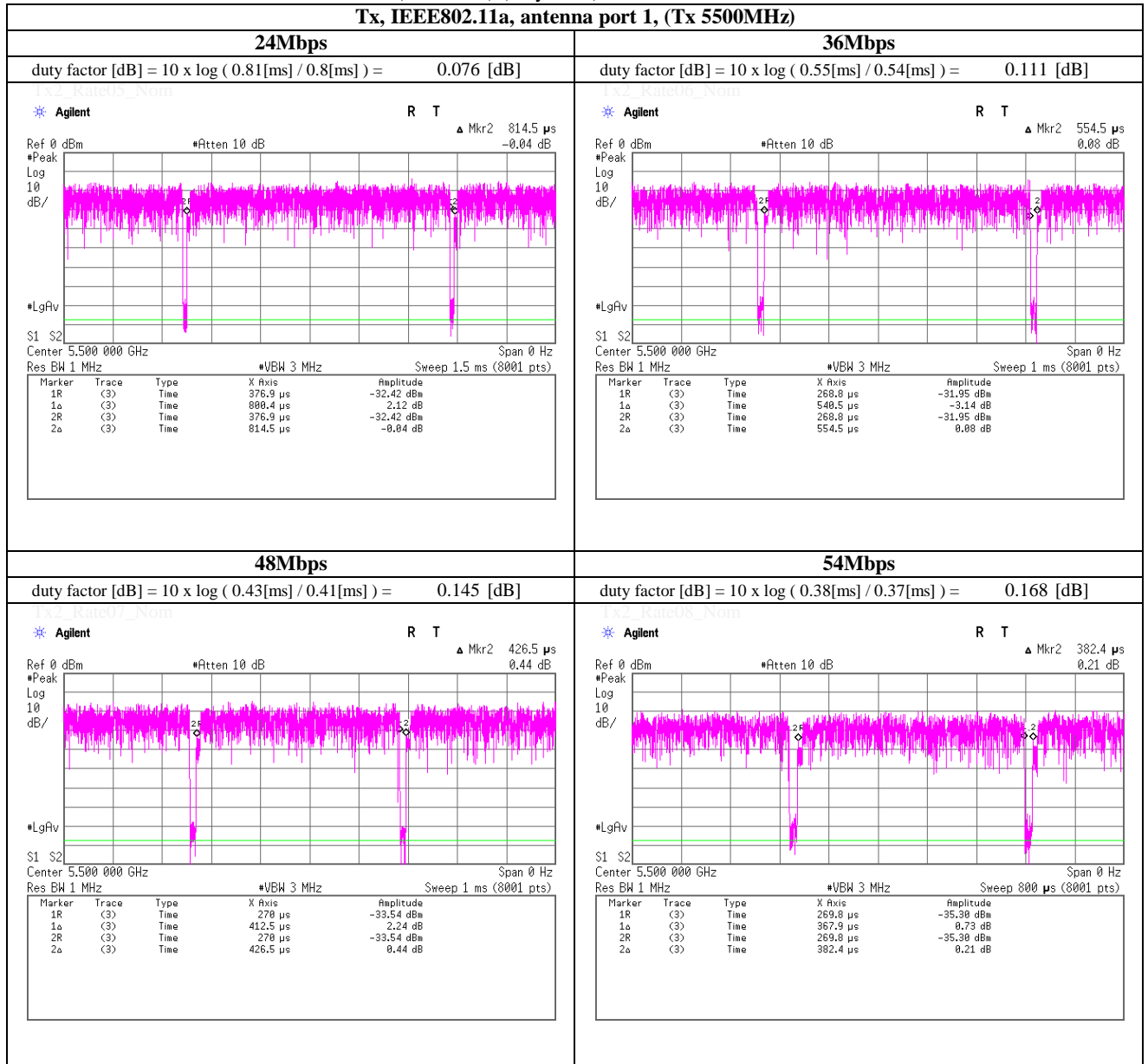
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Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11a, antenna port 1, (Tx 5500MHz)



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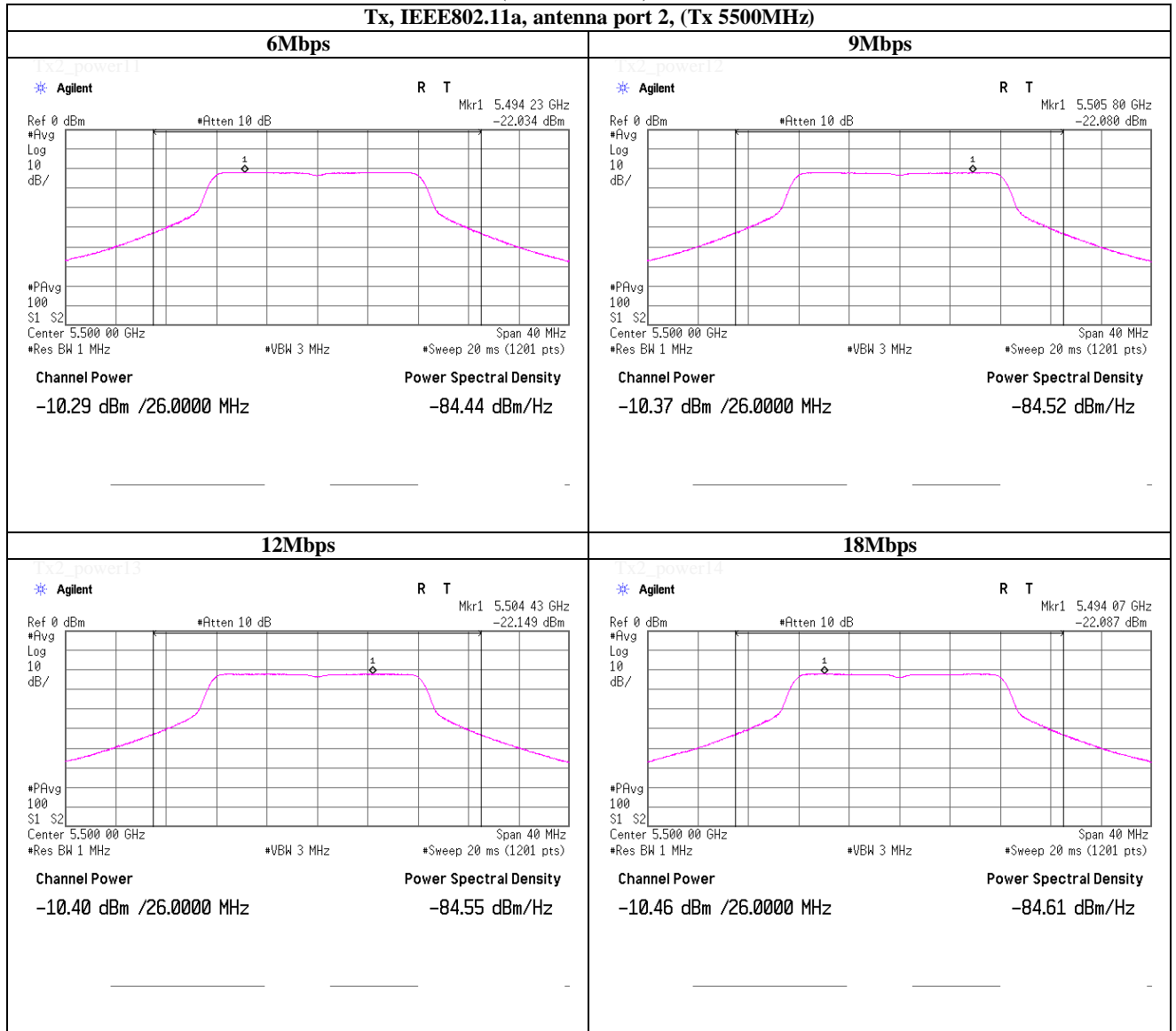
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

(Reference chart)



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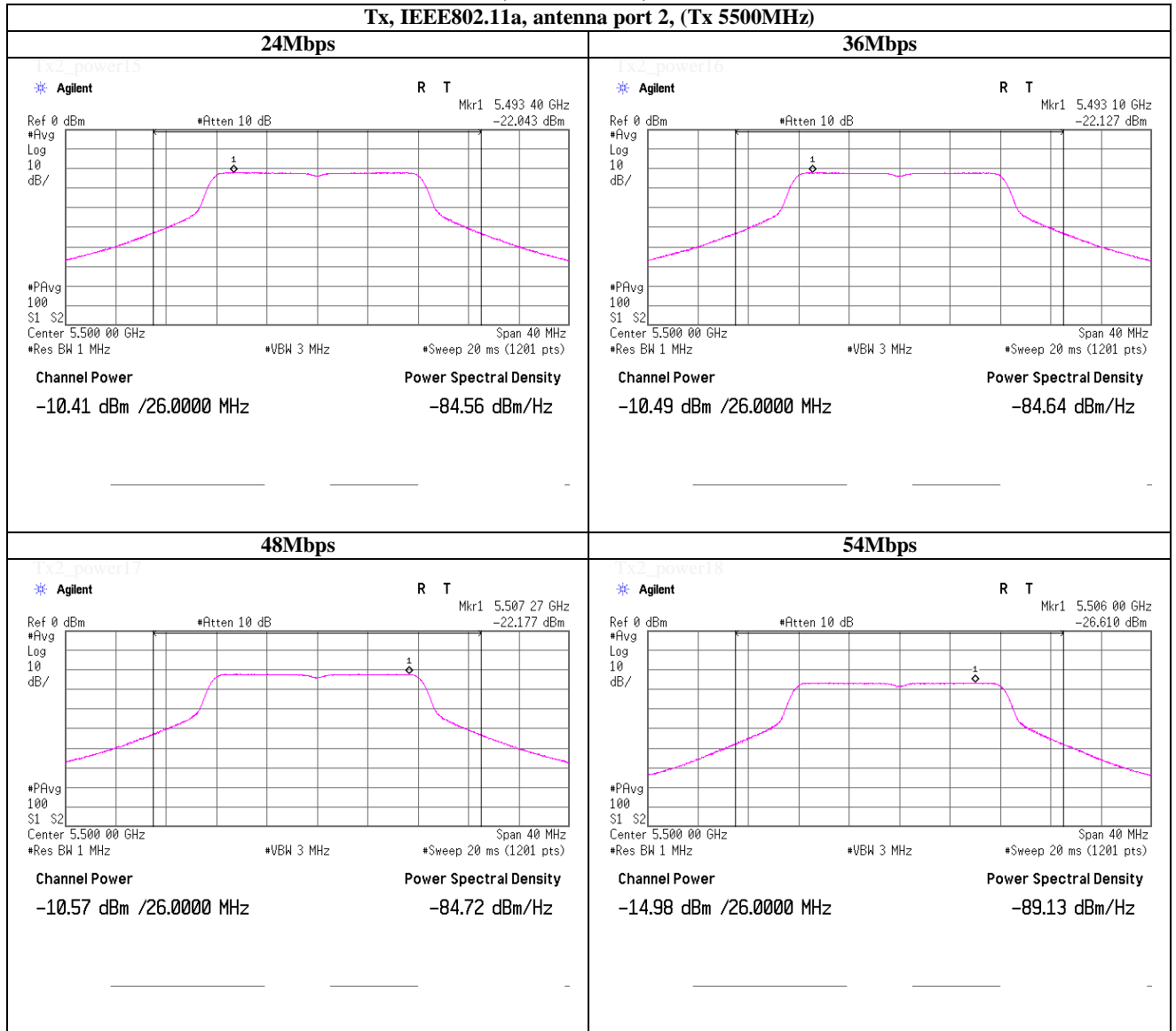
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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Shonan EMC Lab.

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Telephone : +81 463 50 6400

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Maximum Conducted Output Power (Conducted)

Test place: UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date: August 3, 2012
 Temperature / Humidity: 26 deg.C , 50 %RH
 Engineer: Hikaru Shirasawa
 Mode: Tx, IEEE802.11n (HT20), PN9, worst antenna : 1 worst data mode : 0 (MCS)

Antenna terminal power (* S/A: Spectrum Analyzer)

Ch	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result		Limit		Margin [dB]
						[dBm]	[mW]	[dBm]	[mW]	
Low	5180.0	-10.07	2.24	20.24	0.02	12.43	17.50	16.99	50.00	4.56
Mid	5220.0	-9.75	2.24	20.24	0.02	12.75	18.84	16.99	50.00	4.24
High	5240.0	-9.53	2.33	20.24	0.02	13.06	20.23	16.99	50.00	3.93

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss

EIRP (* S/A: Spectrum Analyzer) **Reference Data**

Ch	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
							(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	
Low	5180.0	-10.07	2.24	20.24	0.02	5.18	17.61	57.68	-	-	-
Mid	5220.0	-9.75	2.24	20.24	0.02	5.18	17.93	62.09	-	-	-
High	5240.0	-9.53	2.33	20.24	0.02	5.18	18.24	66.68	-	-	-

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss + Antenna Gain

[Pre check]

Antenna 1

	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
Worst	0	5180.0	-10.07	2.24	20.24	0.02	12.43
	1	5180.0	-10.57	2.24	20.24	0.04	11.95
	2	5180.0	-10.61	2.24	20.24	0.05	11.92
	3	5180.0	-10.62	2.24	20.24	0.07	11.93
	4	5180.0	-10.68	2.24	20.24	0.10	11.90
	5	5180.0	-10.71	2.24	20.24	0.14	11.91
	6	5180.0	-13.76	2.24	20.24	0.16	8.88
7	5180.0	-13.76	2.24	20.24	0.17	8.89	

Antenna 2

	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
2	0	5180.0	-10.11	2.24	20.24	0.02	12.39
2	1	5180.0	-10.49	2.24	20.24	0.04	12.03
2	2	5180.0	-10.49	2.24	20.24	0.05	12.04
2	3	5180.0	-10.45	2.24	20.24	0.07	12.10
2	4	5180.0	-10.49	2.24	20.24	0.10	12.09
2	5	5180.0	-10.48	2.24	20.24	0.14	12.14
2	6	5180.0	-14.23	2.24	20.24	0.16	8.41
2	7	5180.0	-14.27	2.24	20.24	0.17	8.38

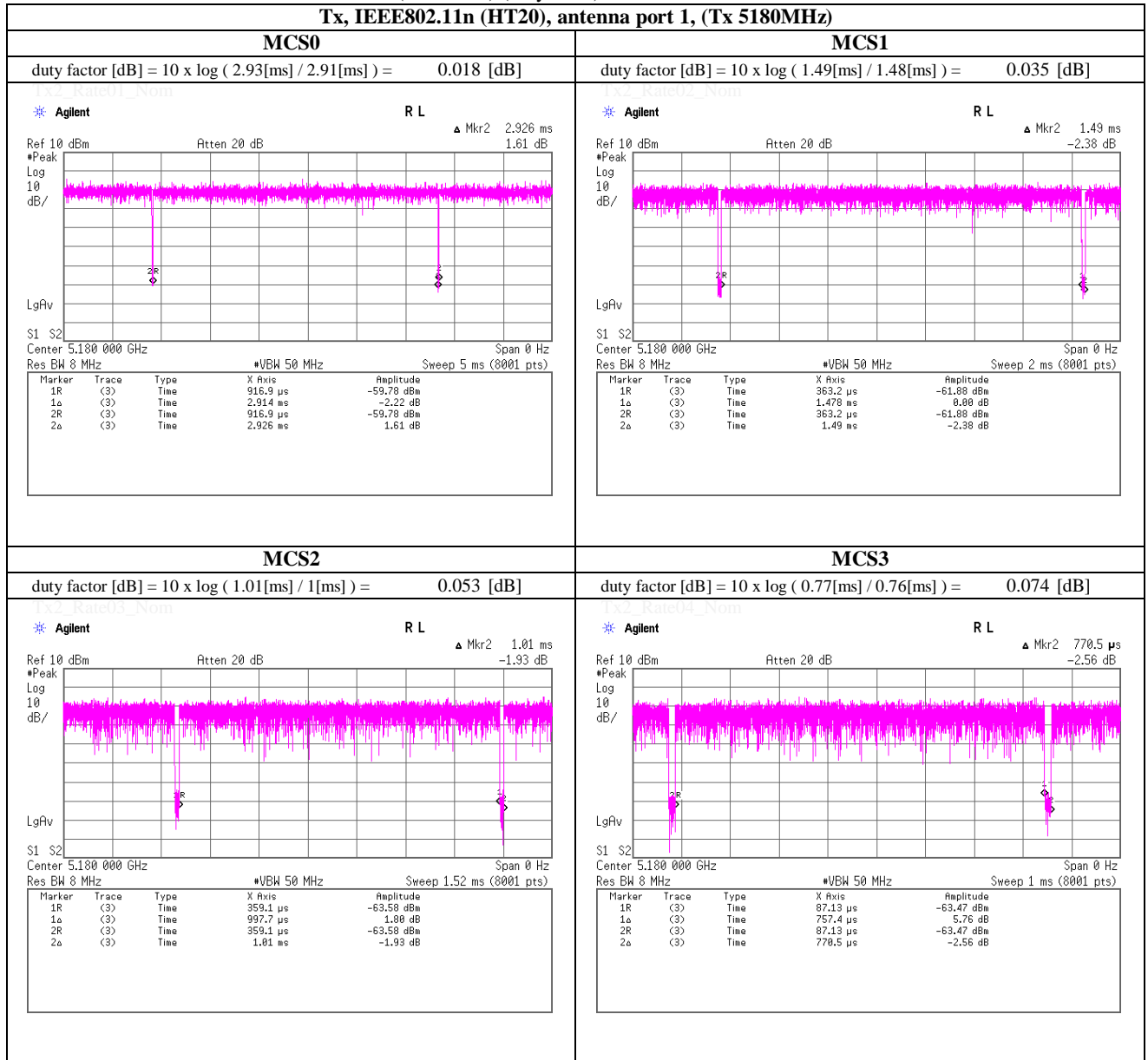
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Shonan EMC Lab.

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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11n (HT20), antenna port 1, (Tx 5180MHz)



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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11n (HT20), antenna port 1, (Tx 5180MHz)



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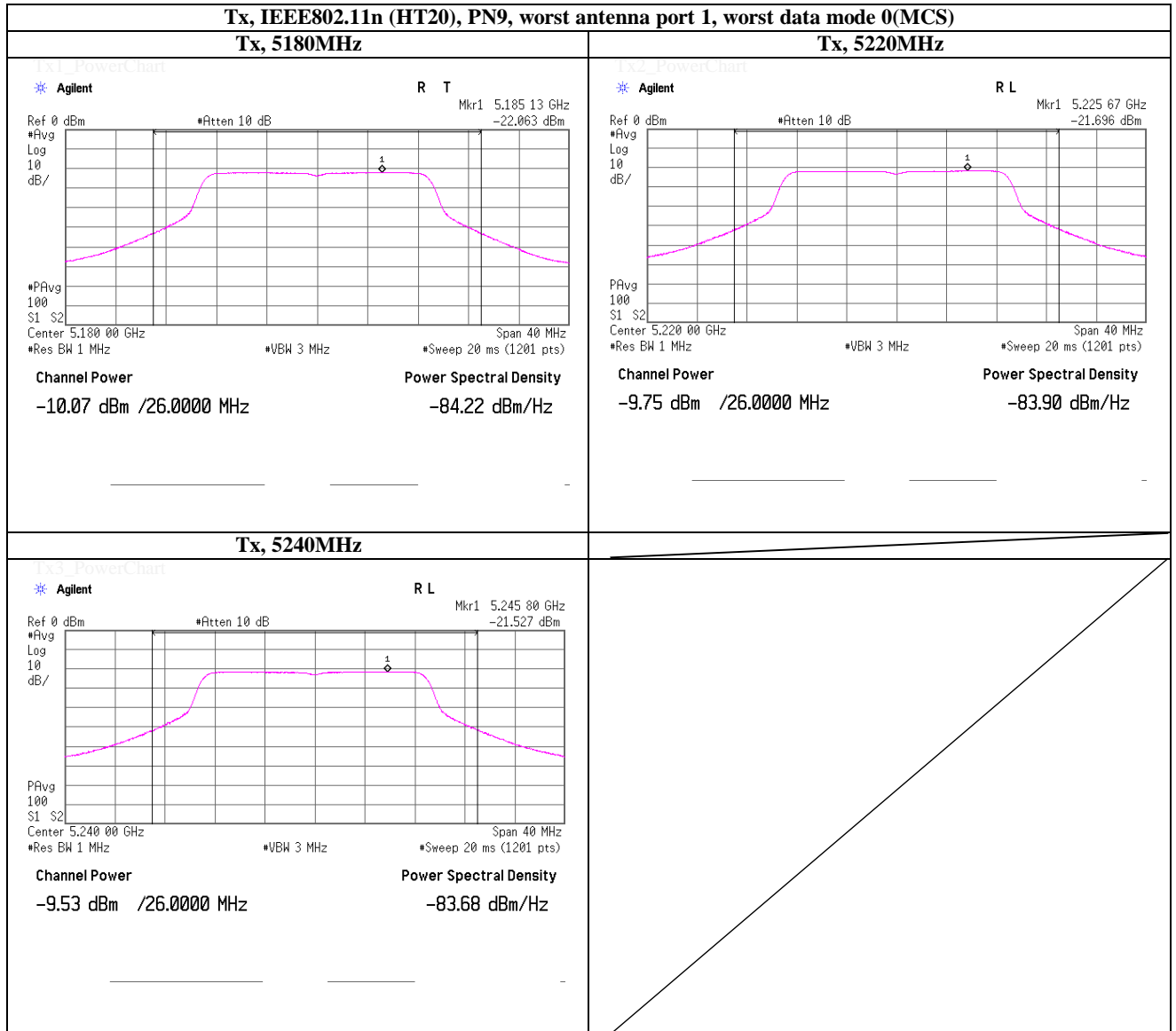
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Maximum Conducted Output Power (Conducted)



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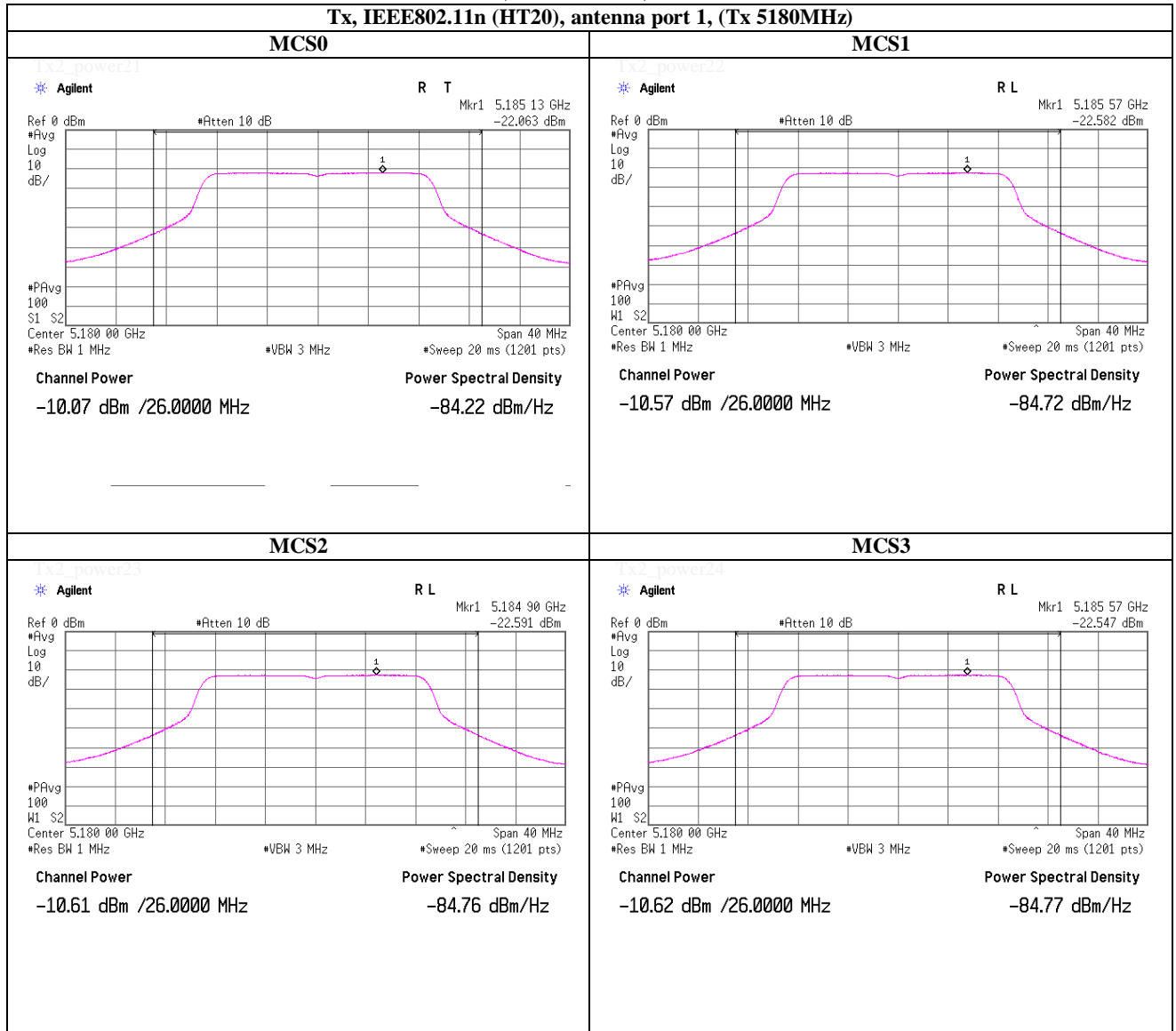
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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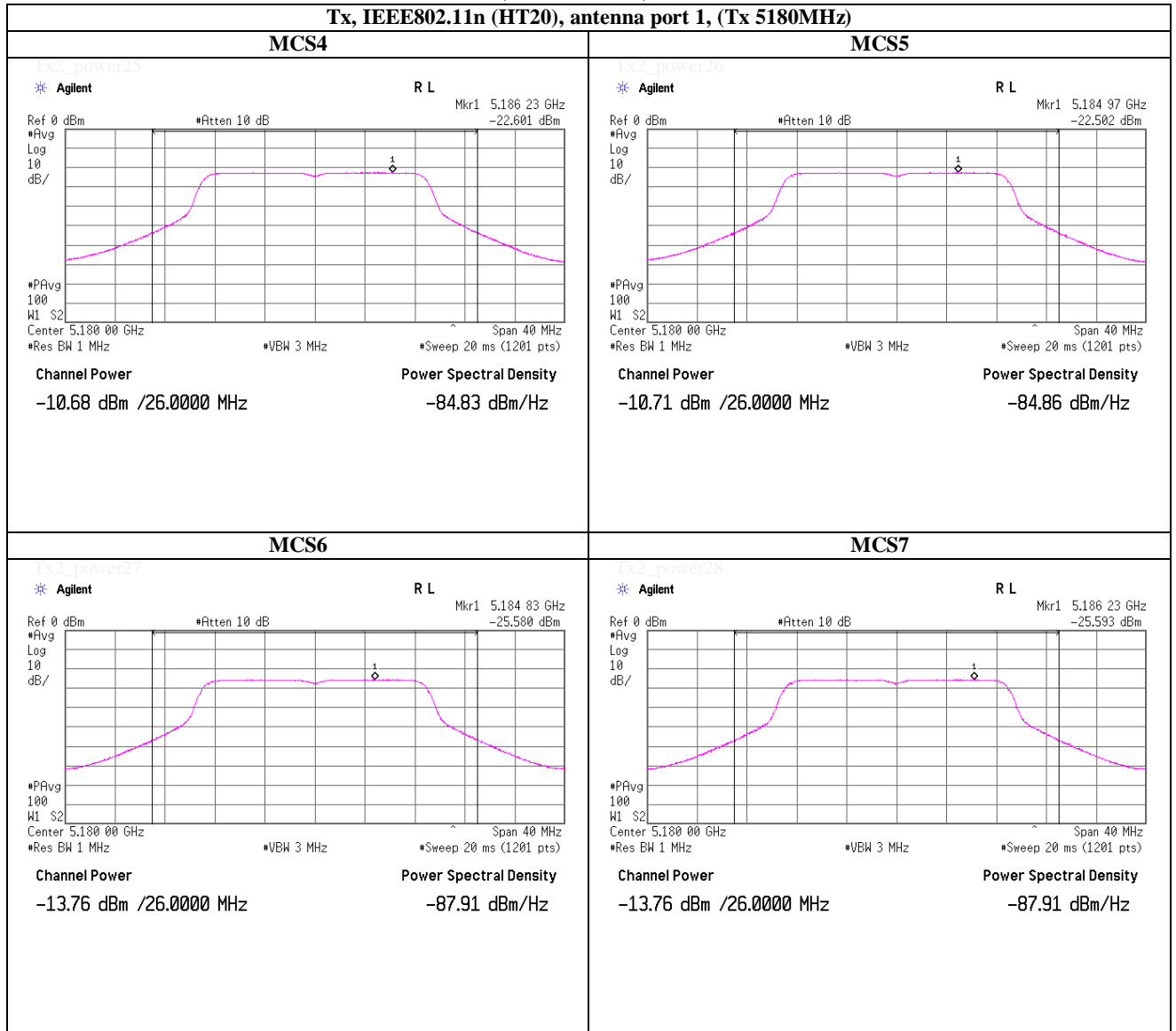
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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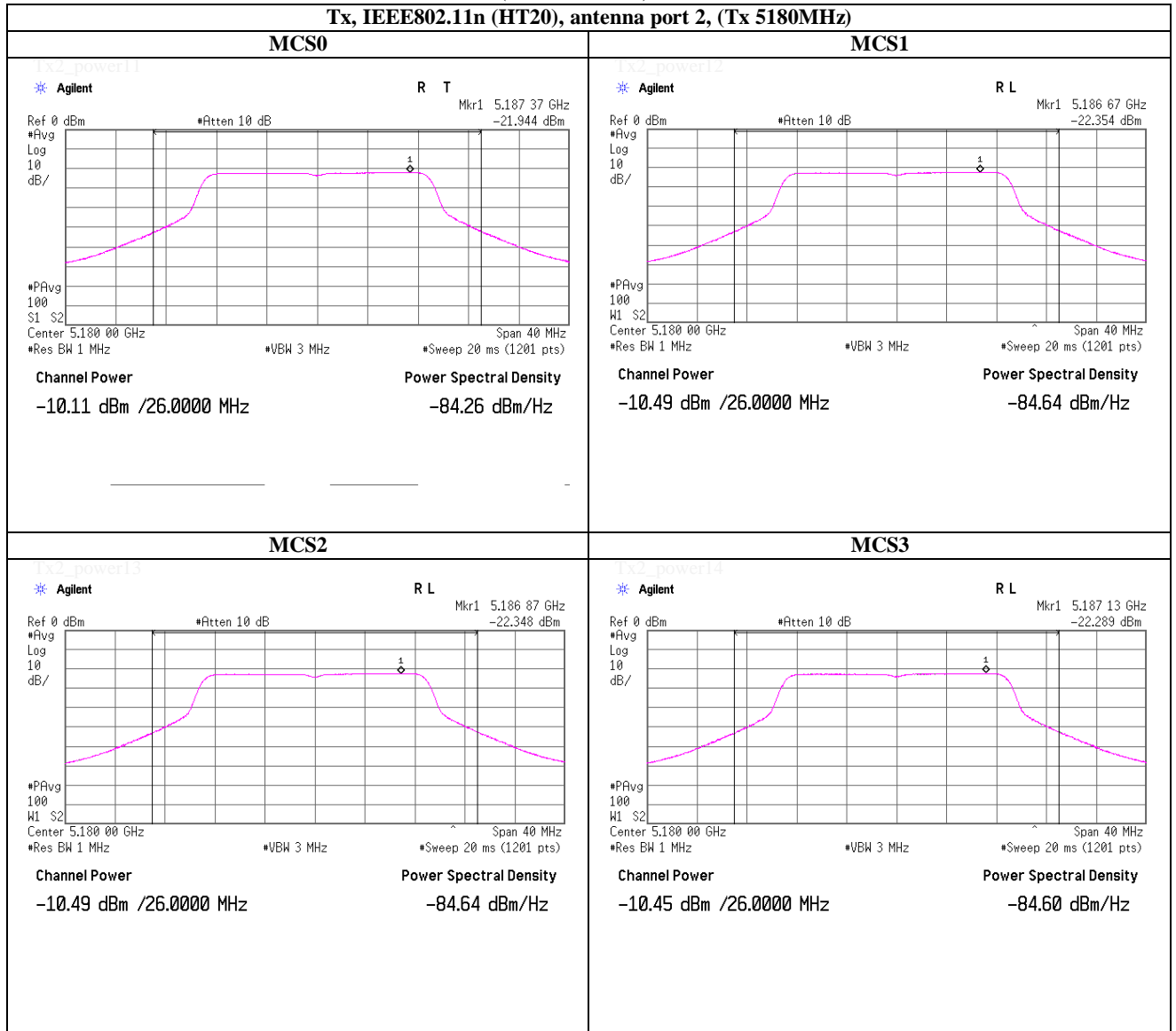
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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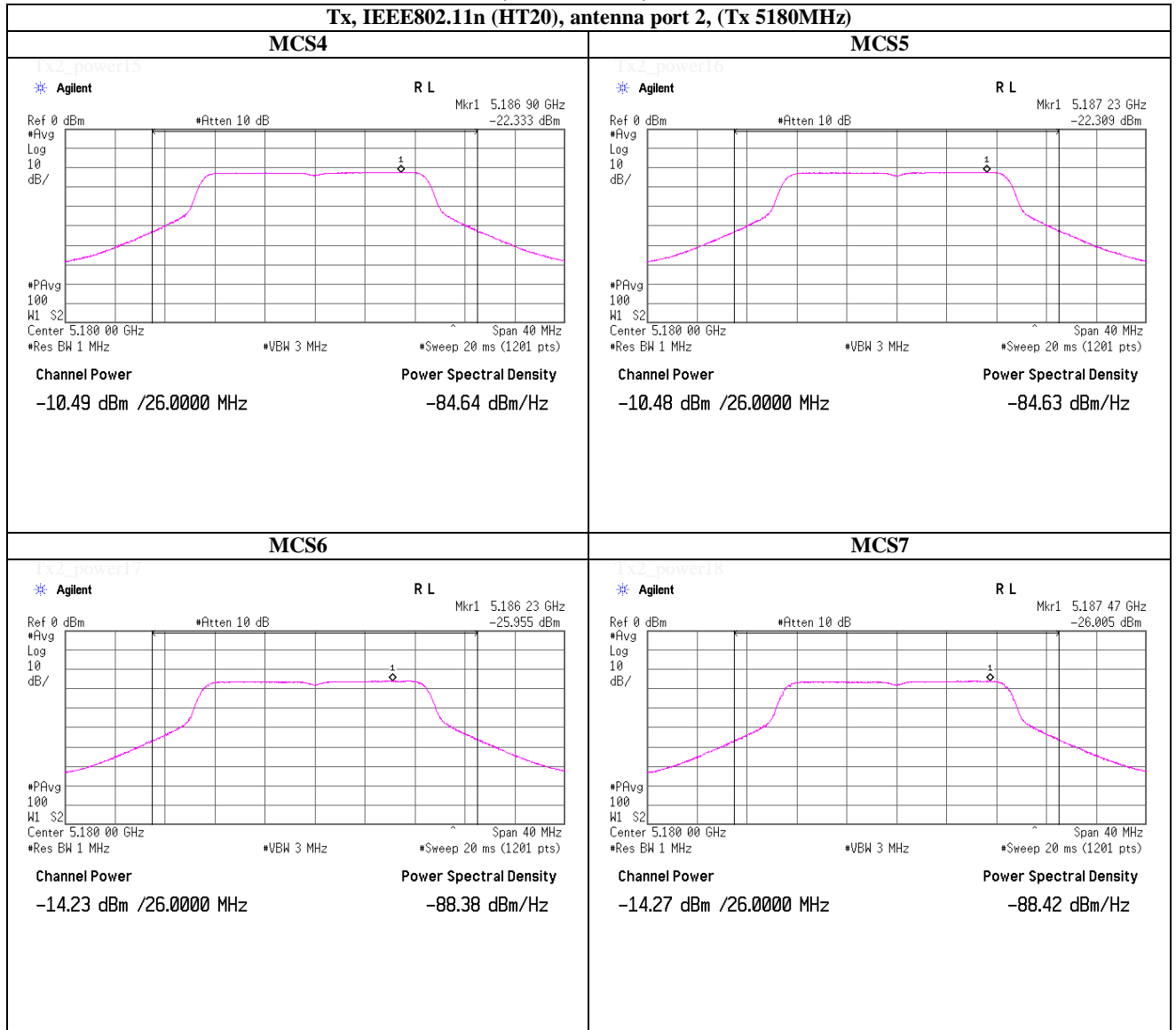
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Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

(Reference chart)



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Maximum Conducted Output Power (Conducted)

Test place: UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date: August 7, 2012
 Temperature / Humidity: 25deg.C , 52%RH
 Engineer: Kenichi Adachi
 Mode: Tx, IEEE802.11n (HT20), PN9, worst antenna : 1 worst data mode : 0 (MCS)

Antena terminal power (* S/A: Spectrum Analyzer)

Ch	Freq. [MHz]	S/A (RMS) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result		Limit		Margin [dB]
						[dBm]	[mW]	[dBm]	[mW]	
Low	5260.0	-10.73	3.15	20.23	0.04	12.69	18.56	23.98	250.00	11.29
Mid	5300.0	-10.88	3.16	20.23	0.04	12.55	17.97	23.98	250.00	11.43
High	5320.0	-10.41	3.25	20.23	0.04	13.11	20.44	23.98	250.00	10.87

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss

EIRP (* S/A: Spectrum Analyzer) **Reference Data**

Ch	Freq. [MHz]	S/A (RMS) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
							(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	
Low	5260.0	-10.73	3.15	20.23	0.04	5.18	17.87	61.16	-	-	-
Mid	5300.0	-10.88	3.16	20.23	0.04	5.18	17.73	59.22	-	-	-
High	5320.0	-10.41	3.25	20.23	0.04	5.18	18.29	67.38	-	-	-

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss + Antenna Gain

[Pre check]

Antenna 1

	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
Worst	0	5260.0	-10.73	3.15	20.23	0.04	12.69
	1	5260.0	-10.79	3.15	20.23	0.07	12.66
	2	5260.0	-10.83	3.15	20.23	0.06	12.61
	3	5260.0	-10.88	3.15	20.23	0.08	12.58
	4	5260.0	-10.85	3.15	20.23	0.12	12.65
	5	5260.0	-10.91	3.15	20.23	0.15	12.62
	6	5260.0	-14.37	3.15	20.23	0.17	9.18
7	5260.0	-14.40	3.15	20.23	0.19	9.17	

Antenna 2

	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
2	0	5260.0	-11.30	3.15	20.23	0.04	12.12
2	1	5260.0	-11.35	3.15	20.23	0.07	12.10
2	2	5260.0	-11.34	3.15	20.23	0.06	12.10
2	3	5260.0	-11.37	3.15	20.23	0.08	12.09
2	4	5260.0	-11.47	3.15	20.23	0.12	12.03
2	5	5260.0	-11.53	3.15	20.23	0.15	12.00
2	6	5260.0	-15.02	3.15	20.23	0.17	8.53
2	7	5260.0	-15.01	3.15	20.23	0.19	8.56

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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11n (HT20), antenna port 1, (Tx 5260MHz)



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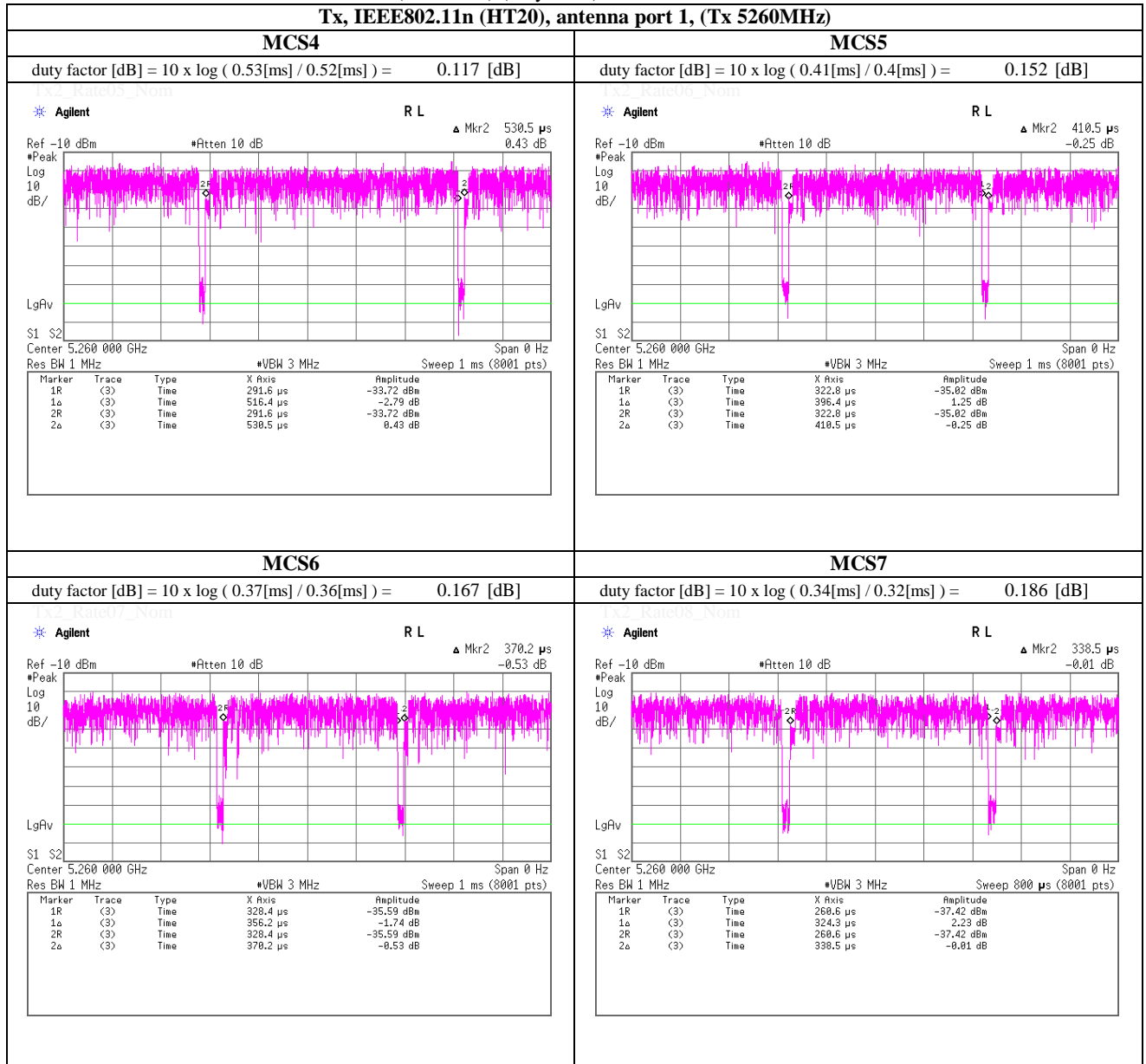
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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



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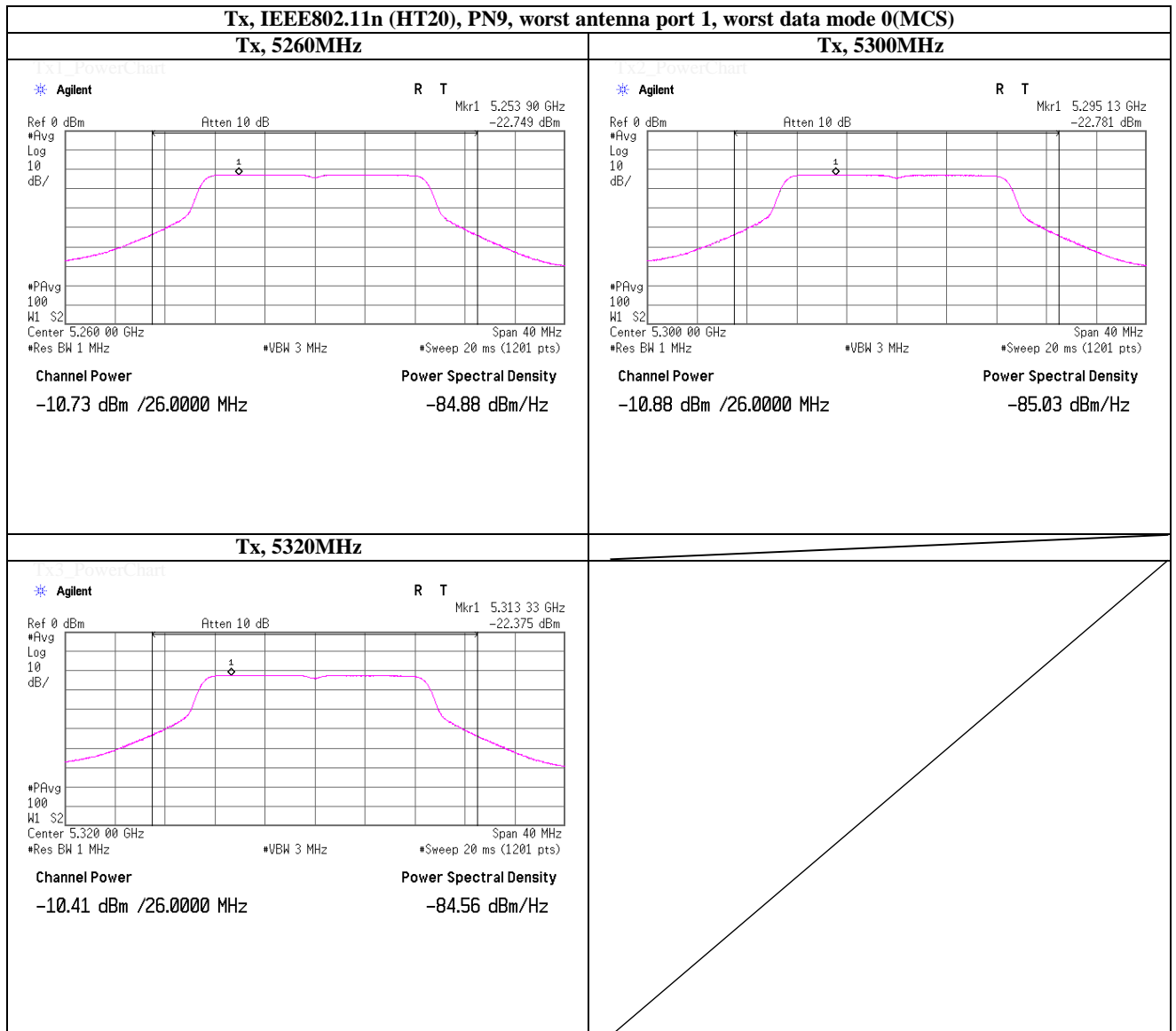
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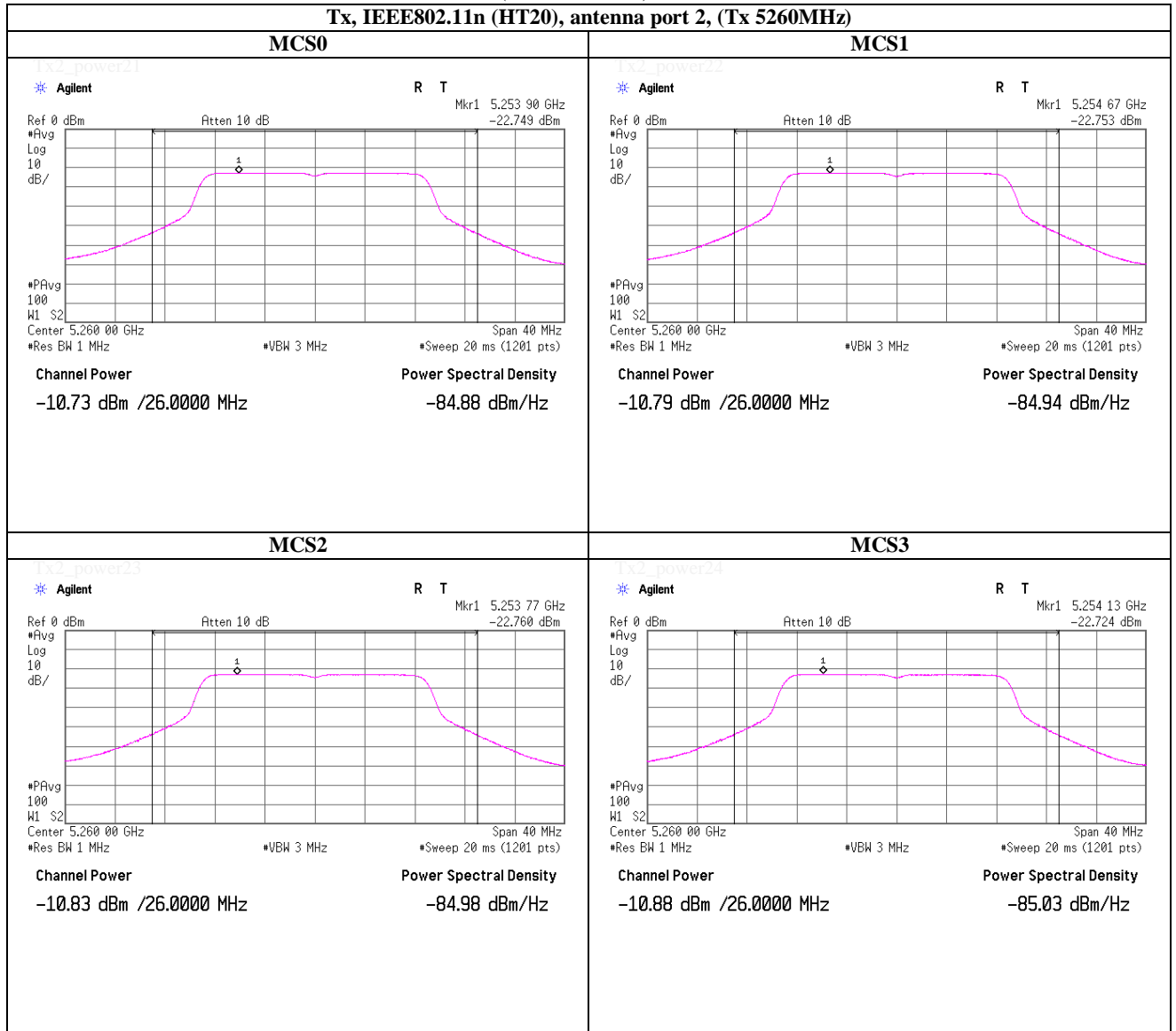
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Maximum Conducted Output Power (Conducted)



Maximum Conducted Output Power (Conducted)

(Reference chart)



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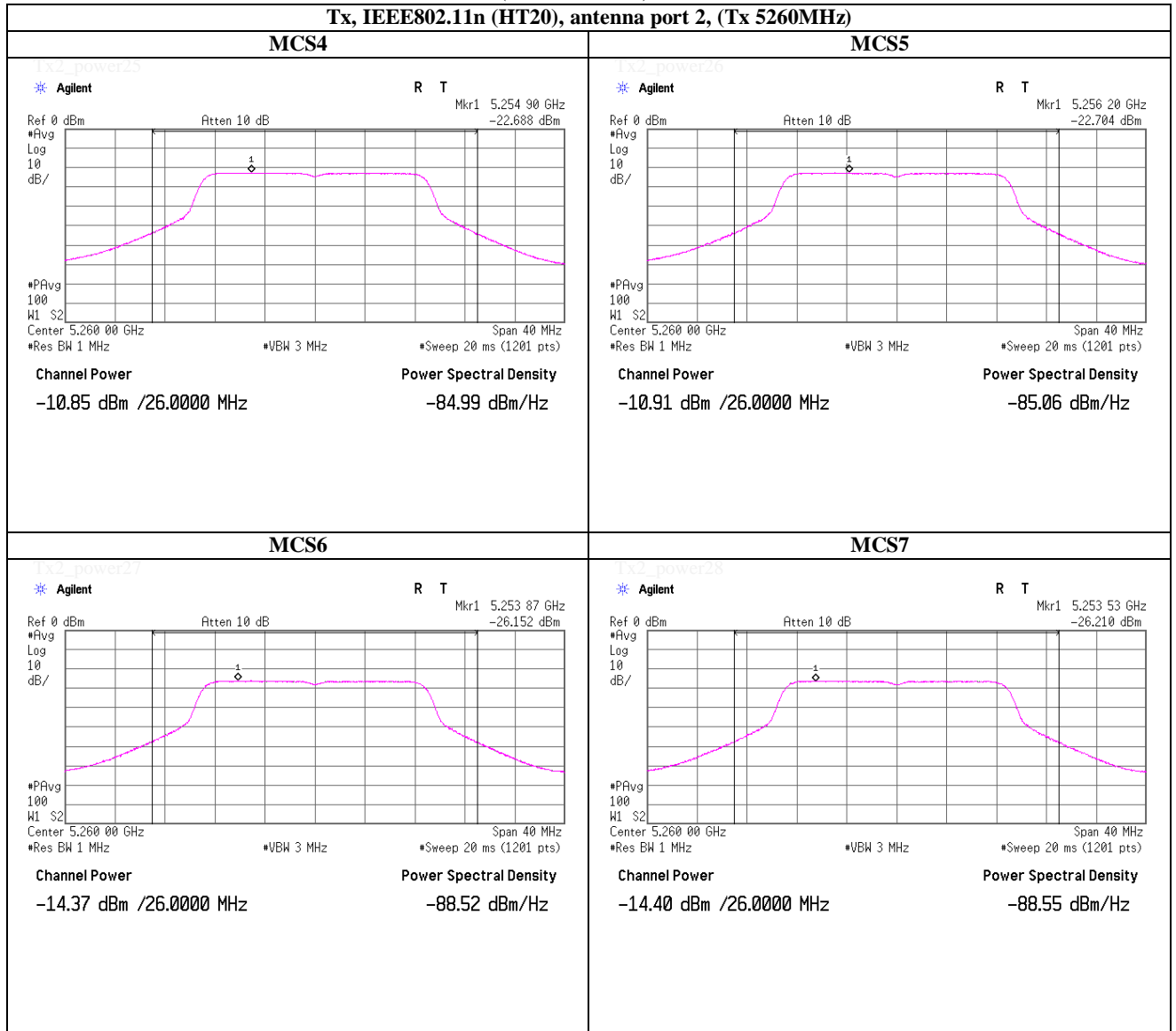
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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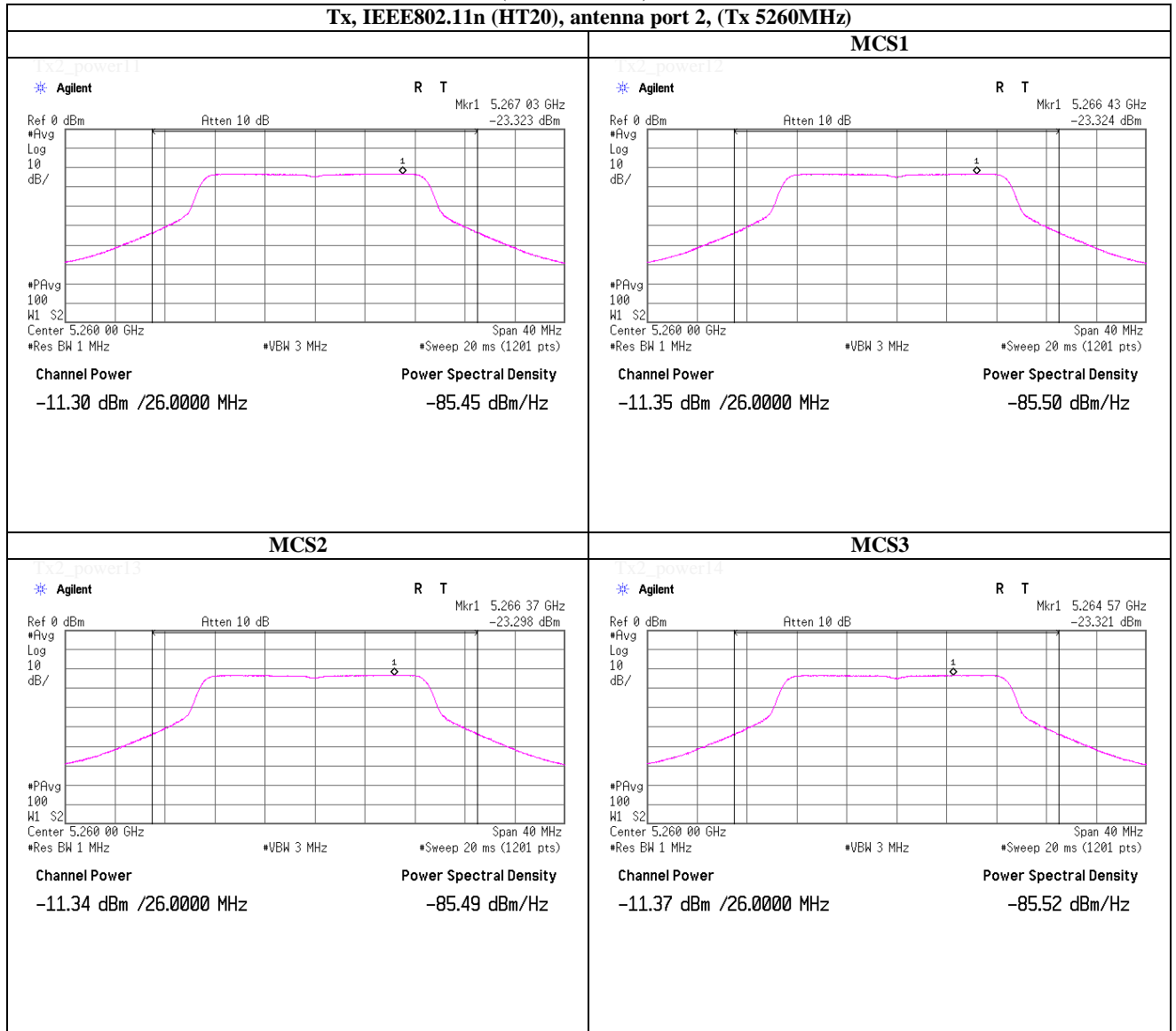
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Maximum Conducted Output Power (Conducted)

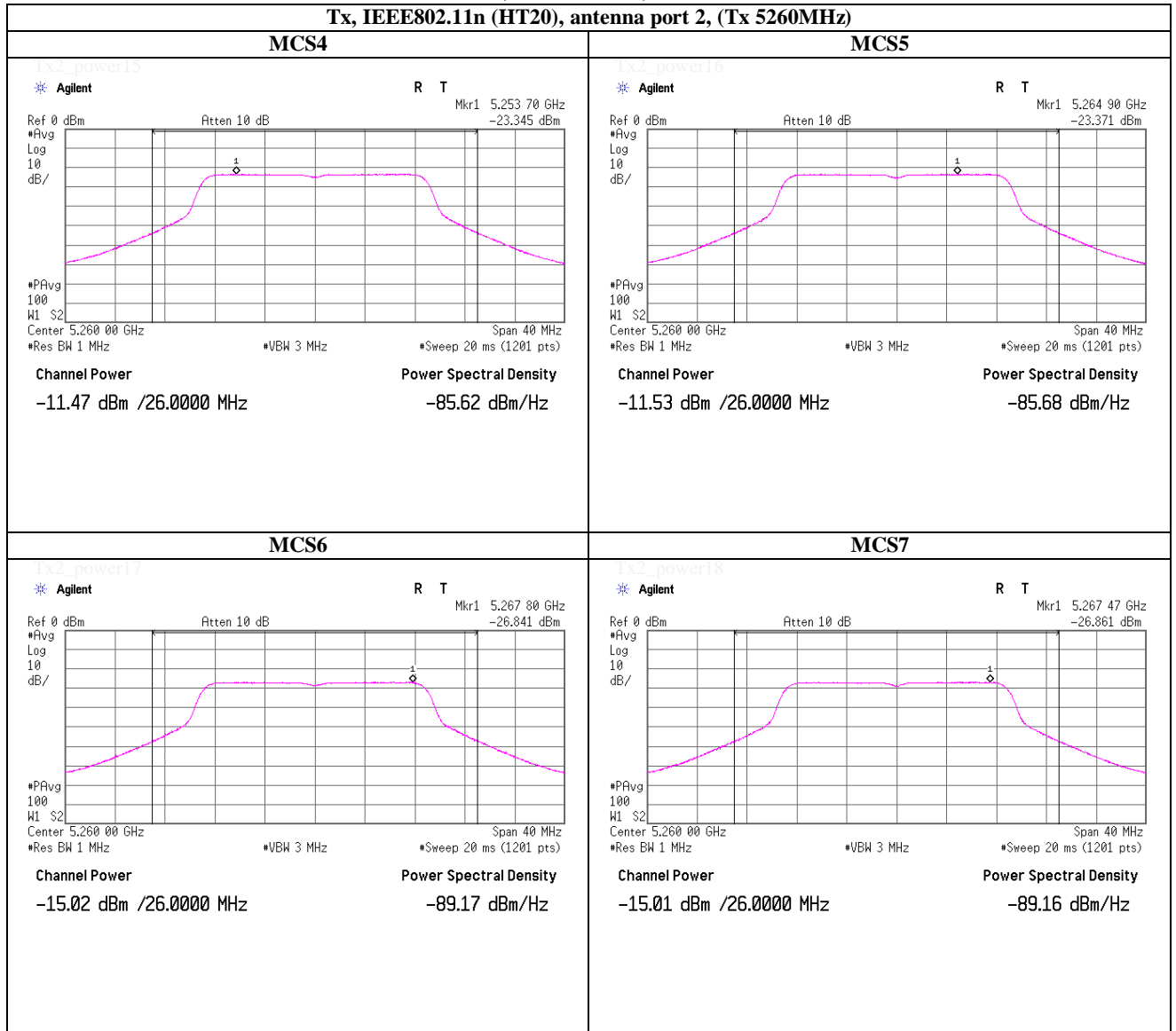
(Reference chart)



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Maximum Conducted Output Power (Conducted)

(Reference chart)



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Maximum Conducted Output Power (Conducted)

Test place: UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date: August 22, 2012
 Temperature / Humidity: 25deg.C , 50%RH
 Engineer: Hikaru Shirsawa
 Mode: Tx, IEEE802.11n (HT20), PN9, worst antenna : 1 worst data mode : 0 (MCS)

Antena terminal power (* S/A: Spectrum Analyzer)

Ch	Freq. [MHz]	S/A (RMS) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result		Limit		Margin [dB]
						[dBm]	[mW]	[dBm]	[mW]	
Low	5500.0	-13.24	3.31	20.21	0.02	10.30	10.72	23.98	250.00	13.68
Mid	5580.0	-11.93	3.33	20.21	0.02	11.63	14.56	23.98	250.00	12.35
High	5700.0	-12.54	3.16	20.21	0.02	10.85	12.16	23.98	250.00	13.13

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss

EIRP (* S/A: Spectrum Analyzer) **Reference Data**

Ch	Freq. [MHz]	S/A (RMS) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
							(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	
Low	5500.0	-13.24	3.31	20.21	0.02	4.02	14.32	27.05	-	-	-
Mid	5580.0	-11.93	3.33	20.21	0.02	4.02	15.65	36.74	-	-	-
High	5700.0	-12.54	3.16	20.21	0.02	4.02	14.87	30.70	-	-	-

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss + Antenna Gain

[Pre check]

Antenna 1

	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
Worst	0	5500.0	-13.24	3.31	20.21	0.02	10.30
	1	5500.0	-13.33	3.31	20.21	0.04	10.23
	2	5500.0	-13.37	3.31	20.21	0.06	10.21
	3	5500.0	-13.36	3.31	20.21	0.08	10.24
	4	5500.0	-13.47	3.31	20.21	0.12	10.17
	5	5500.0	-13.45	3.31	20.21	0.16	10.23
	6	5500.0	-16.47	3.31	20.21	0.19	7.24
7	5500.0	-16.45	3.31	20.21	0.19	7.26	

Antenna 2

	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
2	0	5500.0	-13.39	3.31	20.21	0.02	10.15
2	1	5500.0	-13.63	3.31	20.21	0.04	9.93
2	2	5500.0	-13.57	3.31	20.21	0.06	10.01
2	3	5500.0	-13.67	3.31	20.21	0.08	9.93
2	4	5500.0	-13.48	3.31	20.21	0.12	10.16
2	5	5500.0	-13.54	3.31	20.21	0.16	10.14
2	6	5500.0	-17.40	3.31	20.21	0.19	6.31
2	7	5500.0	-17.42	3.31	20.21	0.19	6.29

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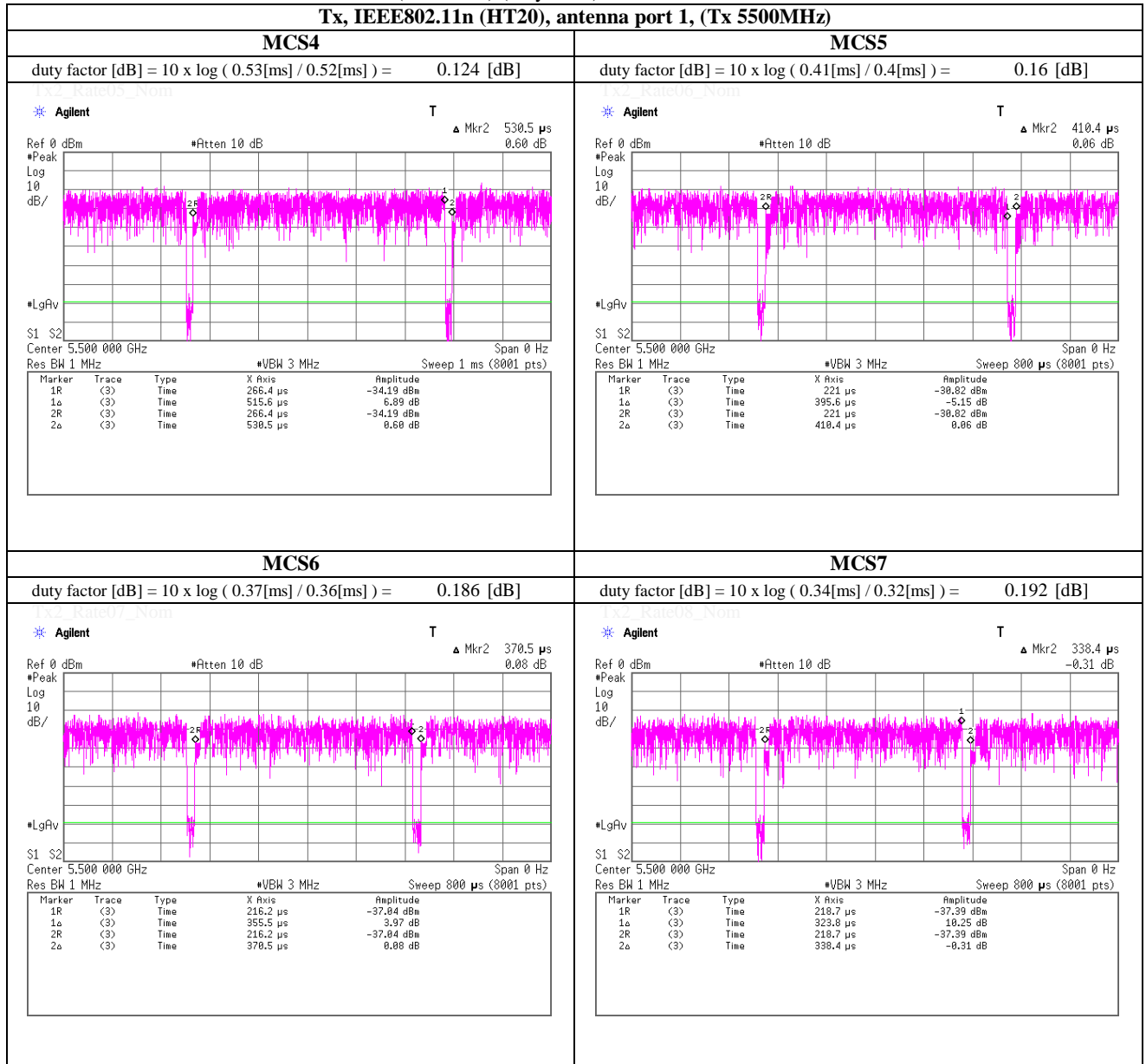
Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



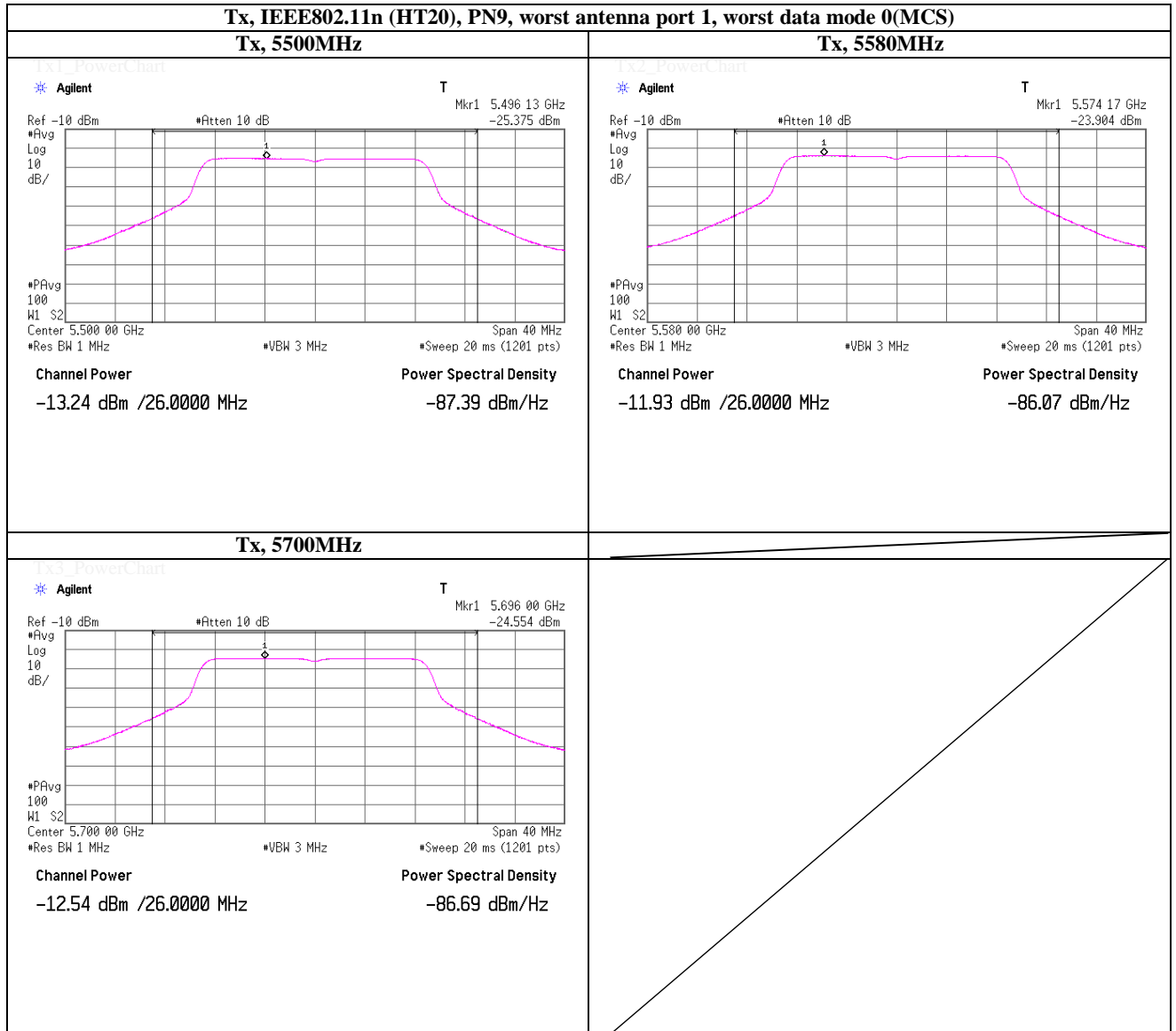
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Maximum Conducted Output Power (Conducted)



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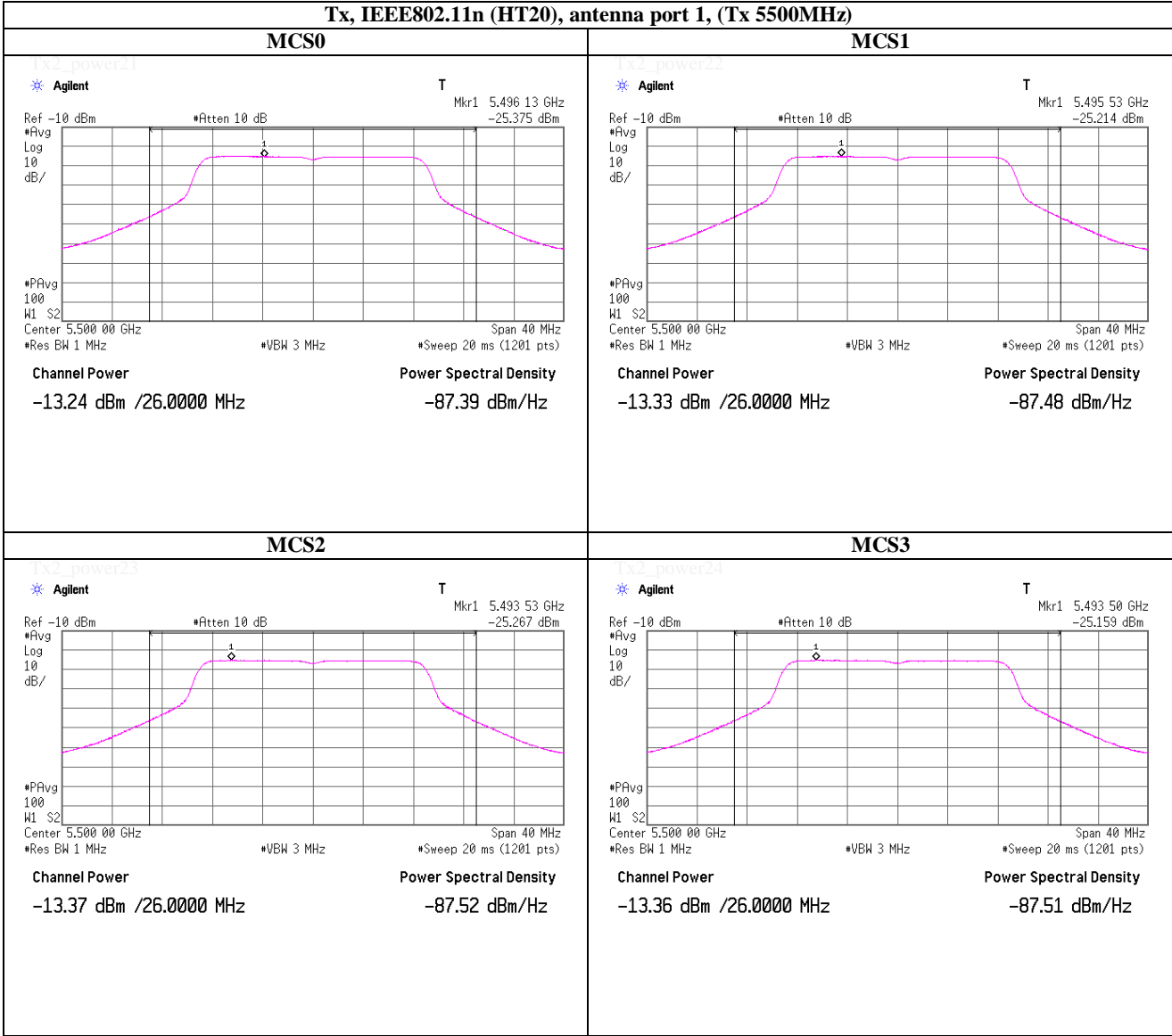
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Maximum Conducted Output Power (Conducted)

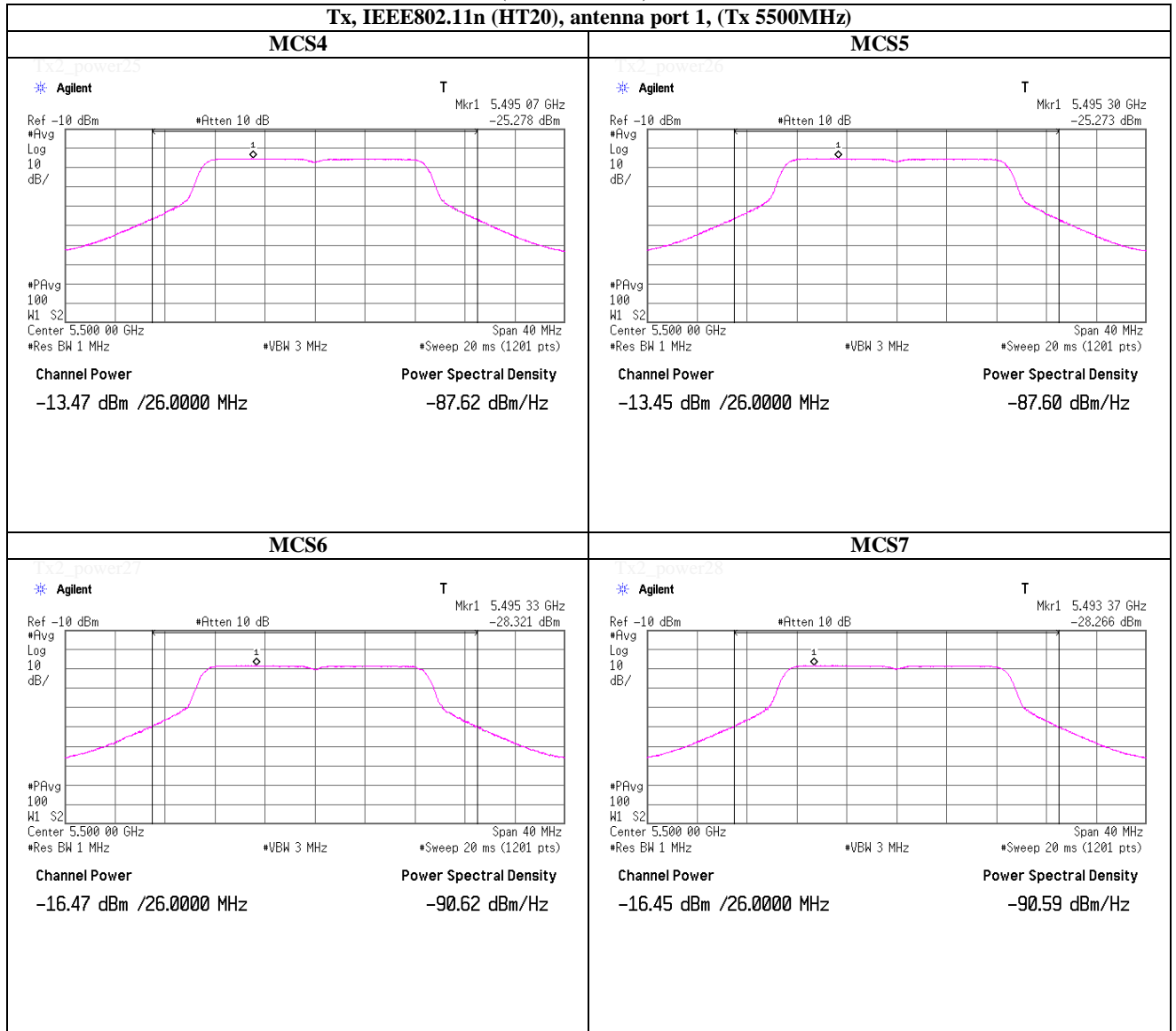
(Reference chart)



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Maximum Conducted Output Power (Conducted)

(Reference chart)



UL Japan, Inc.

Shonan EMC Lab.

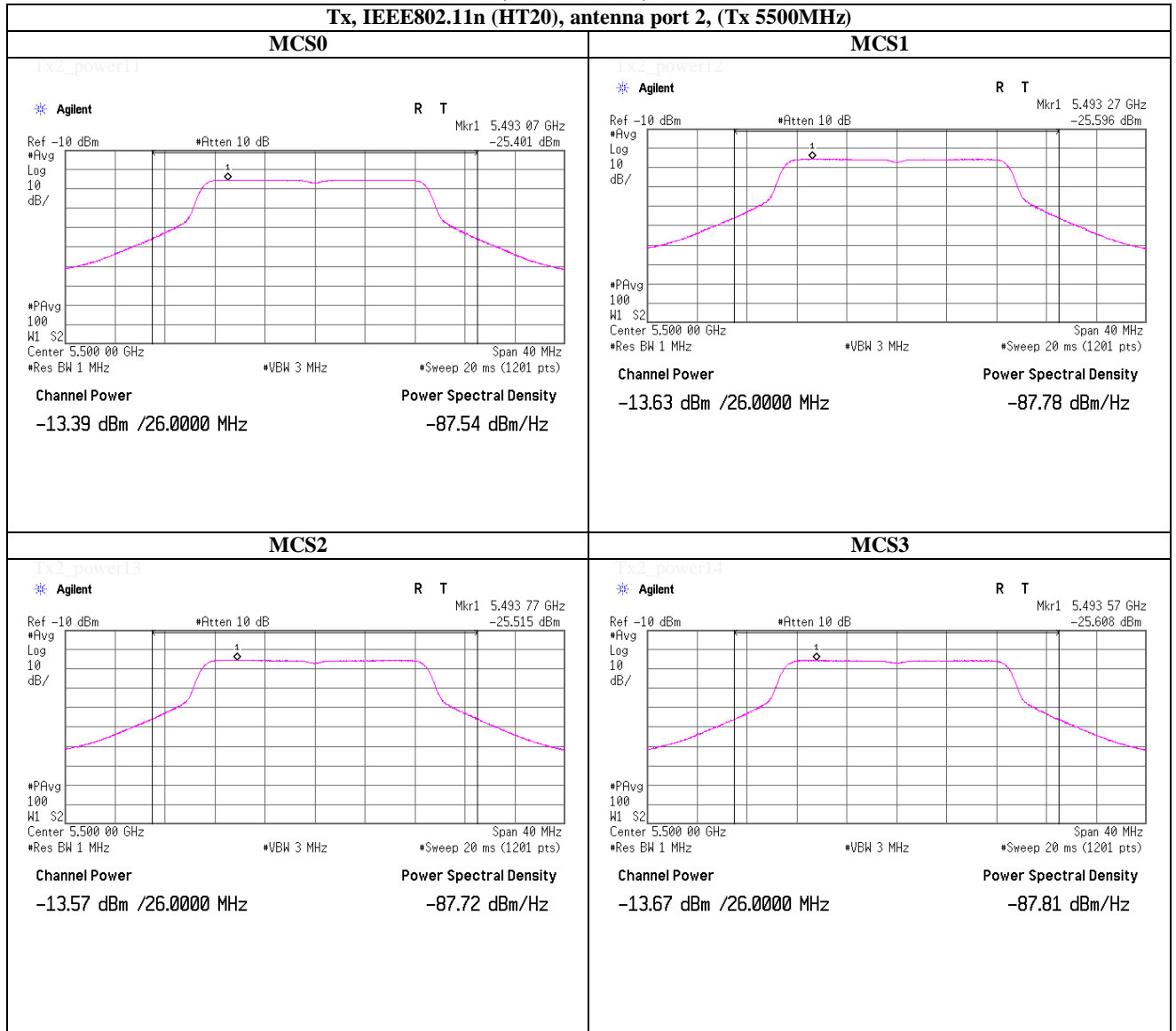
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

(Reference chart)



UL Japan, Inc.

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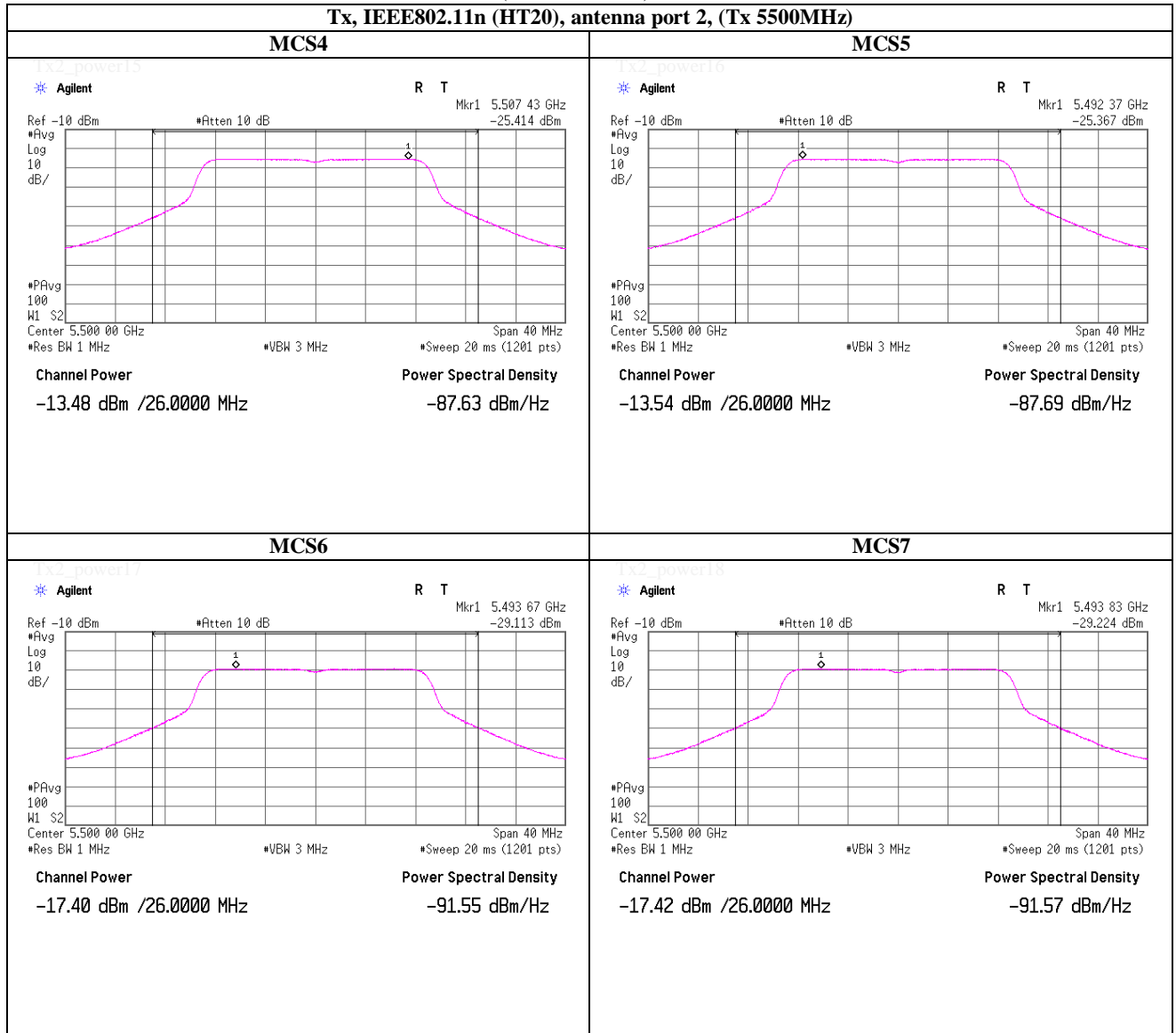
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

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Maximum Conducted Output Power (Conducted)

(Reference chart)



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

Maximum Conducted Output Power (Conducted)

Test place: UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date: August 30, 2012
 Temperature / Humidity: 25deg.C , 45%RH
 Engineer: Hikaru Shirasawa
 Mode: Tx, IEEE802.11n (HT20), PN9,

worst data mode : 8 (MCS)

Antena terminal power (* S/A: Spectrum Analyzer)

Antenna	Freq. [MHz]	S/A (RMS) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]	Total Result		Limit		Margin [dB]
							[dBm]	[mW]	[dBm]	[mW]	
Ant1	5180.0	-11.08	3.02	20.24	0.04	12.22	15.29	33.80	16.99	50.00	1.70
	5220.0	-11.30	3.03	20.24	0.04	12.01	15.20	33.09	16.99	50.00	1.79
	5240.0	-11.39	3.12	20.24	0.04	12.01	15.22	33.29	16.99	50.00	1.77
Ant2	5180.0	-10.97	3.02	20.24	0.04	12.33					
	5220.0	-10.96	3.03	20.24	0.04	12.35					
	5240.0	-11.00	3.12	20.24	0.04	12.40					

Sample Calculation: Result (Ant1) or (Ant2) [dBm] = Reading [dBm] + Cable Loss [dB] + Atten. Loss [dB]
 Total Result = Result (Ant1) [mW] + Result (Ant2) [mW]

EIRP (* S/A: Spectrum Analyzer) **Reference Data**

Antenna	Freq. [MHz]	S/A (RMS) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Antenna Gain [dBi]	Result (e.i.r.p.) [dBm]	Total Result		Limit		Margin [dB]
								(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	
Ant1	5180.0	-10.97	3.02	20.24	0.04	5.18	17.51	20.47	111.39	-	-	-
	5220.0	-10.96	3.03	20.24	0.04	5.18	17.53	20.38	109.06	-	-	-
	5240.0	-11.00	3.12	20.24	0.04	5.18	17.58	20.40	109.72	-	-	-
Ant2	5180.0	-11.08	3.02	20.24	0.04	5.18	17.40					
	5220.0	-11.30	3.03	20.24	0.04	5.18	17.19					
	5240.0	-11.39	3.12	20.24	0.04	5.18	17.19					

Sample Calculation: Result (Ant1) or (Ant2) [dBm] = Reading [dBm] + Cable Loss [dB] + Atten. Loss [dB] + Antenna Gain [dBi]
 Total Result = Result (Ant1) [mW] + Result (Ant2) [mW]

[Pre check]

Antenna 1

	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
1	8	5180.0	-10.97	3.03	20.24	0.04	12.34
1	9	5180.0	-11.10	3.03	20.24	0.08	12.25
1	10	5180.0	-11.13	3.03	20.24	0.12	12.26
1	11	5180.0	-11.15	3.03	20.24	0.15	12.27
1	12	5180.0	-11.19	3.03	20.24	0.21	12.29
1	13	5180.0	-11.21	3.03	20.24	0.27	12.33
1	14	5180.0	-14.39	3.03	20.24	0.32	9.20
1	15	5180.0	-14.46	3.03	20.24	0.32	9.13

Antenna 1 + 2

Result [dBm]
15.30
15.23
15.25
15.28
15.29
15.24
11.89
11.85

Worst

Antenna 2

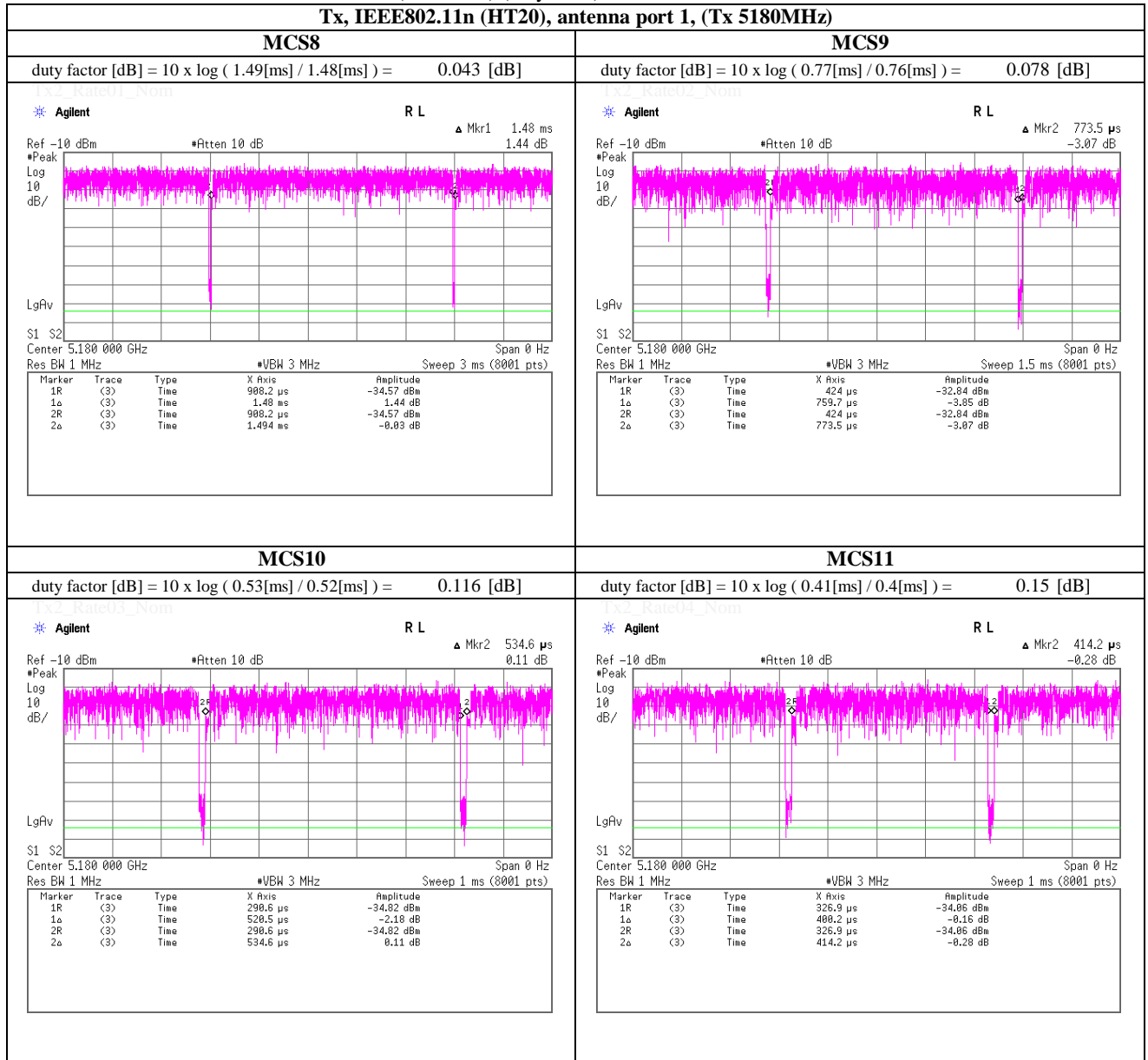
	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
2	8	5180.0	-11.08	3.03	20.24	0.04	12.23
2	9	5180.0	-11.15	3.03	20.24	0.08	12.20
2	10	5180.0	-11.17	3.03	20.24	0.12	12.22
2	11	5180.0	-11.16	3.03	20.24	0.15	12.26
2	12	5180.0	-11.22	3.03	20.24	0.21	12.26
2	13	5180.0	-11.40	3.03	20.24	0.27	12.14
2	14	5180.0	-15.06	3.03	20.24	0.32	8.53
2	15	5180.0	-15.05	3.03	20.24	0.32	8.54

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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



UL Japan, Inc.

Shonan EMC Lab.

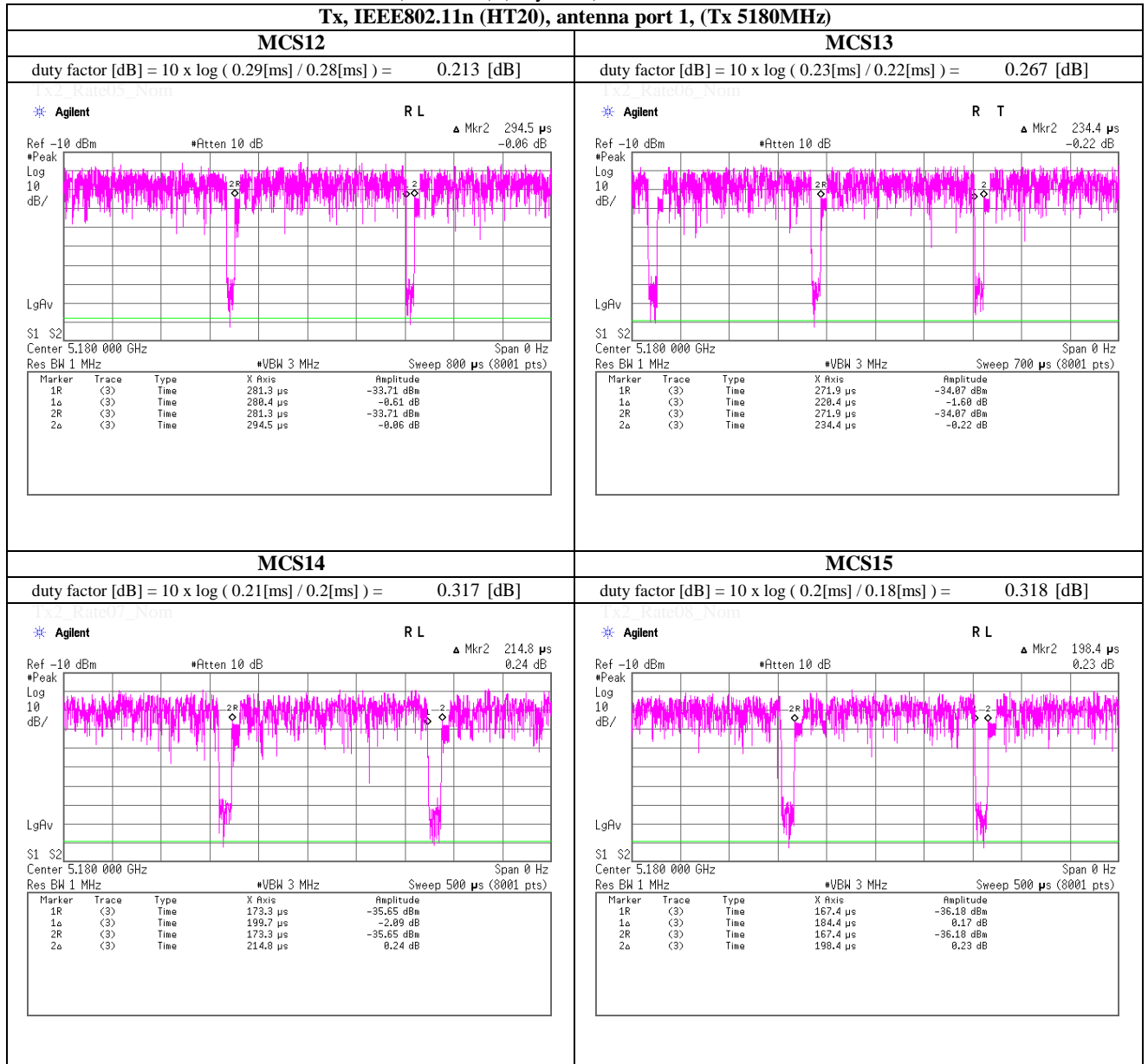
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



UL Japan, Inc.

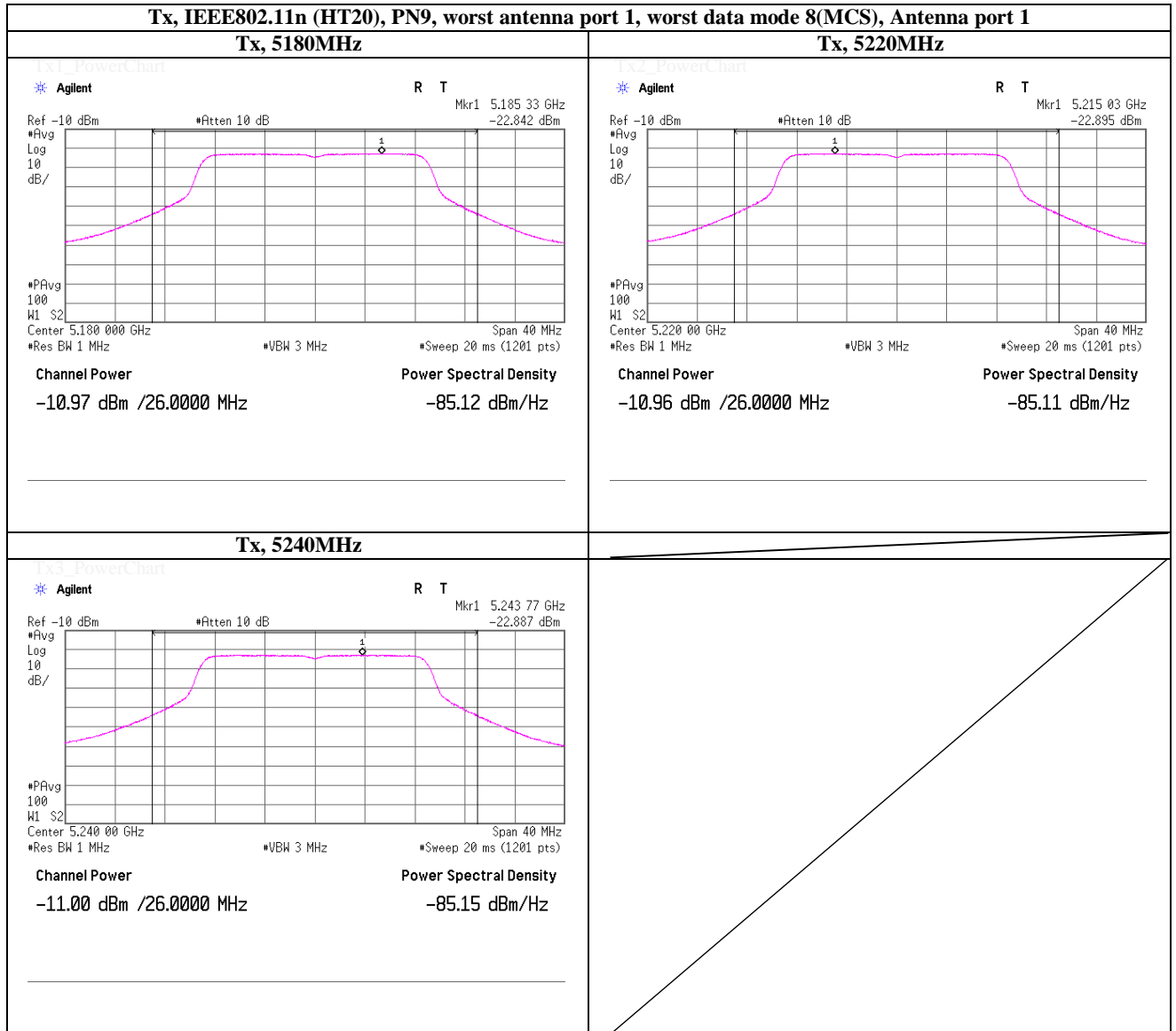
Shonan EMC Lab.

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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)



UL Japan, Inc.

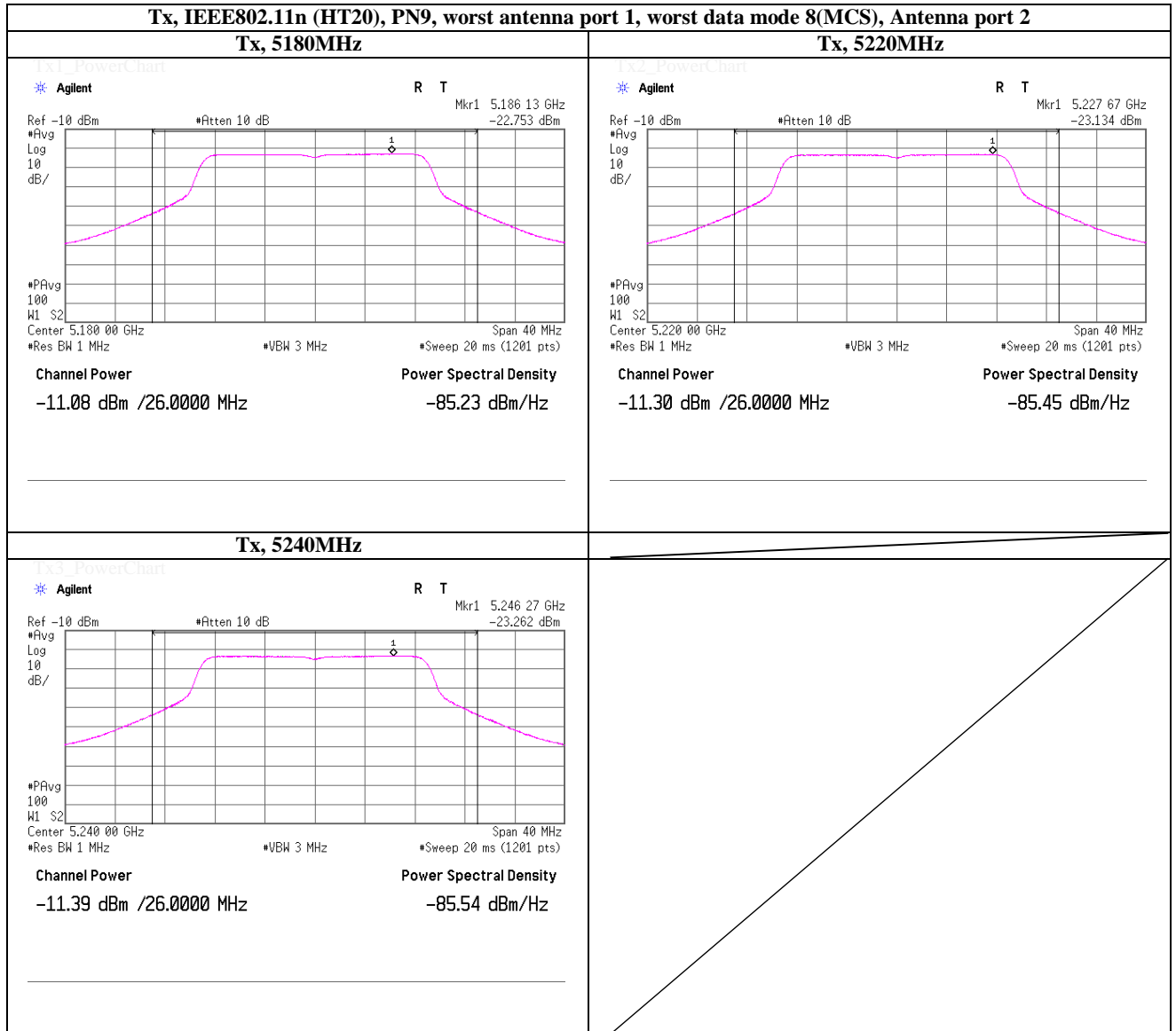
Shonan EMC Lab.

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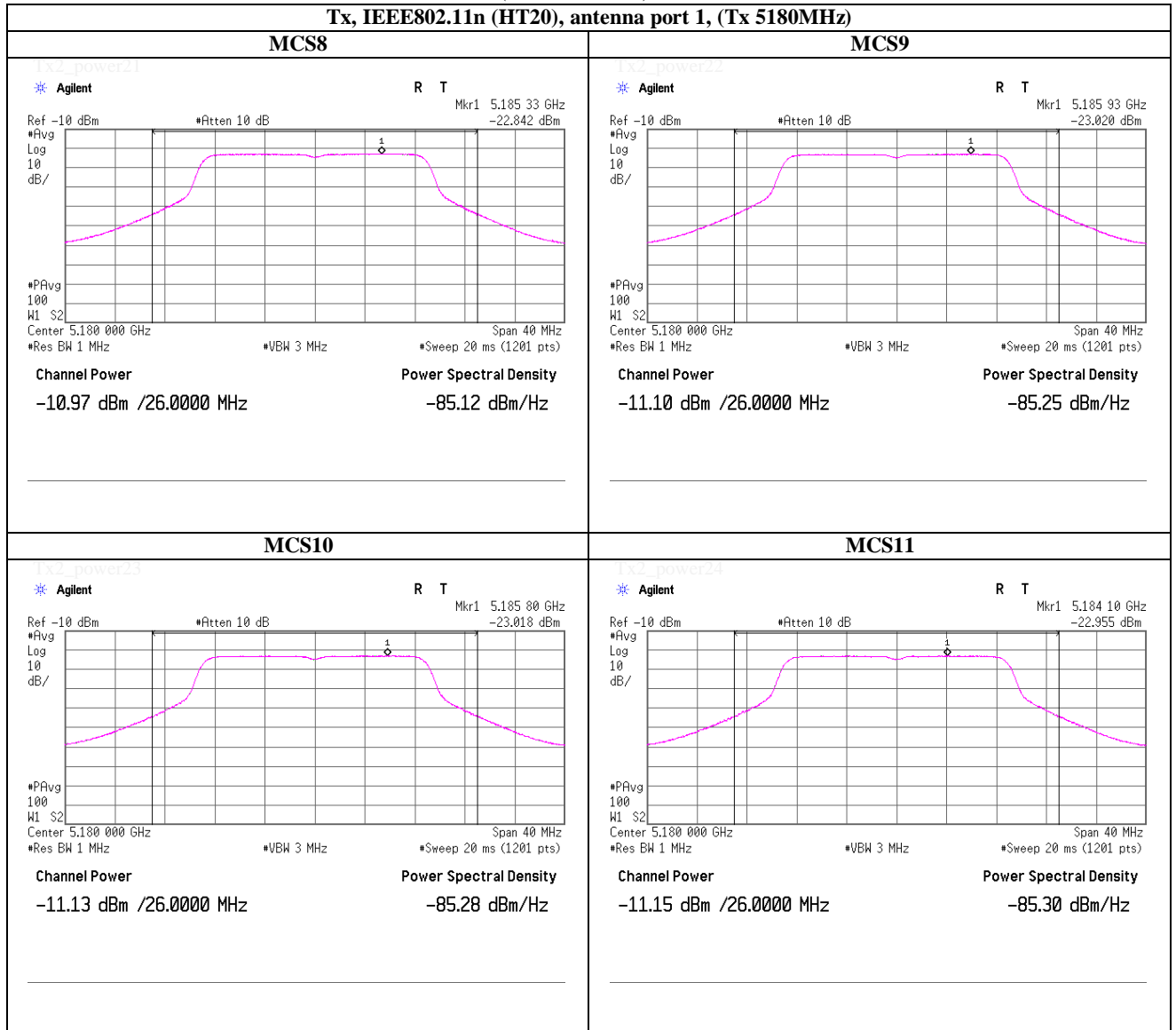
Maximum Conducted Output Power (Conducted)



UL Japan, Inc.
Shonan EMC Lab.
 1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
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Maximum Conducted Output Power (Conducted)

(Reference chart)



UL Japan, Inc.
Shonan EMC Lab.

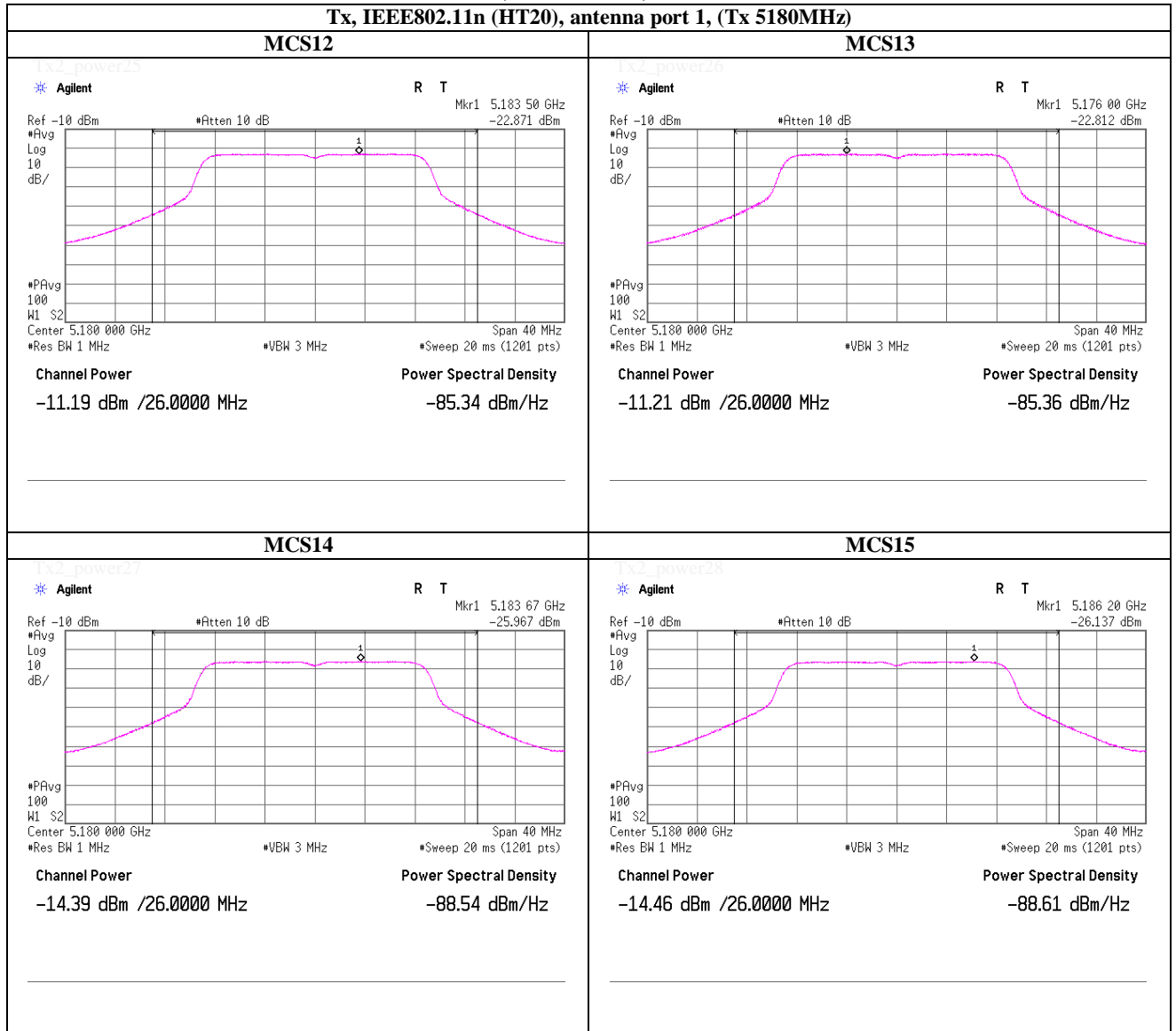
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

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Maximum Conducted Output Power (Conducted)

(Reference chart)



UL Japan, Inc.

Shonan EMC Lab.

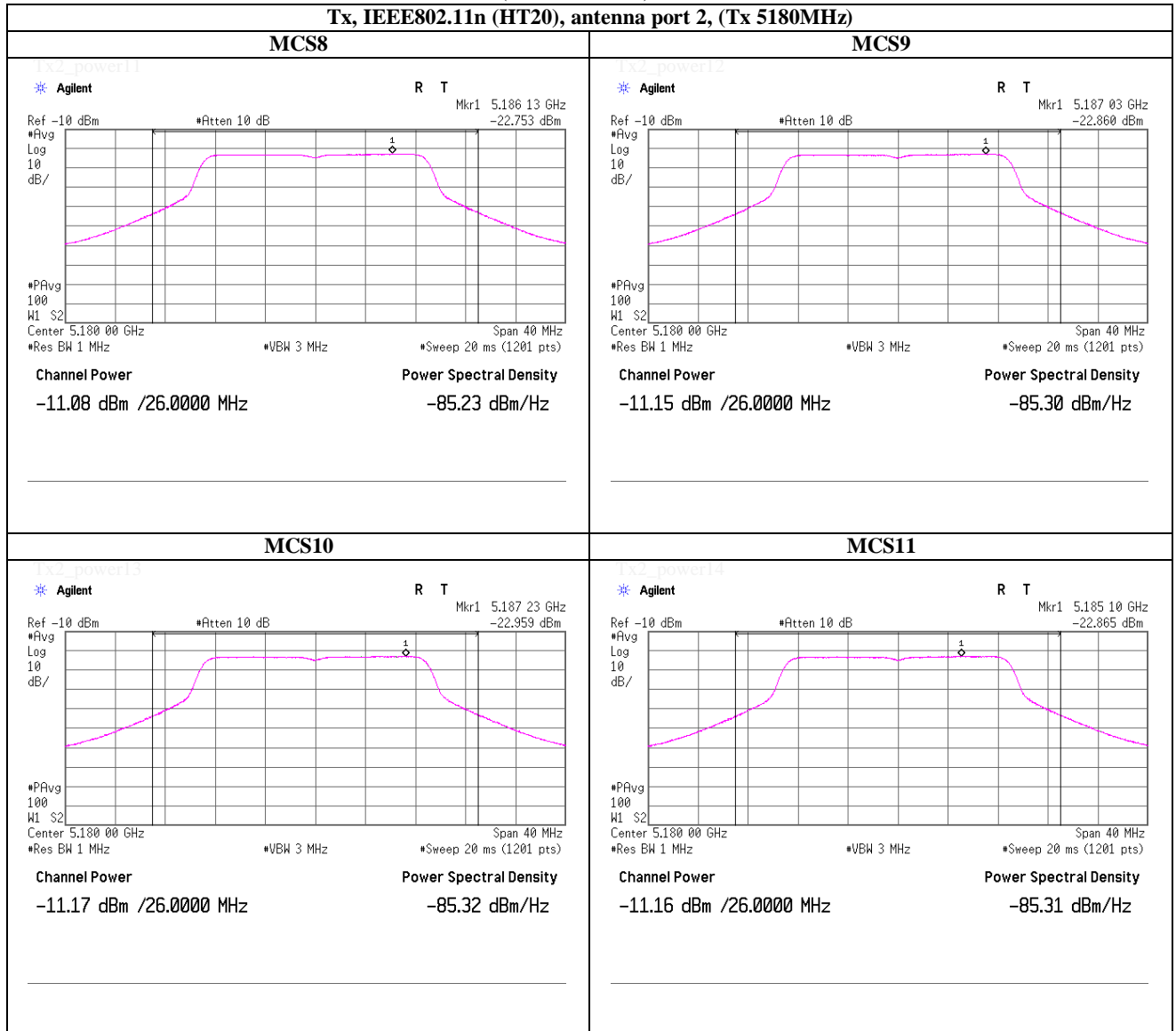
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

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Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

(Reference chart)



UL Japan, Inc.
Shonan EMC Lab.

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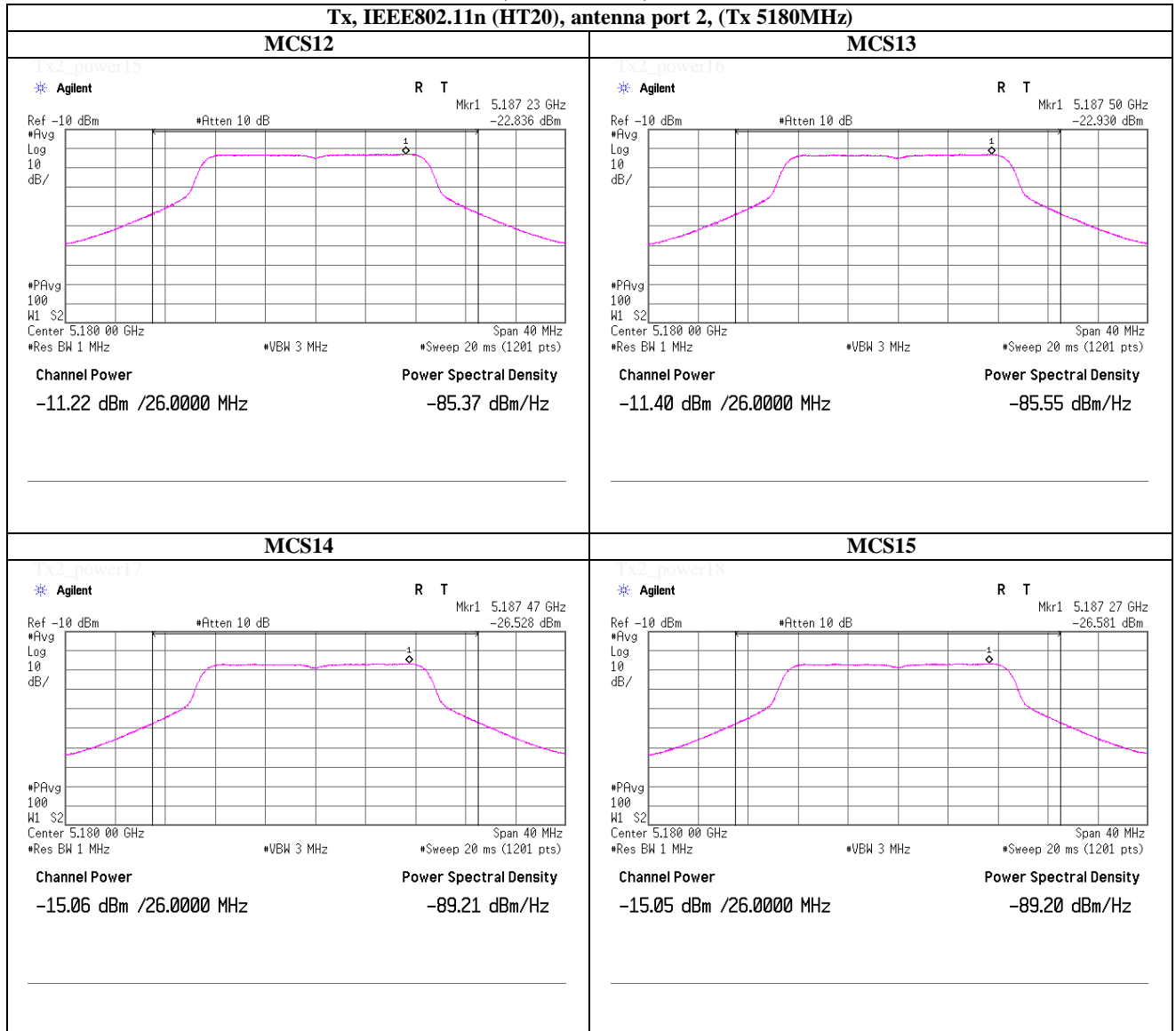
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Maximum Conducted Output Power (Conducted)

(Reference chart)

Tx, IEEE802.11n (HT20), antenna port 2, (Tx 5180MHz)



UL Japan, Inc.

Shonan EMC Lab.

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Maximum Conducted Output Power (Conducted)

Test place: UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date: August 7, 2012
 Temperature / Humidity: 25deg.C , 52%RH
 Engineer: Kenichi Adachi
 Mode: Tx, IEEE802.11n (HT20), PN9, worst data mode : 8 (MCS)

Antenna terminal power (* S/A: Spectrum Analyzer)

Antenna	Freq. [MHz]	S/A (RMS) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]	Total Result		Limit		Margin [dB]
							[dBm]	[mW]	[dBm]	[mW]	
Ant1	5260.0	-10.72	3.15	20.23	0.04	12.70	15.46	35.19	23.98	250.00	8.51
	5300.0	-10.87	3.16	20.23	0.04	12.56	15.23	33.36	23.98	250.00	8.75
	5320.0	-10.57	3.25	20.23	0.04	12.95	15.48	35.34	23.98	250.00	8.50
Ant2	5260.0	-11.23	3.15	20.23	0.04	12.19					
	5300.0	-11.58	3.16	20.23	0.04	11.85					
	5320.0	-11.59	3.25	20.23	0.04	11.93					

Sample Calculation: Result (Ant1) or (Ant2) [dBm] = Reading [dBm] + Cable Loss [dB] + Atten. Loss [dB]
 Total Result = Result (Ant1) [mW] + Result (Ant2) [mW]

EIRP

(* S/A: Spectrum Analyzer)

Reference Data

Antenna	Freq. [MHz]	S/A (RMS) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Antenna Gain [dBi]	Result (e.i.r.p.) [dBm]	Total Result		Limit		Margin [dB]
								(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	
Ant1	5260.0	-10.72	3.15	20.23	0.04	5.18	17.88	20.64	116.01	-	-	-
	5300.0	-10.87	3.16	20.23	0.04	5.18	17.74	20.41	109.95	-	-	-
	5320.0	-10.57	3.25	20.23	0.04	5.18	18.13	20.66	116.47	-	-	-
Ant2	5260.0	-11.23	3.15	20.23	0.04	5.18	17.37					
	5300.0	-11.58	3.16	20.23	0.04	5.18	17.03					
	5320.0	-11.59	3.25	20.23	0.04	5.18	17.11					

Sample Calculation: Result (Ant1) or (Ant2) [dBm] = Reading [dBm] + Cable Loss [dB] + Atten. Loss [dB] + Antenna Gain [dBi]
 Total Result = Result (Ant1) [mW] + Result (Ant2) [mW]

[Pre check]

Antenna 1

	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
1	8	5260.0	-10.72	3.15	20.23	0.04	12.70
1	9	5260.0	-10.81	3.15	20.23	0.09	12.66
1	10	5260.0	-10.92	3.15	20.23	0.12	12.58
1	11	5260.0	-10.86	3.15	20.23	0.16	12.68
1	12	5260.0	-10.92	3.15	20.23	0.22	12.68
1	13	5260.0	-10.98	3.15	20.23	0.27	12.67
1	14	5260.0	-14.55	3.15	20.23	0.30	9.13
1	15	5260.0	-14.56	3.15	20.23	0.32	9.14

Antenna 1 + 2

Result [dBm]
15.46
15.38
15.29
15.33
15.31
15.28
11.78
11.79

Worst

Antenna 2

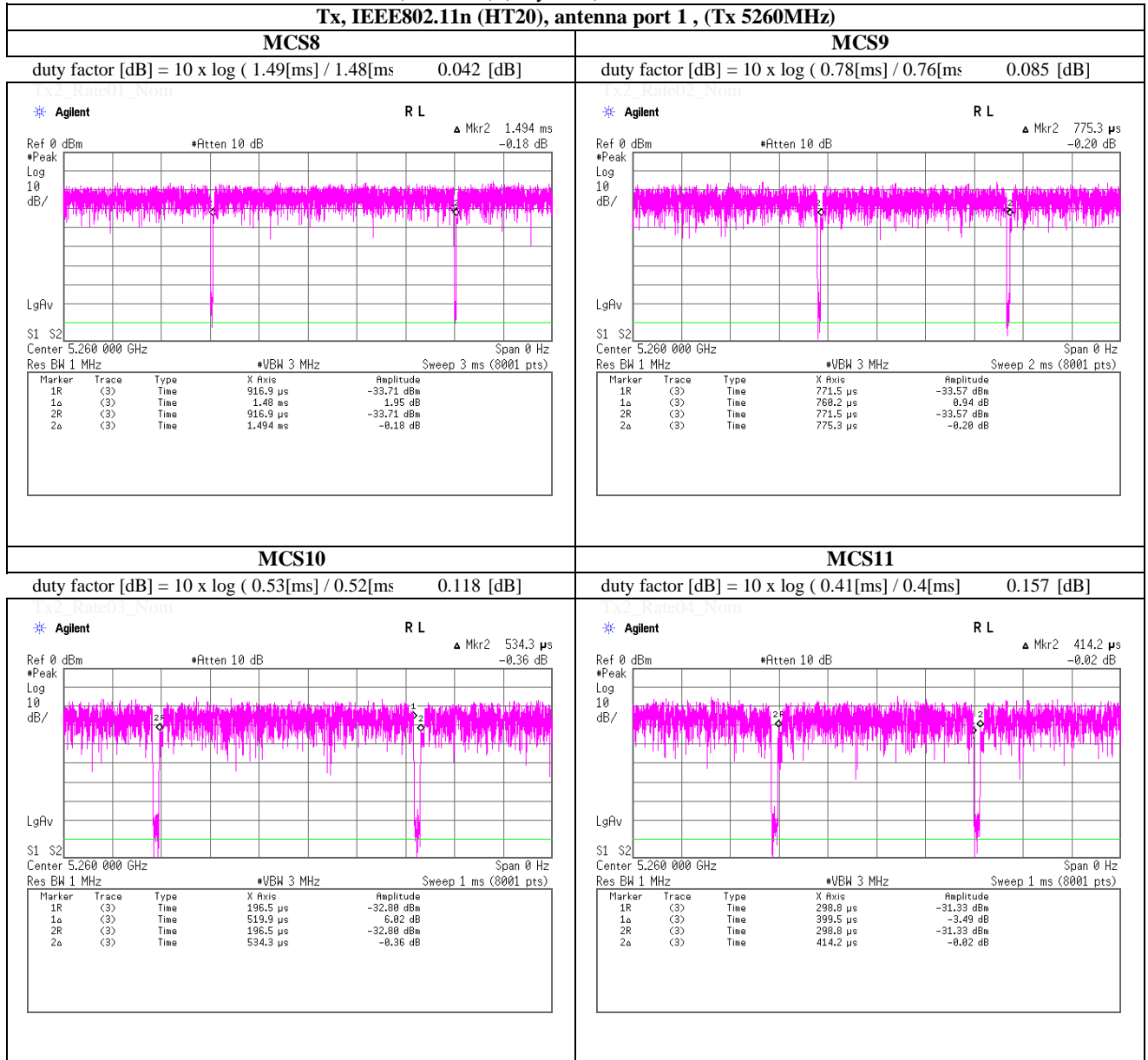
	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
2	8	5260.0	-11.23	3.15	20.23	0.04	12.19
2	9	5260.0	-11.41	3.15	20.23	0.09	12.06
2	10	5260.0	-11.54	3.15	20.23	0.12	11.96
2	11	5260.0	-11.60	3.15	20.23	0.16	11.94
2	12	5260.0	-11.73	3.15	20.23	0.22	11.87
2	13	5260.0	-11.82	3.15	20.23	0.27	11.83
2	14	5260.0	-15.31	3.15	20.23	0.30	8.37
2	15	5260.0	-15.32	3.15	20.23	0.32	8.38

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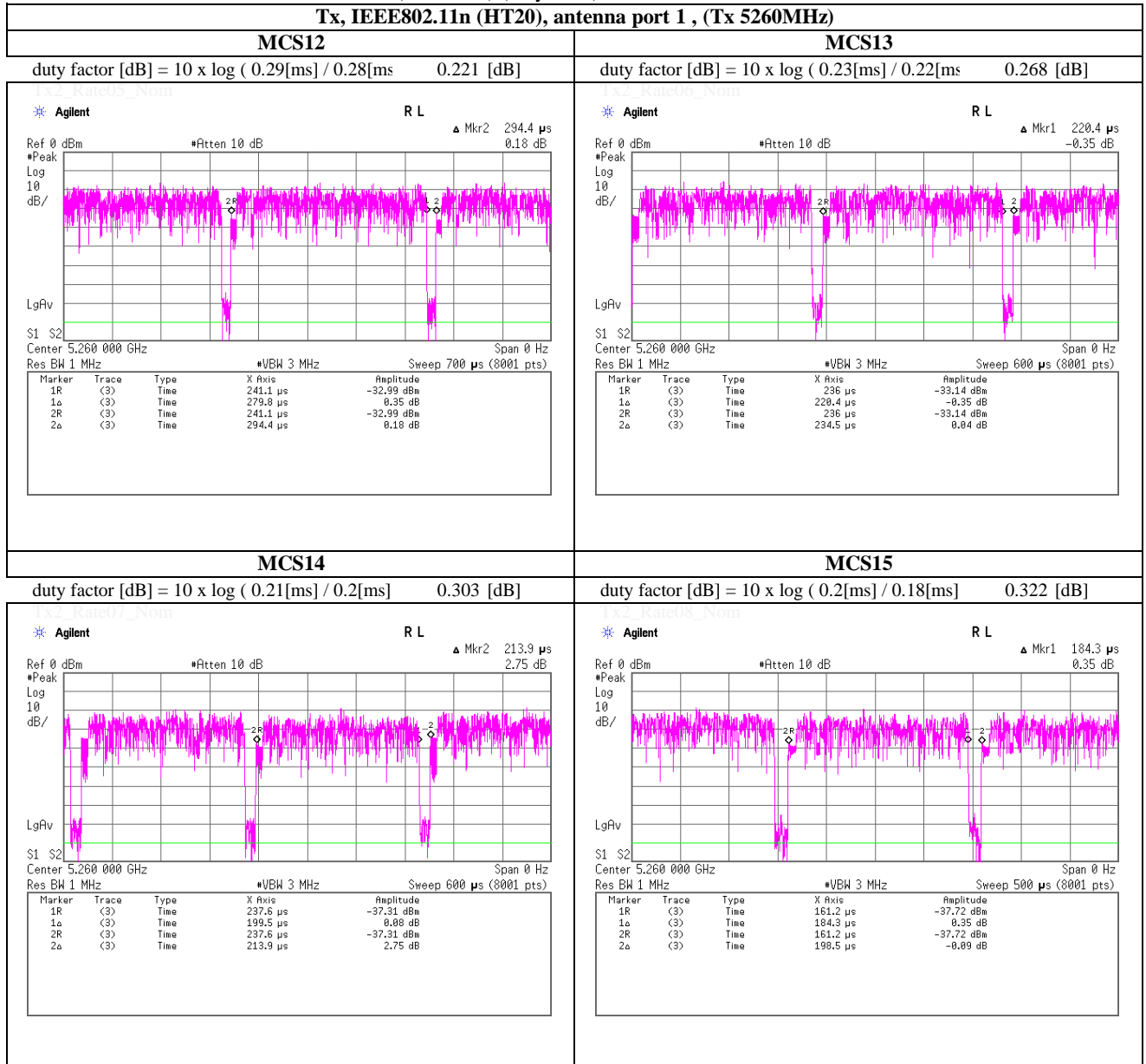
Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



UL Japan, Inc.

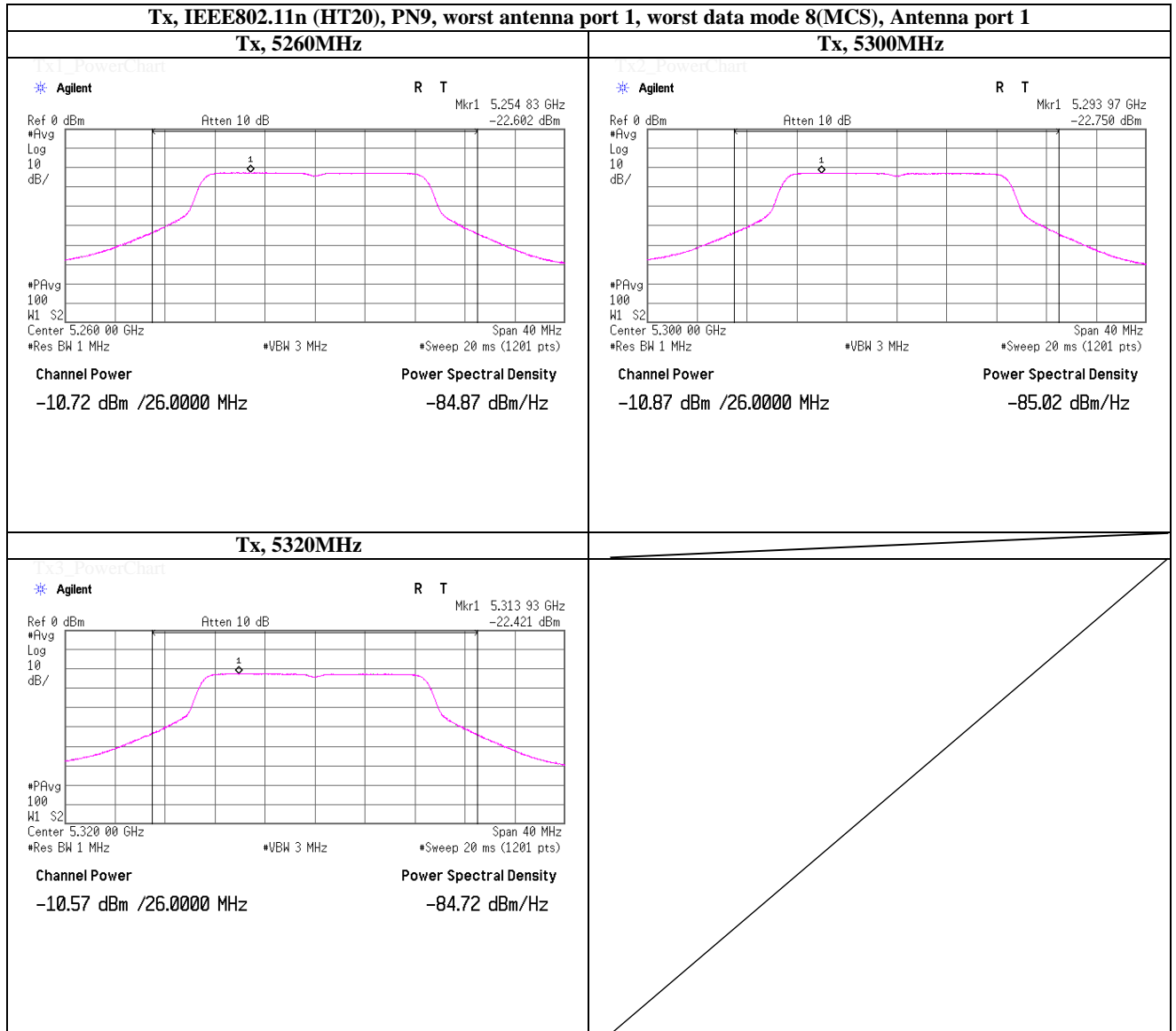
Shonan EMC Lab.

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Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)



UL Japan, Inc.

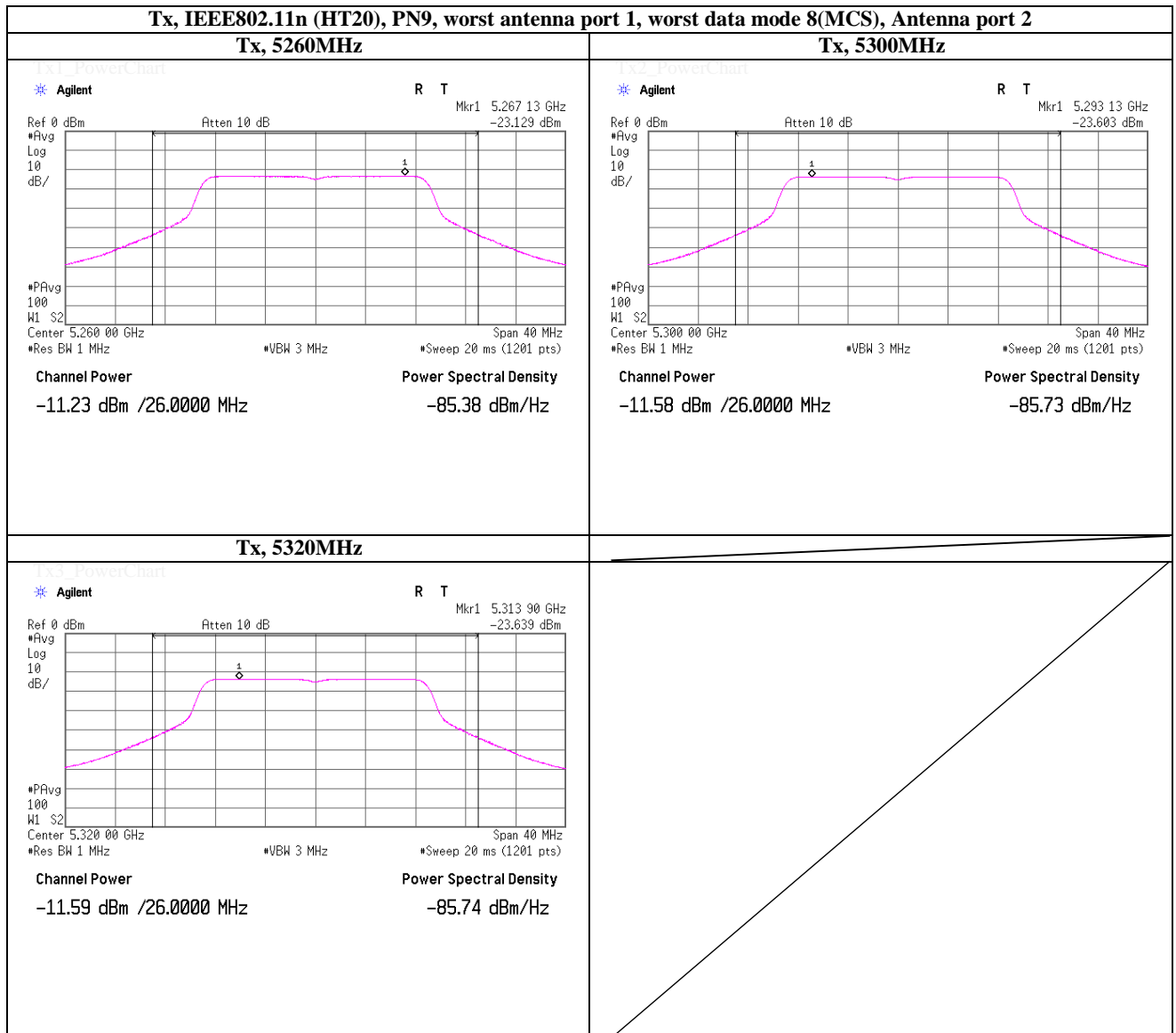
Shonan EMC Lab.

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

Telephone : +81 463 50 6400

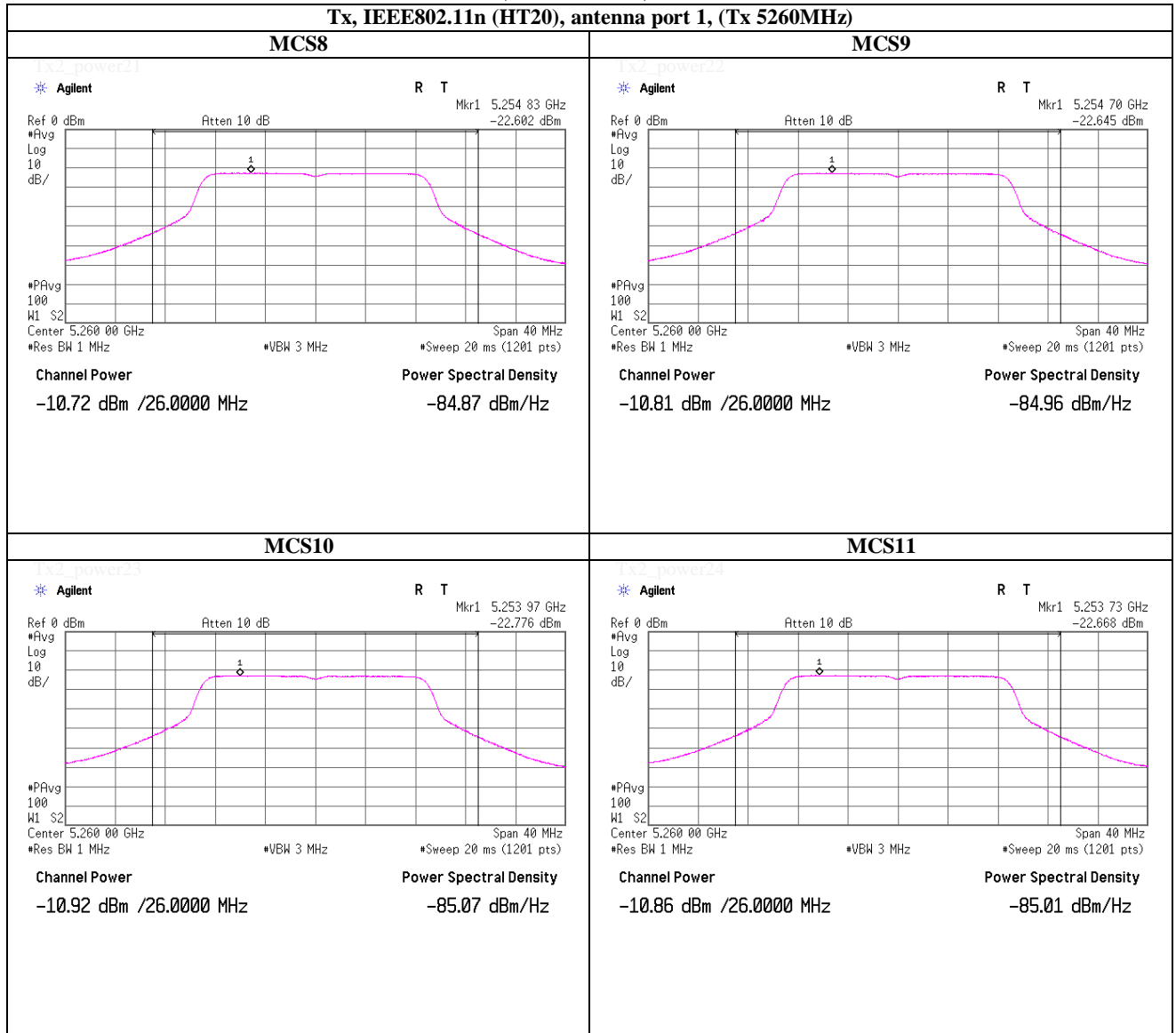
Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)



Maximum Conducted Output Power (Conducted)

(Reference chart)



UL Japan, Inc.
Shonan EMC Lab.

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

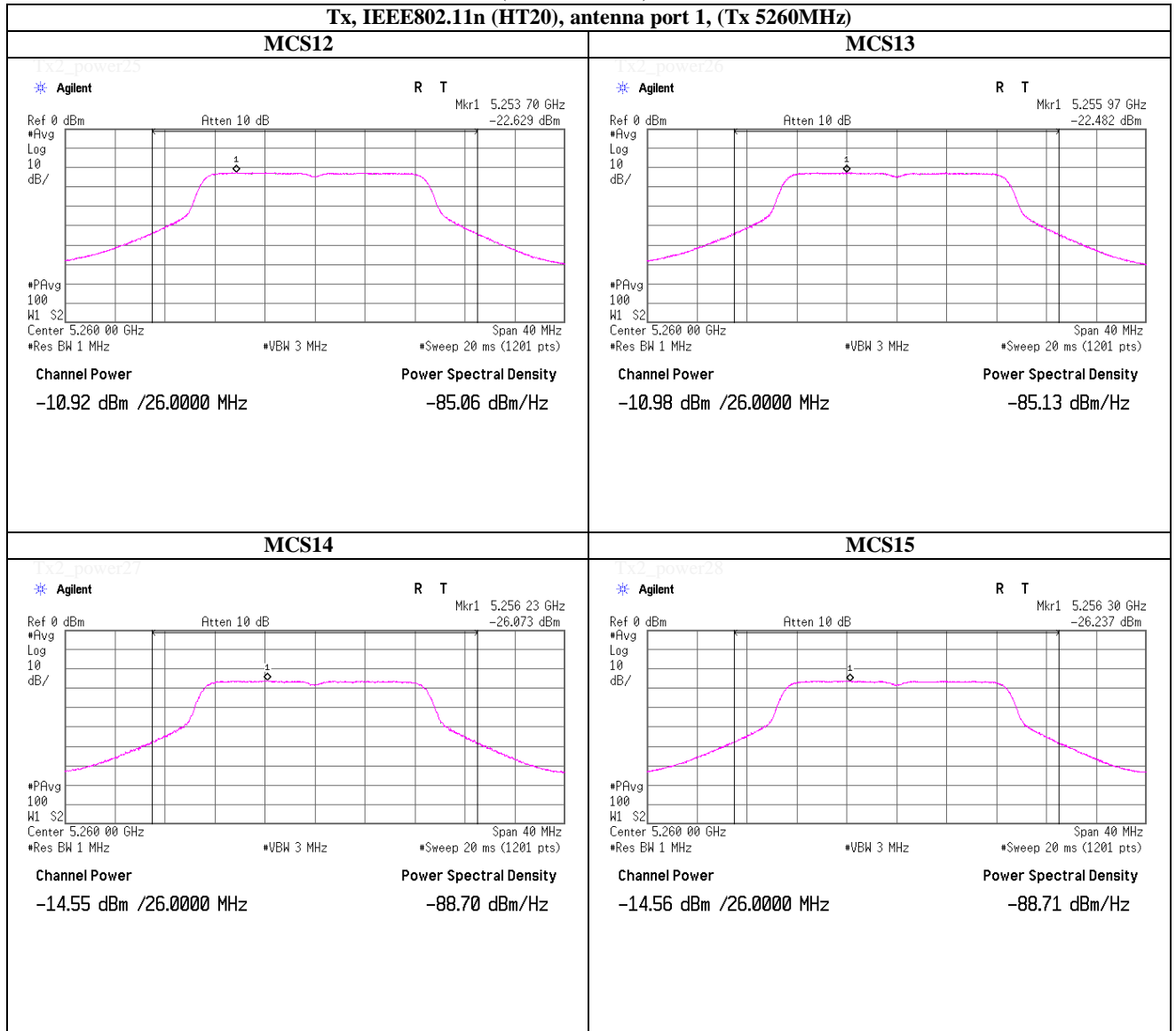
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

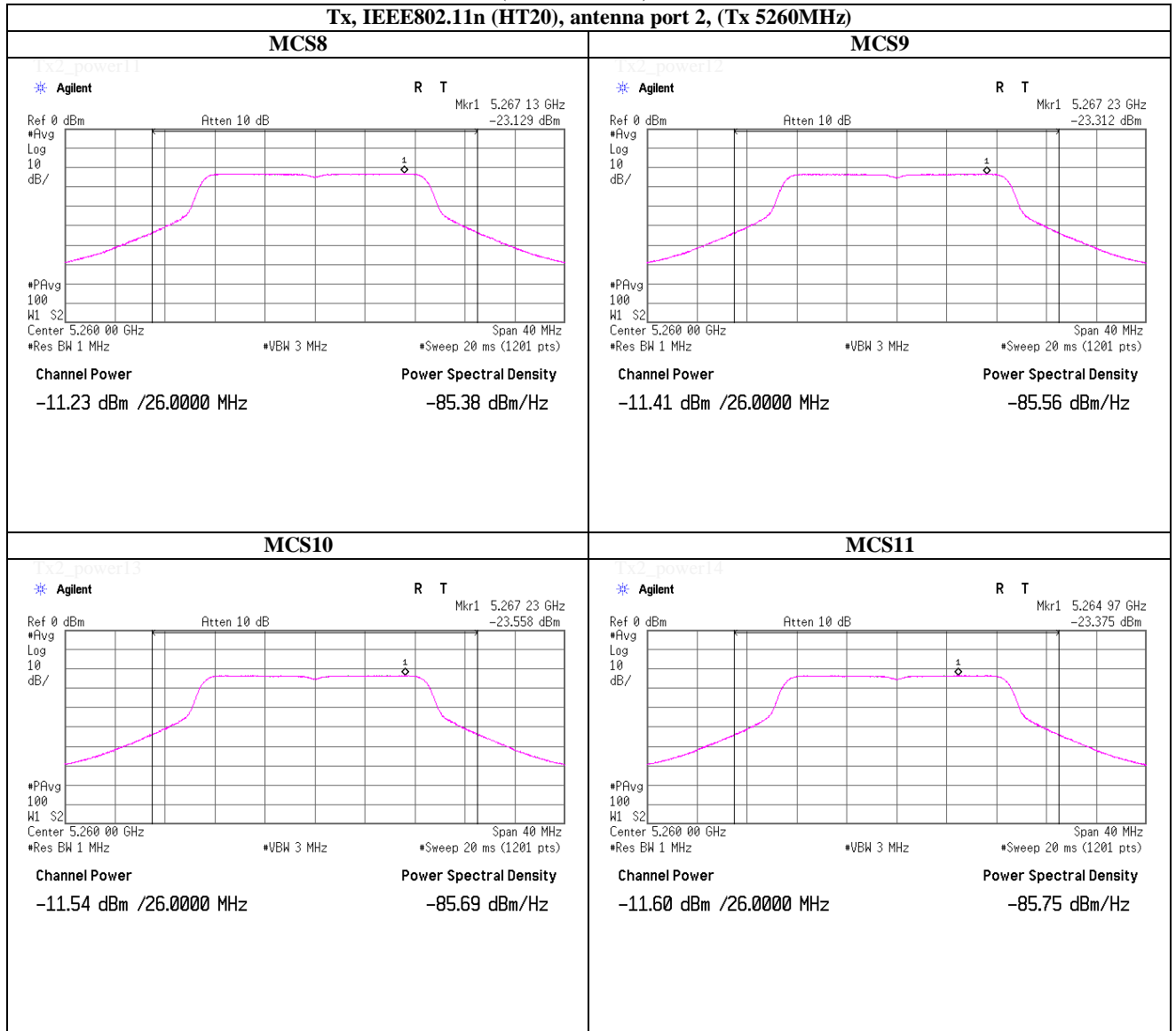
(Reference chart)

Tx, IEEE802.11n (HT20), antenna port 1, (Tx 5260MHz)



Maximum Conducted Output Power (Conducted)

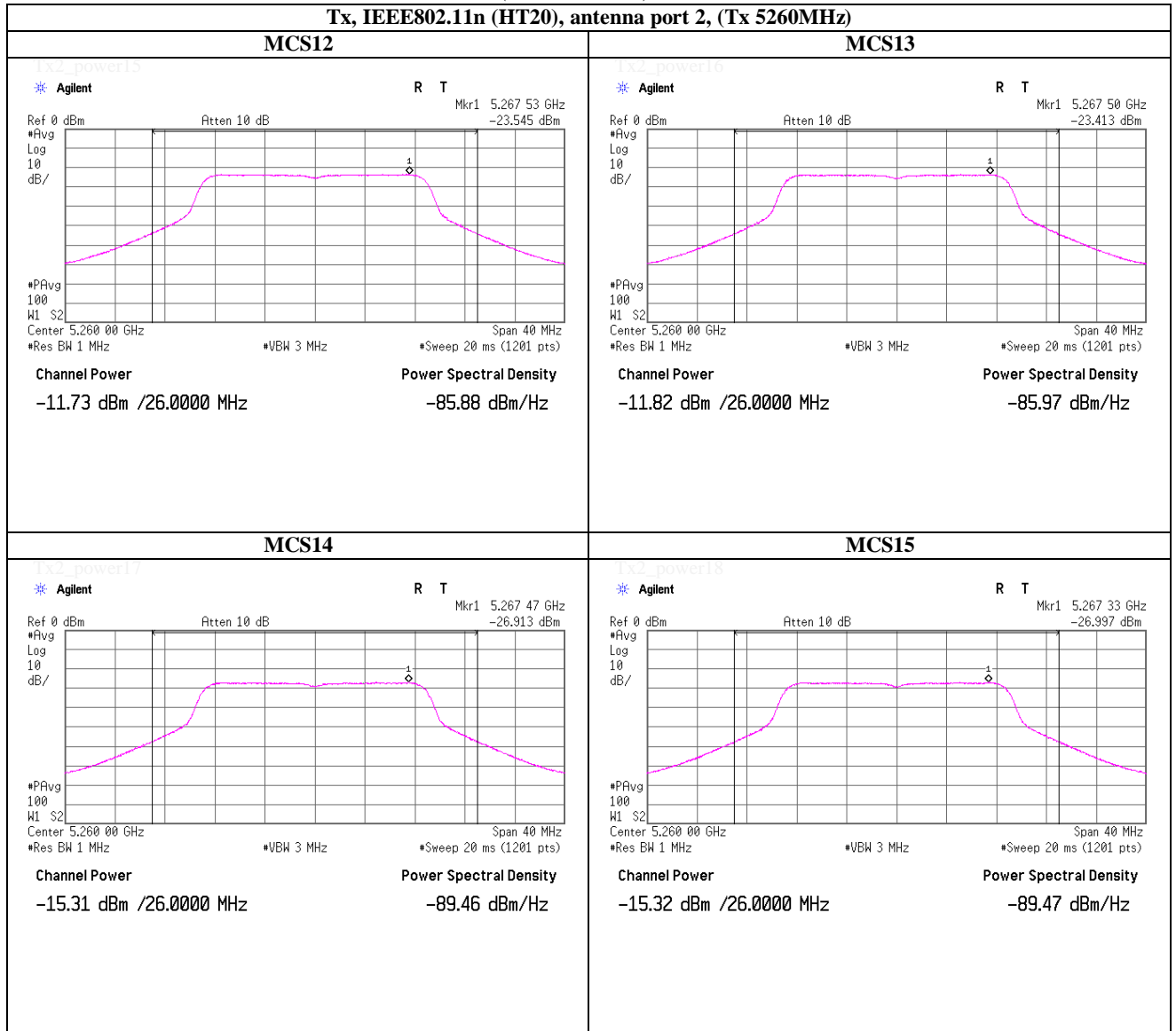
(Reference chart)



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Maximum Conducted Output Power (Conducted)

(Reference chart)



UL Japan, Inc.

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Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

Test place: UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date: August 30, 2012
 Temperature / Humidity: 25deg.C , 45%RH
 Engineer: Hikaru Shirasawa
 Mode: Tx, IEEE802.11n (HT20), PN9, worst data mode : 8 (MCS)

Antenna terminal power (* S/A: Spectrum Analyzer)

Antenna	Freq. [MHz]	S/A (RMS) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]	Total Result		Limit		Margin [dB]
							[dBm]	[mW]	[dBm]	[mW]	
Ant1	5500.0	-13.28	3.31	20.21	0.04	10.28	13.19	20.83	23.98	250.00	10.79
	5580.0	-12.03	3.33	20.21	0.04	11.55	14.31	27.00	23.98	250.00	9.67
	5700.0	-12.59	3.16	20.21	0.04	10.82	13.76	23.78	23.98	250.00	10.22
Ant2	5500.0	-13.49	3.31	20.21	0.04	10.07					
	5580.0	-12.54	3.33	20.21	0.04	11.04					
	5700.0	-12.73	3.16	20.21	0.04	10.68					

Sample Calculation: Result (Ant1) or (Ant2) [dBm] = Reading [dBm] + Cable Loss [dB] + Atten. Loss [dB]
 Total Result = Result (Ant1) [mW] + Result (Ant2) [mW]

EIRP (* S/A: Spectrum Analyzer) **Reference Data**

Antenna	Freq. [MHz]	S/A (RMS) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Antenna Gain [dBi]	Result (e.i.r.p.) [dBm]	Total Result		Limit		Margin [dB]
								(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	
Ant1	5500.0	-13.28	3.31	20.21	0.04	4.02	14.30	17.21	52.57	-	-	-
	5580.0	-12.03	3.33	20.21	0.04	4.02	15.57	18.33	68.14	-	-	-
	5700.0	-12.59	3.16	20.21	0.04	4.02	14.84	17.78	60.00	-	-	-
Ant2	5500.0	-13.49	3.31	20.21	0.04	4.02	14.09					
	5580.0	-12.54	3.33	20.21	0.04	4.02	15.06					
	5700.0	-12.73	3.16	20.21	0.04	4.02	14.70					

Sample Calculation: Result (Ant1) or (Ant2) [dBm] = Reading [dBm] + Cable Loss [dB] + Atten. Loss [dB] + Antenna Gain [dBi]
 Total Result = Result (Ant1) [mW] + Result (Ant2) [mW]

[Pre check]

Antenna 1

	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
1	8	5500.0	-13.28	3.31	20.21	0.04	10.28
1	9	5500.0	-13.40	3.31	20.21	0.08	10.20
1	10	5500.0	-13.42	3.31	20.21	0.12	10.22
1	11	5500.0	-13.46	3.31	20.21	0.16	10.22
1	12	5500.0	-13.49	3.31	20.21	0.22	10.25
1	13	5500.0	-13.54	3.31	20.21	0.27	10.25
1	14	5500.0	-16.46	3.31	20.21	0.30	7.36
1	15	5500.0	-16.67	3.31	20.21	0.33	7.18

Antenna 1 + 2

Result [dBm]
13.19
13.13
13.14
13.12
13.13
13.14
9.81
9.70

Worst

Antenna 2

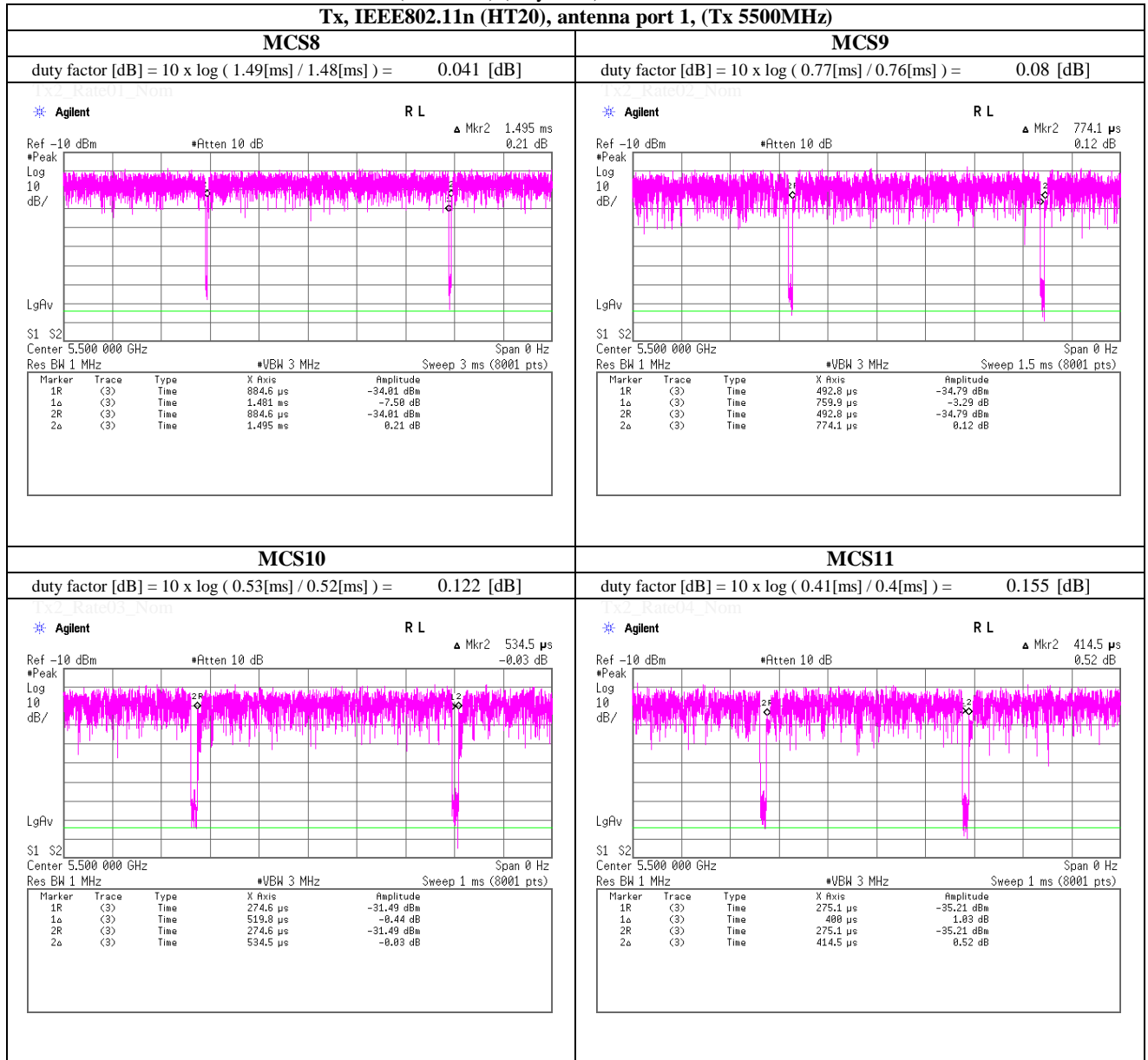
	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
2	8	5500.0	-13.49	3.31	20.21	0.04	10.07
2	9	5500.0	-13.57	3.31	20.21	0.08	10.03
2	10	5500.0	-13.61	3.31	20.21	0.12	10.03
2	11	5500.0	-13.68	3.31	20.21	0.16	10.00
2	12	5500.0	-13.75	3.31	20.21	0.22	9.99
2	13	5500.0	-13.78	3.31	20.21	0.27	10.01
2	14	5500.0	-17.67	3.31	20.21	0.30	6.15
2	15	5500.0	-17.71	3.31	20.21	0.33	6.14

**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

Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



UL Japan, Inc.

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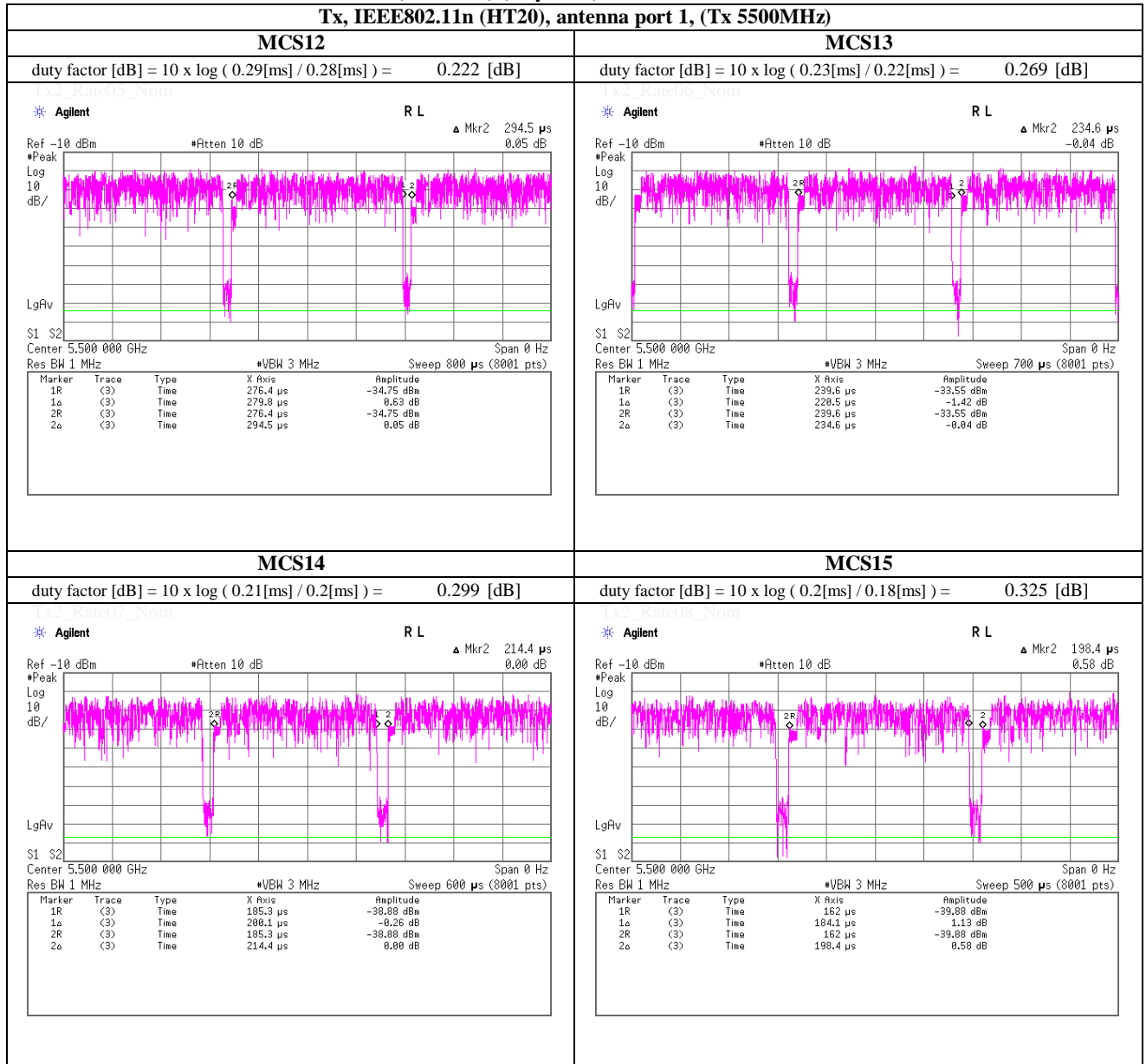
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



UL Japan, Inc.

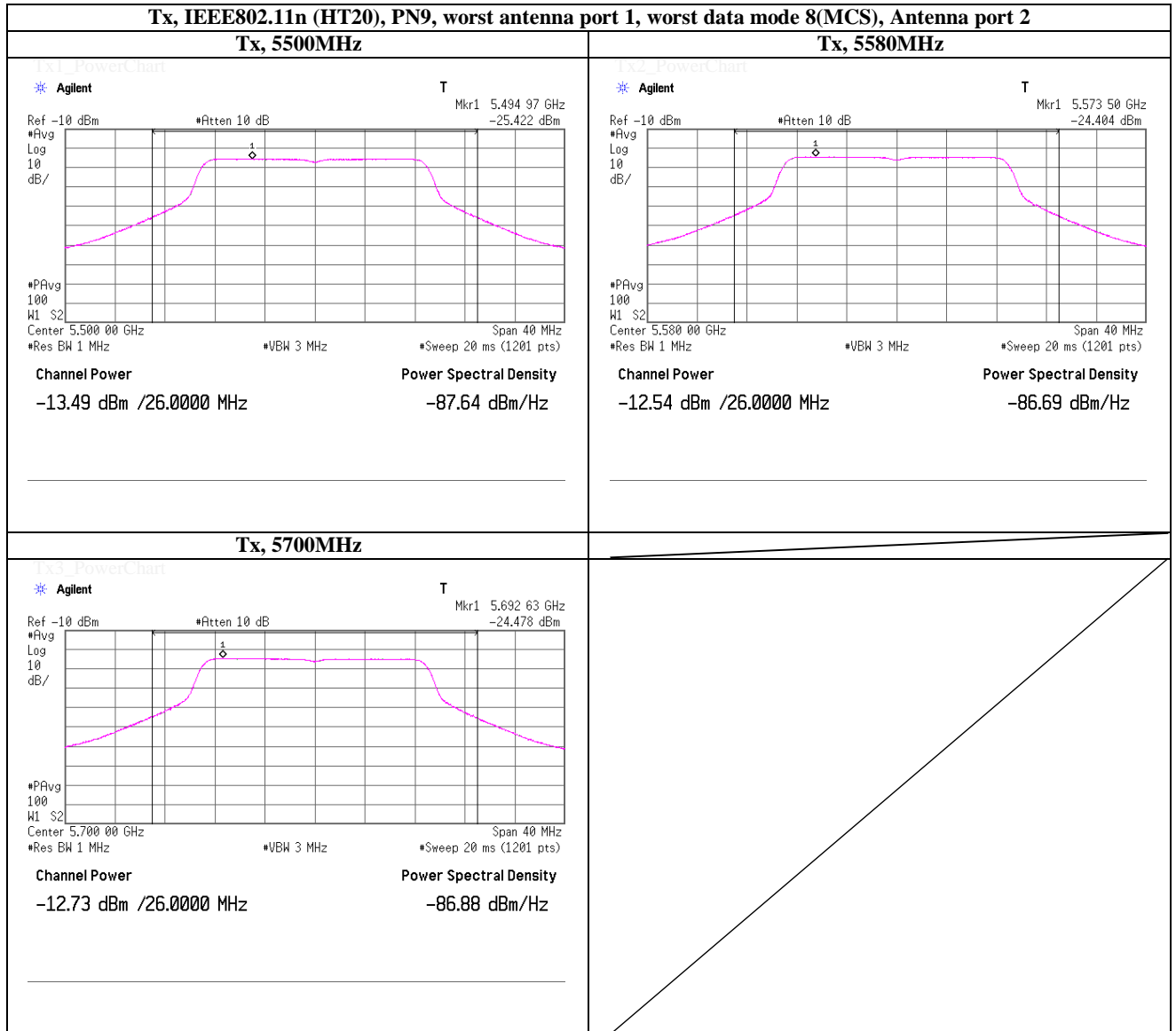
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Maximum Conducted Output Power (Conducted)



UL Japan, Inc.

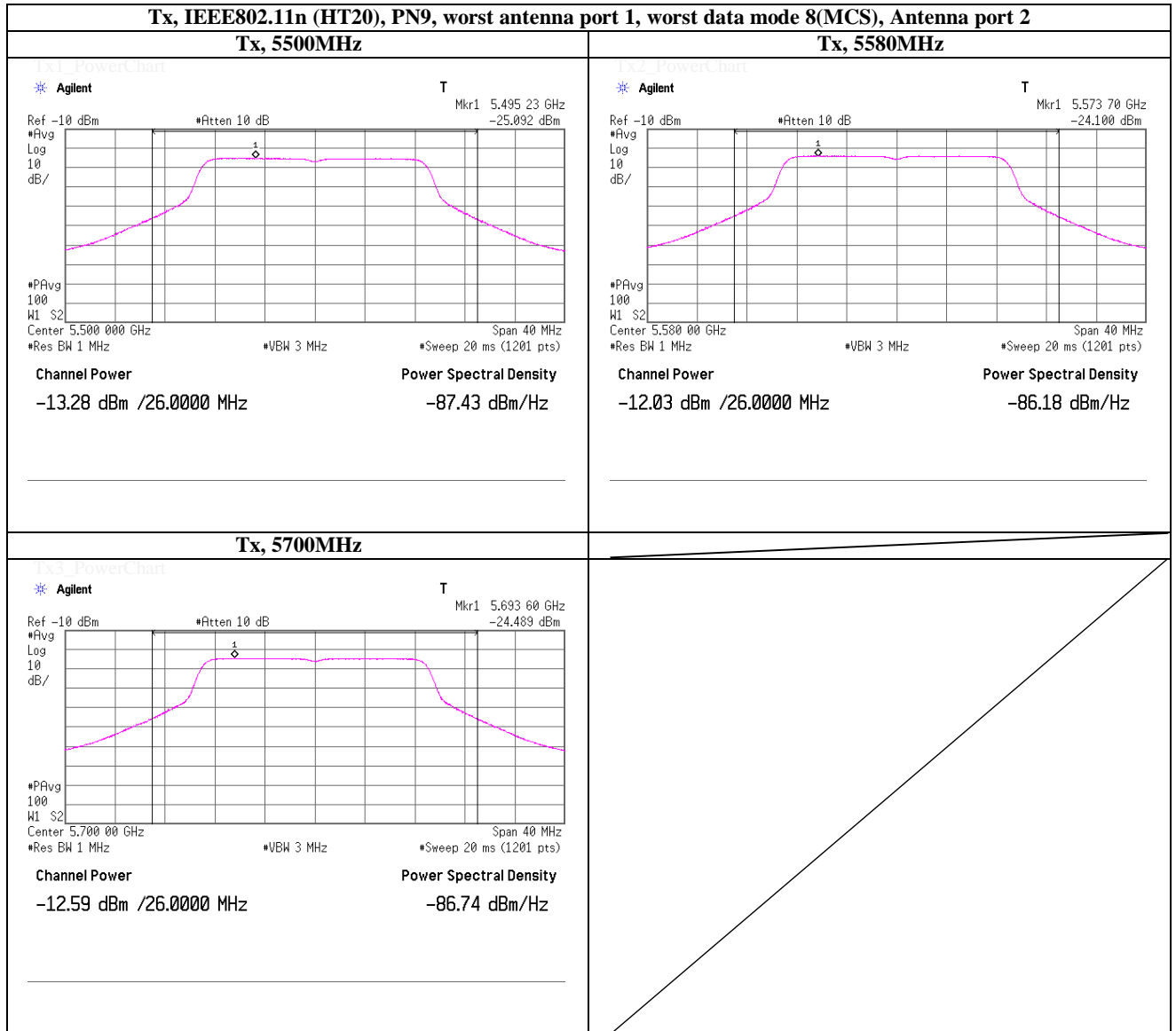
Shonan EMC Lab.

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Maximum Conducted Output Power (Conducted)



UL Japan, Inc.

Shonan EMC Lab.

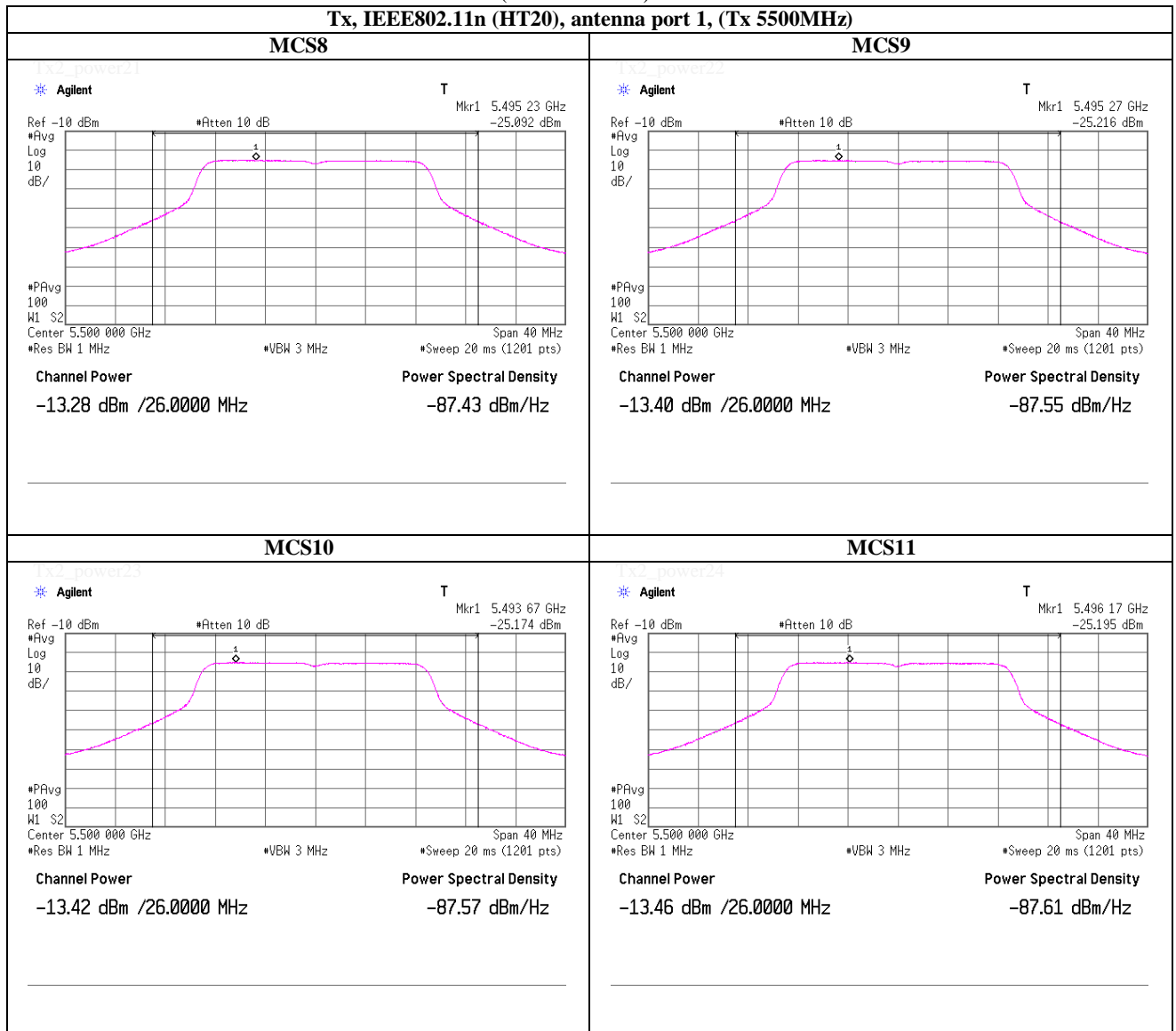
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Maximum Conducted Output Power (Conducted)

(Reference chart)



UL Japan, Inc.

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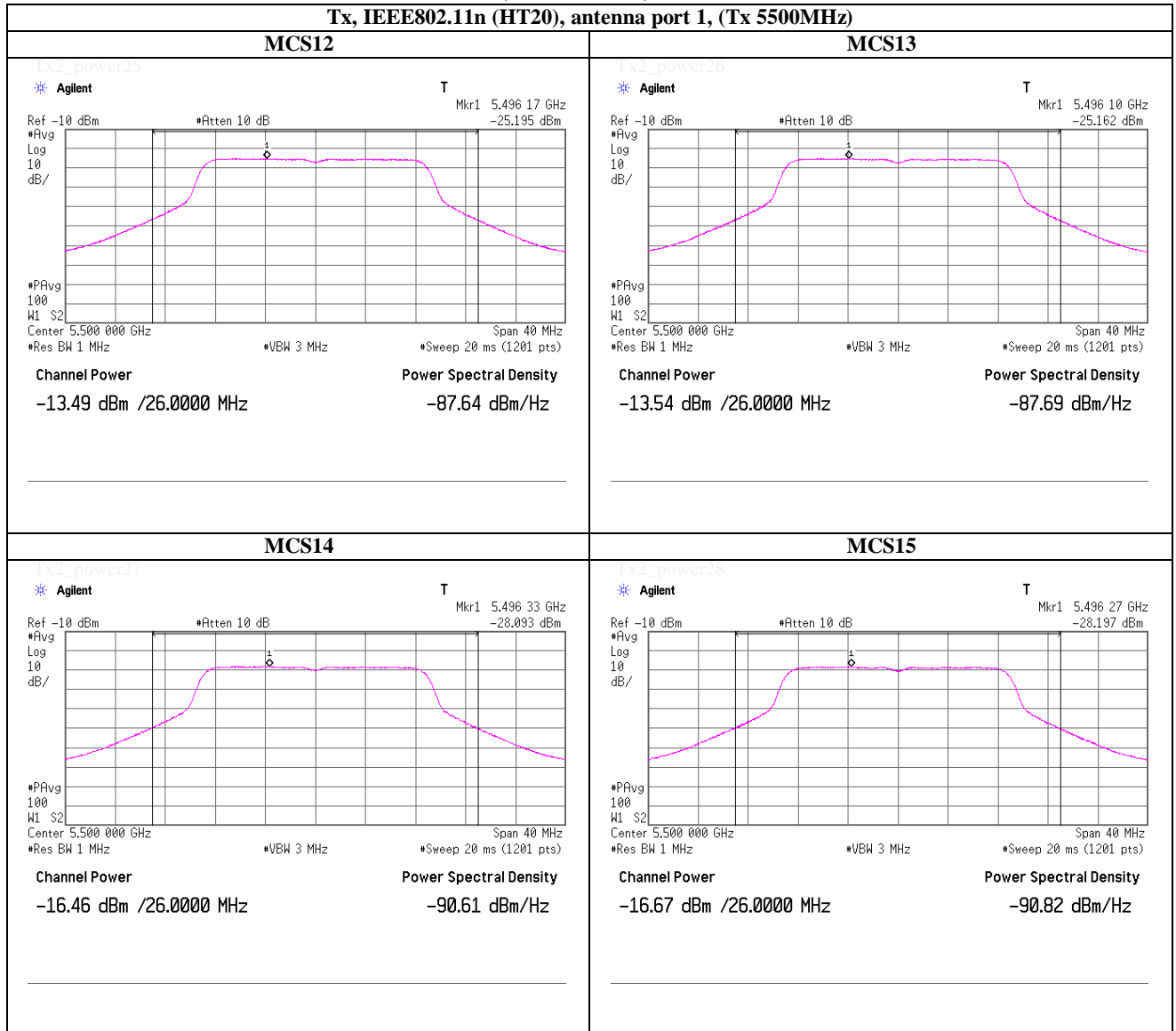
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Maximum Conducted Output Power (Conducted)

(Reference chart)

Tx, IEEE802.11n (HT20), antenna port 1, (Tx 5500MHz)



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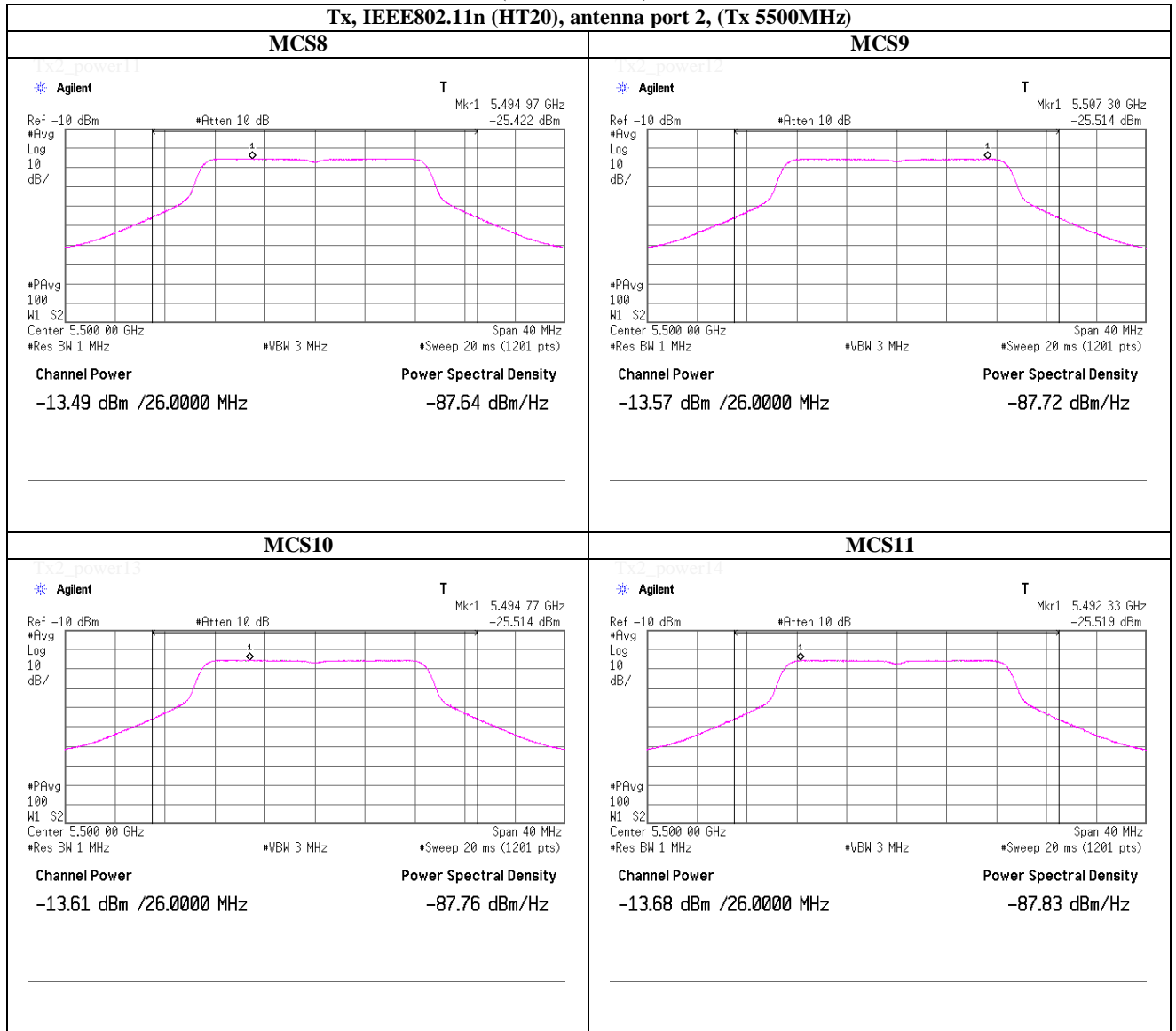
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Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

(Reference chart)



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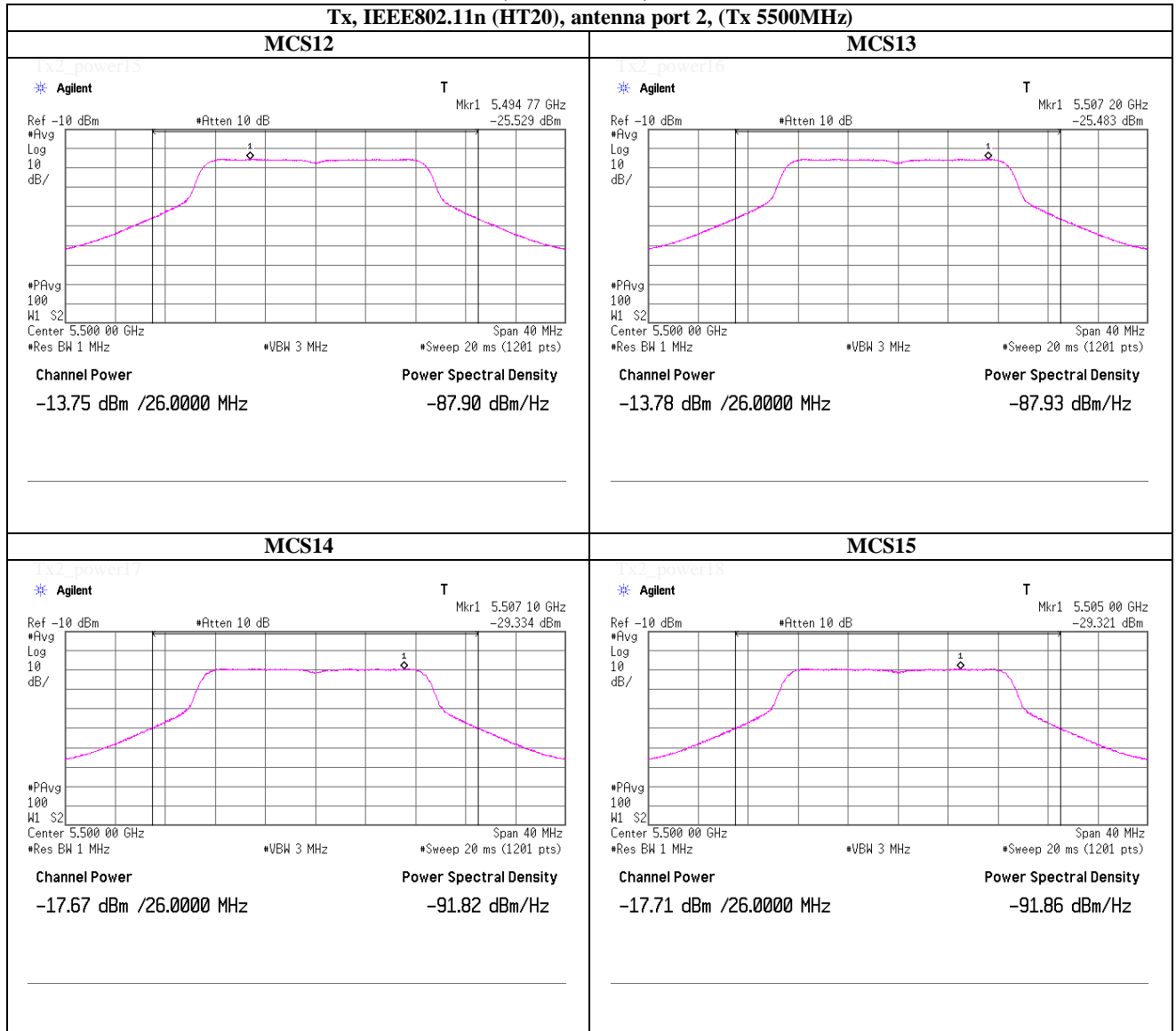
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

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Maximum Conducted Output Power (Conducted)

(Reference chart)



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Maximum Conducted Output Power (Conducted)

Test place: UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date: August 3, 2012
 Temperature / Humidity: 26 deg.C , 50 %RH
 Engineer: Hikaru Shirasawa
 Mode: Tx, IEEE802.11n (HT40), PN9, worst antenna : 1 worst data mode : 0 (MCS)

Antena terminal power (* S/A: Spectrum Analyzer)

Ch	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result		Limit		Margin [dB]
						[dBm]	[mW]	[dBm]	[mW]	
Low	5190.0	-9.75	2.22	20.24	0.04	12.75	18.84	16.99	50.00	4.24
Mid										
High	5230.0	-8.48	2.22	20.24	0.04	14.02	25.23	16.99	50.00	2.97

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss

EIRP (* S/A: Spectrum Analyzer) **Reference Data**

Ch	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
							(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	
Low	5190.0	-9.75	2.22	20.24	0.04	5.18	17.93	62.09	-	-	-
Mid											
High	5230.0	-8.48	2.22	20.24	0.04	5.18	19.20	83.18	-	-	-

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss + Antenna Gain

[Pre check]

Antenna 1

	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
Worst	0	5190.0	-9.75	2.22	20.24	0.04	12.75
	1	5190.0	-10.27	2.22	20.24	0.07	12.26
	2	5190.0	-10.19	2.22	20.24	0.11	12.38
	3	5190.0	-10.16	2.22	20.24	0.14	12.44
	4	5190.0	-10.22	2.22	20.24	0.20	12.44
	5	5190.0	-10.27	2.22	20.24	0.26	12.45
	6	5190.0	-13.55	2.22	20.24	0.28	9.19
7	5190.0	-13.47	2.22	20.24	0.31	9.30	

Antenna 2

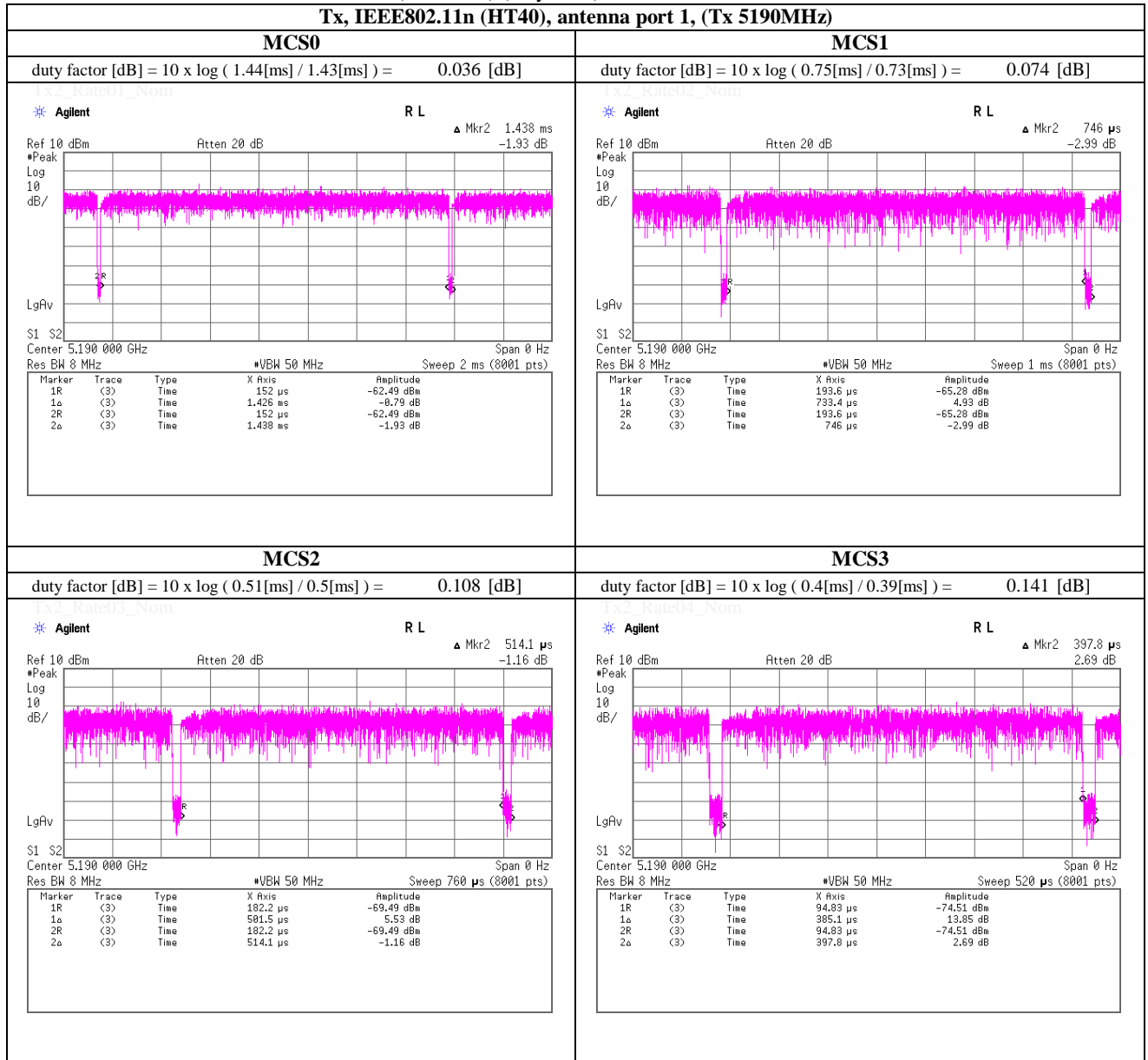
	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
2	0	5190.0	-10.24	2.22	20.24	0.04	12.26
2	1	5190.0	-10.26	2.22	20.24	0.07	12.27
2	2	5190.0	-10.52	2.22	20.24	0.11	12.05
2	3	5190.0	-10.30	2.22	20.24	0.14	12.30
2	4	5190.0	-10.48	2.22	20.24	0.20	12.18
2	5	5190.0	-10.25	2.22	20.24	0.26	12.47
2	6	5190.0	-14.36	2.22	20.24	0.28	8.38
2	7	5190.0	-14.35	2.22	20.24	0.31	8.42

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Maximum Conducted Output Power (Conducted)

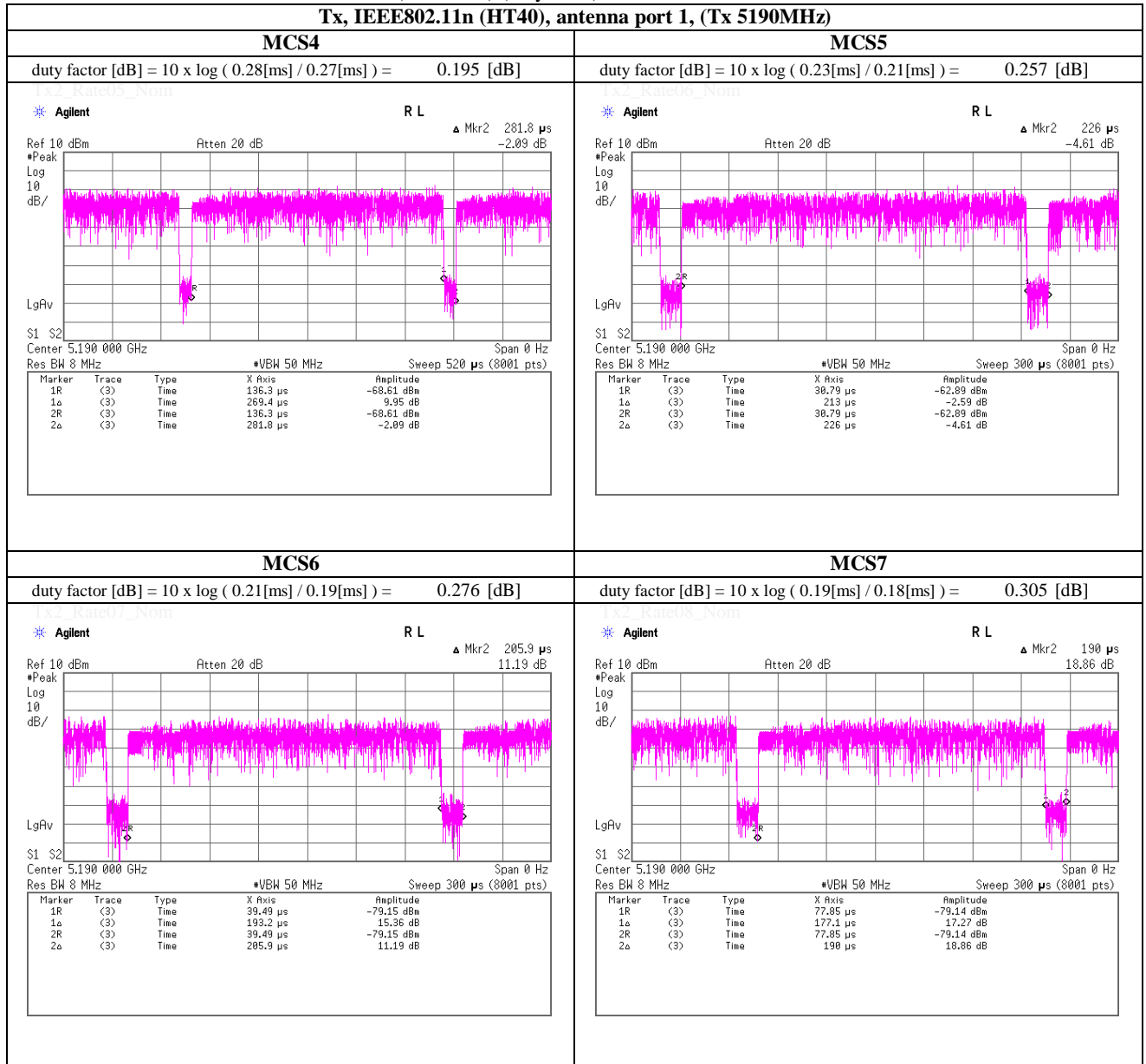
(Reference) (duty chart)



Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11n (HT40), antenna port 1, (Tx 5190MHz)



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Maximum Conducted Output Power (Conducted)

Tx, IEEE802.11n (HT40), PN9, worst antenna port 1, worst data mode 0(MCS)	
<p>Tx, 5190MHz</p> <p>Agilent R T Mkr1 5.195 73 GHz -24.752 dBm</p> <p>Ref 0 dBm #Atten 10 dB #Avg Log 10 dB/</p> <p>#PAvg 100 S1 S2 Center 5.190 00 GHz Span 80 MHz #Res BW 1 MHz #VBW 3 MHz #Sweep 20 ms (1201 pts)</p> <p>Channel Power Power Spectral Density -9.75 dBm /49.0000 MHz -86.65 dBm/Hz</p>	
<p>Tx, 5230MHz</p> <p>Agilent R L Mkr1 5.222 47 GHz -23.448 dBm</p> <p>Ref 0 dBm #Atten 10 dB #Avg Log 10 dB/</p> <p>PAvg 100 S1 S2 Center 5.230 00 GHz Span 80 MHz #Res BW 1 MHz #VBW 3 MHz #Sweep 20 ms (1201 pts)</p> <p>Channel Power Power Spectral Density -8.48 dBm /49.0000 MHz -85.38 dBm/Hz</p>	

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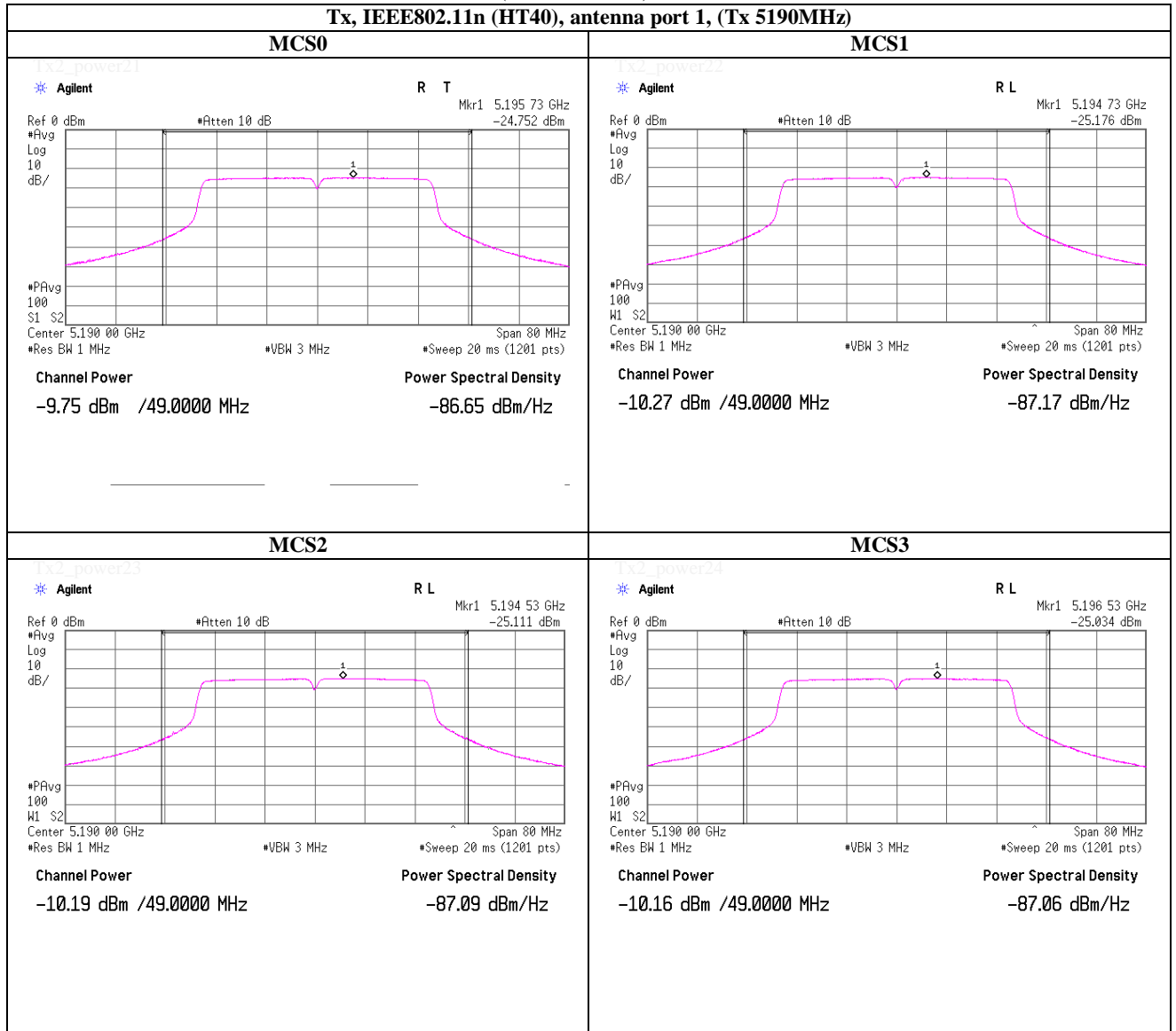
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Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

(Reference chart)



UL Japan, Inc.

Shonan EMC Lab.

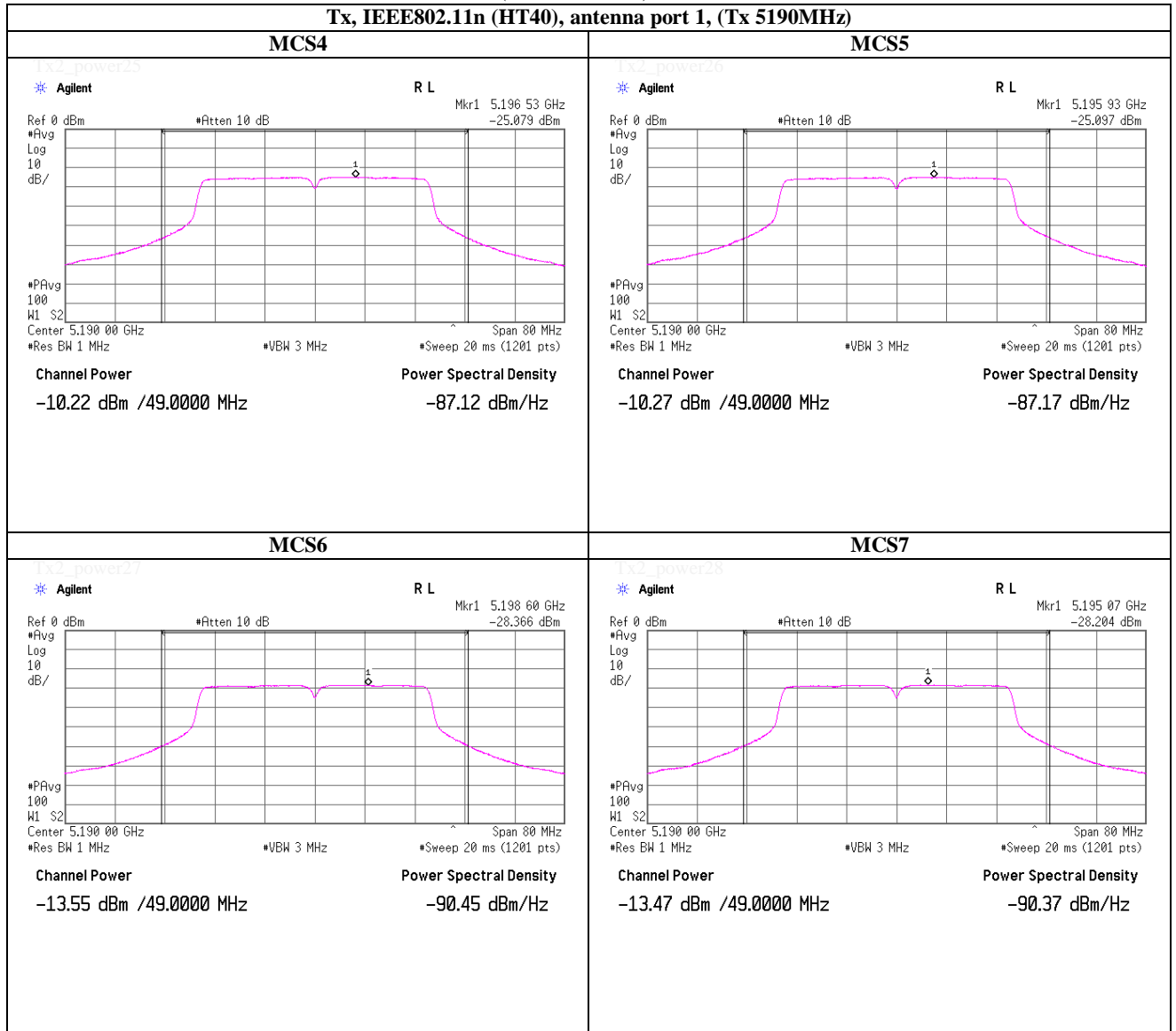
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Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

(Reference chart)



UL Japan, Inc.
Shonan EMC Lab.

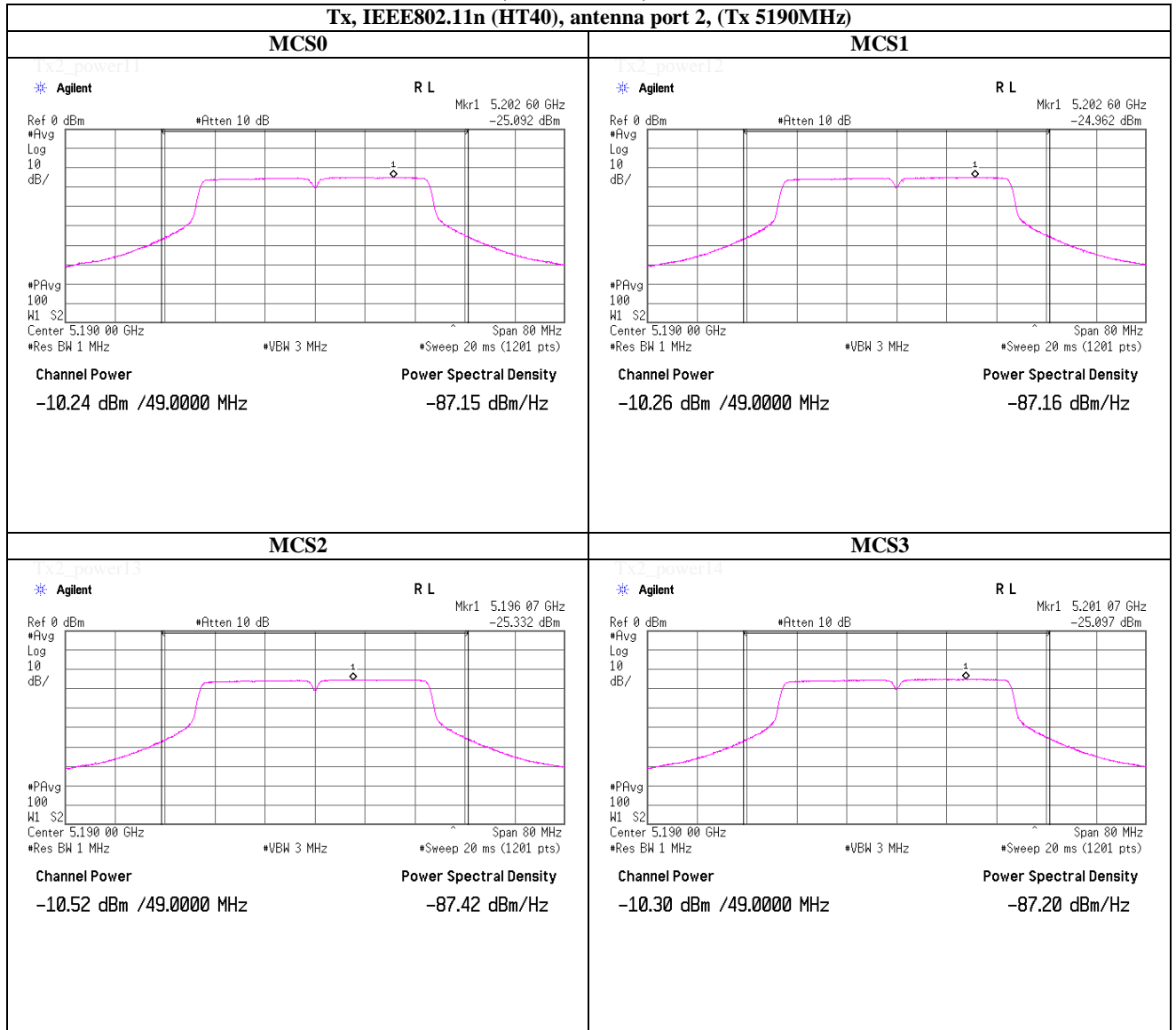
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Maximum Conducted Output Power (Conducted)

(Reference chart)



UL Japan, Inc.
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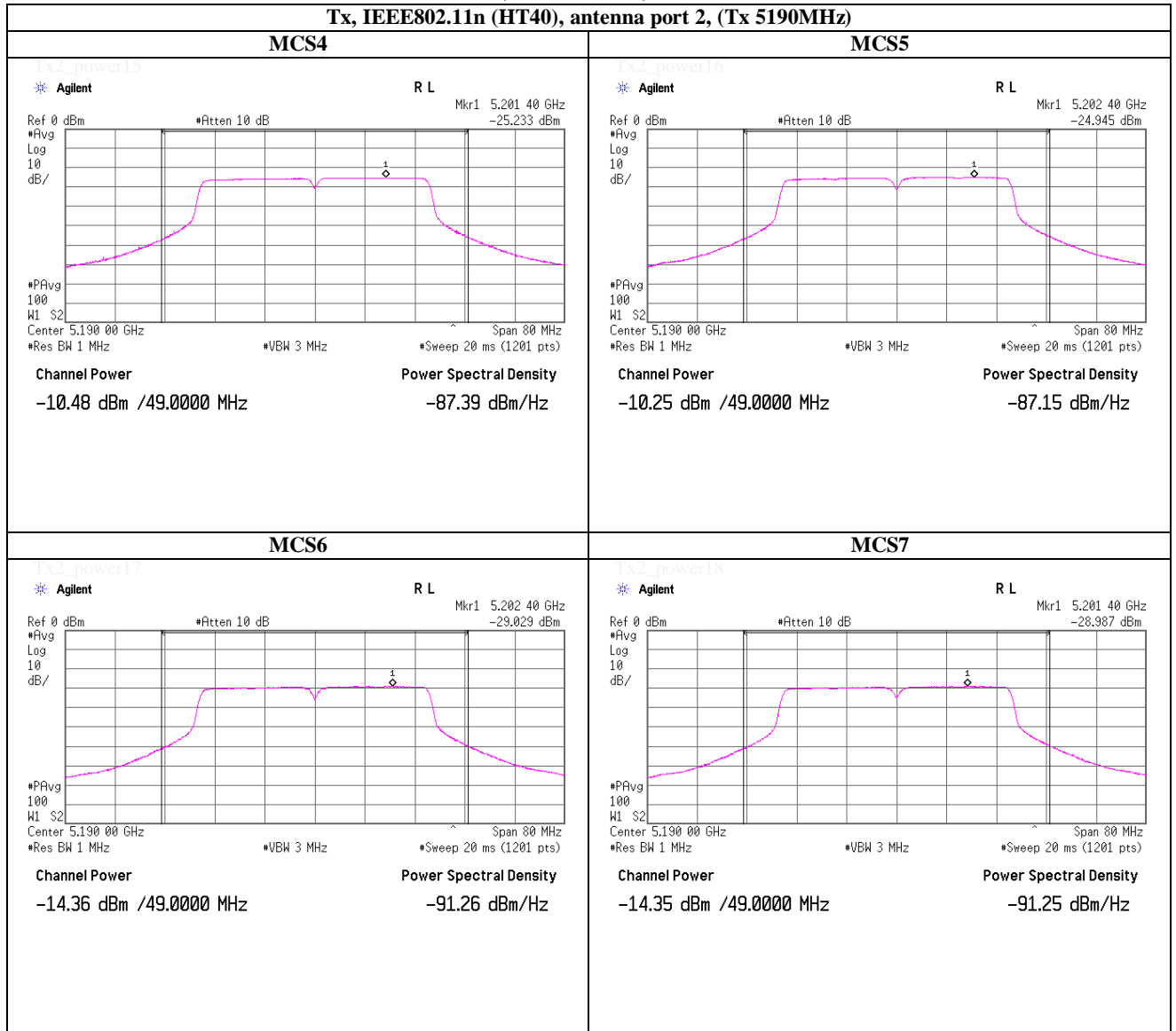
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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Maximum Conducted Output Power (Conducted)

Test place: UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date: August 21, 2012
 Temperature / Humidity: 27 deg.C , 54 %RH
 Engineer: Hikaru Shirasawa
 Mode: Tx, IEEE802.11n (HT40), PN9, worst antenna : 1 worst data mode : 0 (MCS)

Antenna terminal power (* S/A: Spectrum Analyzer)

Ch	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result		Limit		Margin [dB]
						[dBm]	[mW]	[dBm]	[mW]	
Low	5270.0	-10.57	3.15	20.23	0.04	12.85	19.28	23.98	250.00	11.13
Mid										
High	5310.0	-10.60	3.16	20.23	0.04	12.83	19.19	23.98	250.00	11.15

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss

EIRP (* S/A: Spectrum Analyzer) **Reference Data**

Ch	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
							(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	
Low	5270.0	-10.57	3.15	20.23	0.04	5.18	18.03	63.53	-	-	-
Mid											
High	5310.0	-10.60	3.16	20.23	0.04	5.18	18.01	63.24	-	-	-

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss + Antenna Gain

[Pre check]

Antenna 1

	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
1	0	5270.0	-10.52	3.15	20.23	0.04	12.90
1	1	5270.0	-10.65	3.15	20.23	0.08	12.81
1	2	5270.0	-10.68	3.15	20.23	0.12	12.82
1	3	5270.0	-10.71	3.15	20.23	0.15	12.82
1	4	5270.0	-10.78	3.15	20.23	0.22	12.82
1	5	5270.0	-10.84	3.15	20.23	0.27	12.81
1	6	5270.0	-14.42	3.15	20.23	0.31	9.27
1	7	5270.0	-14.38	3.15	20.23	0.33	9.33

Worst

Antenna 2

	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
2	0	5270.0	-11.24	3.15	20.23	0.04	12.18
2	1	5270.0	-11.30	3.15	20.23	0.08	12.16
2	2	5270.0	-11.36	3.15	20.23	0.12	12.14
2	3	5270.0	-11.39	3.15	20.23	0.15	12.14
2	4	5270.0	-11.43	3.15	20.23	0.22	12.17
2	5	5270.0	-11.51	3.15	20.23	0.27	12.14
2	6	5270.0	-15.16	3.15	20.23	0.31	8.53
2	7	5270.0	-15.21	3.15	20.23	0.33	8.50

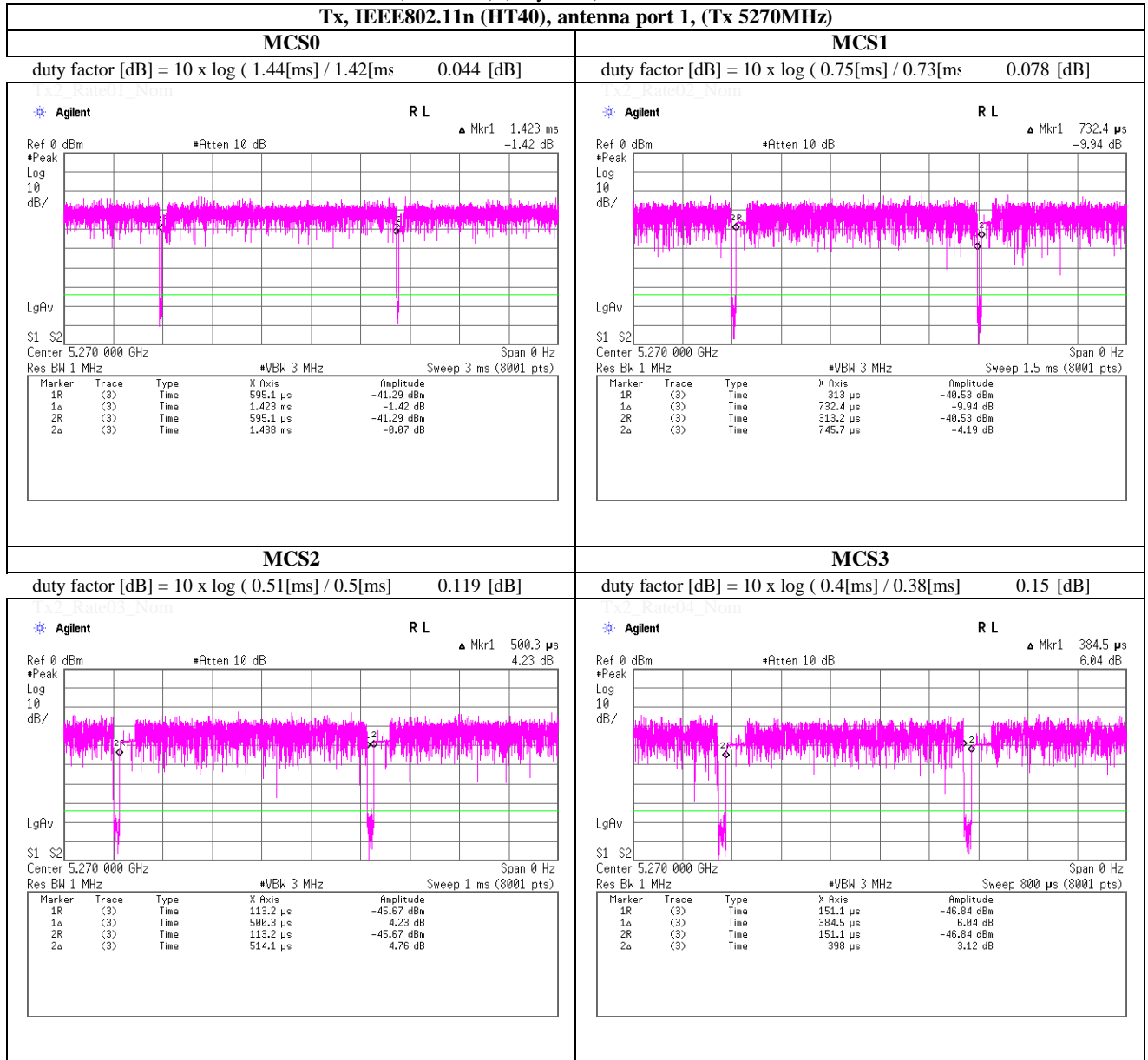
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 Telephone : +81 463 50 6400
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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11n (HT40), antenna port 1, (Tx 5270MHz)



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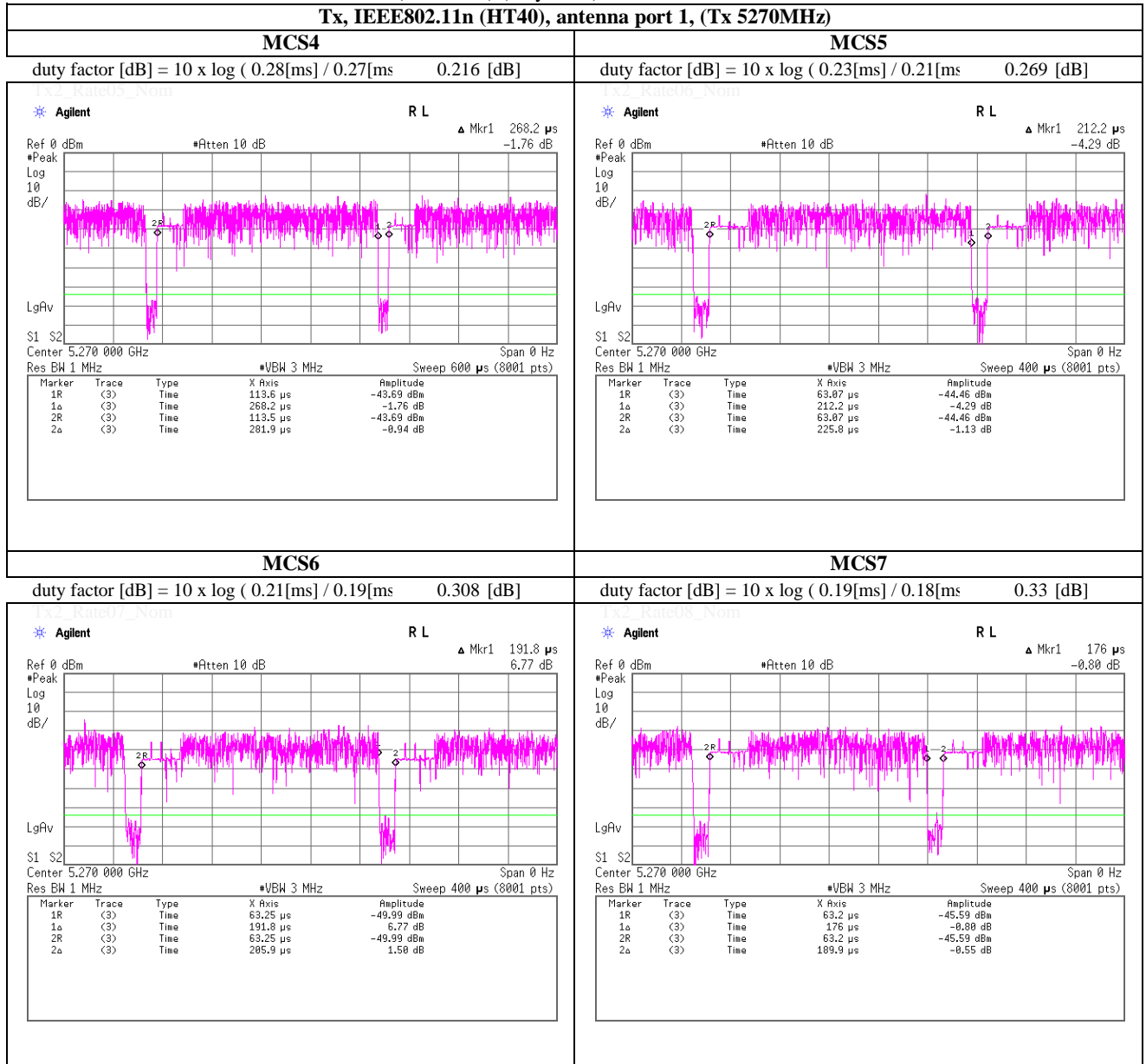
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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11n (HT40), antenna port 1, (Tx 5270MHz)



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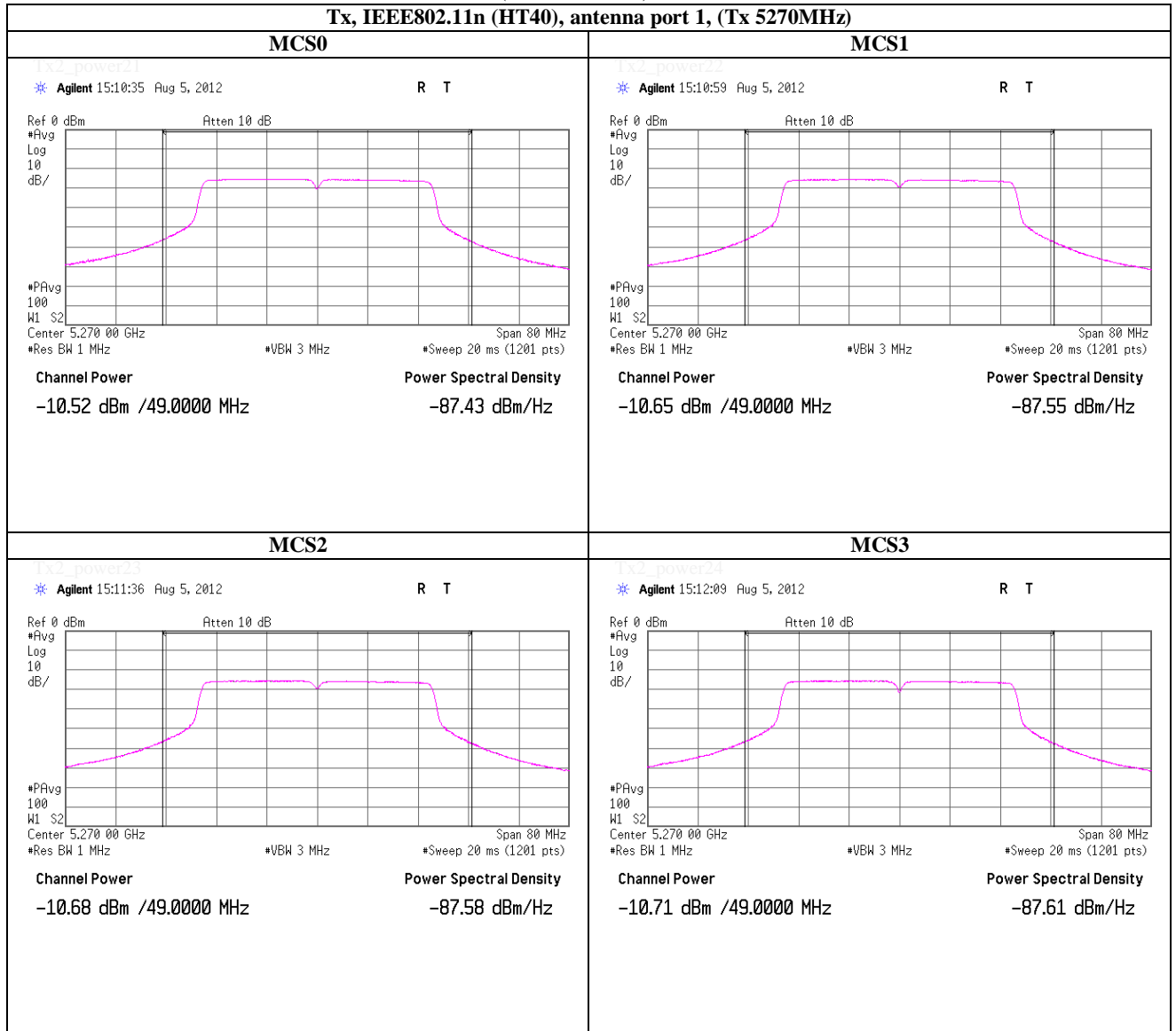
Maximum Conducted Output Power (Conducted)

Tx, IEEE802.11n (HT40), PN9, worst antenna port 1, worst data mode 0(MCS)	
<p>Tx, 5270MHz</p> <p>Agilent 15:25:51 Aug 5, 2012 R T Mkr1 5.261 27 GHz -25.444 dBm Atten 10 dB Ref 0 dBm #PAvg 100 Log 10 dB/ #P1 S2 Center 5.270 00 GHz Span 80 MHz #Res BW 1 MHz #VBW 3 MHz #Sweep 20 ms (1201 pts) Channel Power Power Spectral Density -10.57 dBm /49.0000 MHz -87.47 dBm/Hz</p>	
<p>Tx, 5310MHz</p> <p>Agilent 15:23:49 Aug 5, 2012 R T Mkr1 5.302 27 GHz -25.534 dBm Atten 10 dB Ref 0 dBm #PAvg 100 Log 10 dB/ #P1 S2 Center 5.310 00 GHz Span 80 MHz #Res BW 1 MHz #VBW 3 MHz #Sweep 20 ms (1201 pts) Channel Power Power Spectral Density -10.60 dBm /49.0000 MHz -87.51 dBm/Hz</p>	

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Maximum Conducted Output Power (Conducted)

(Reference chart)



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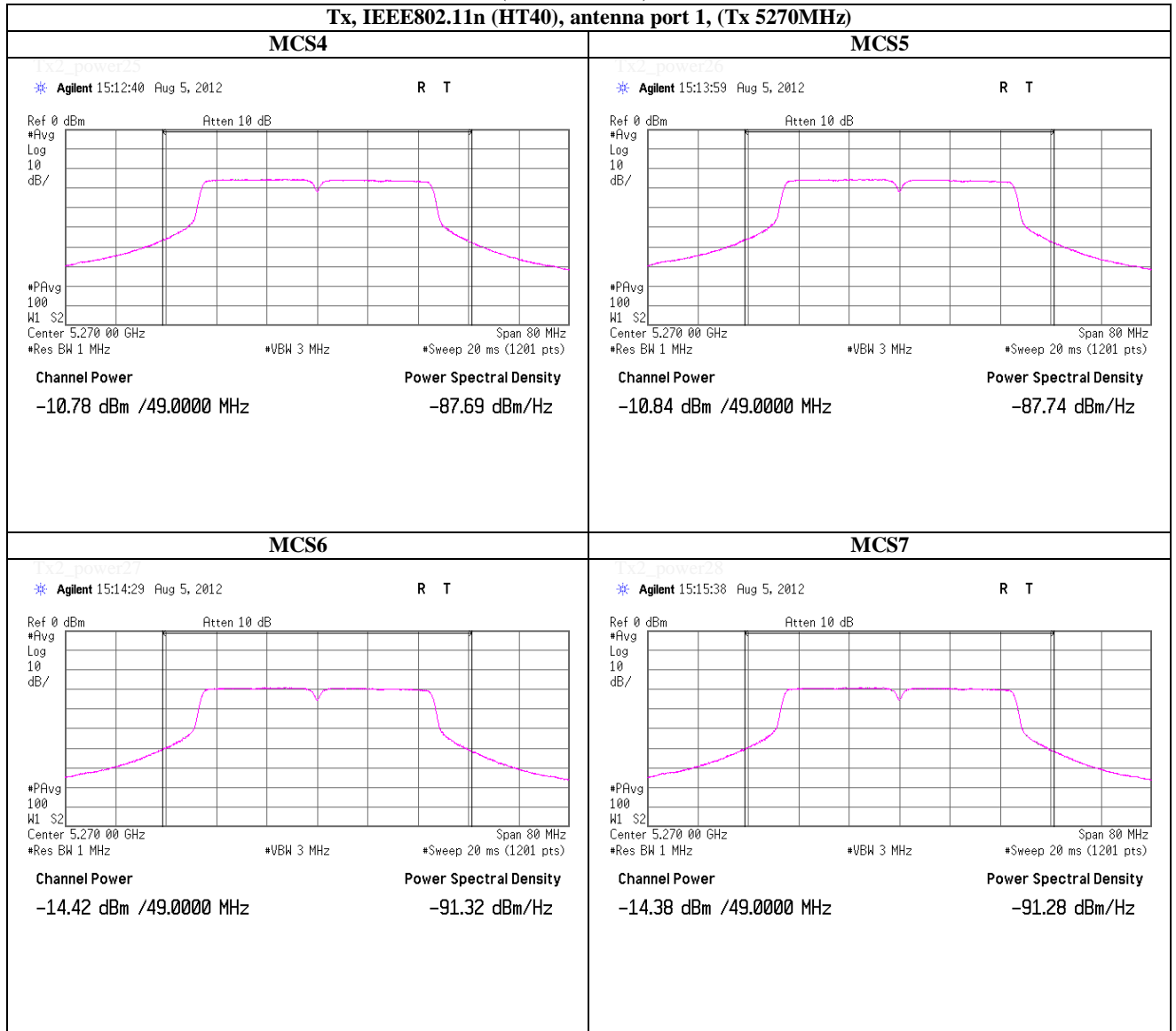
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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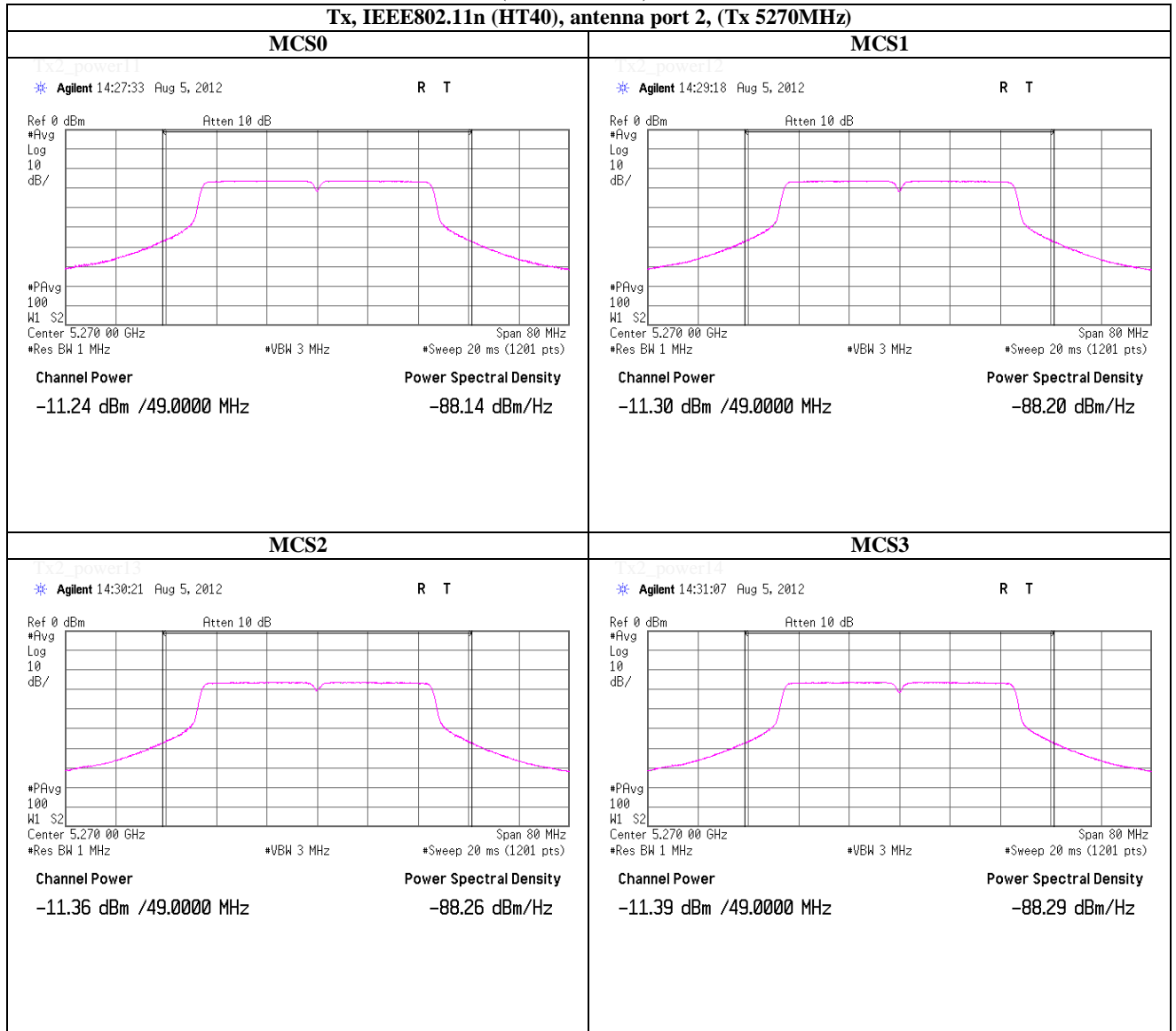
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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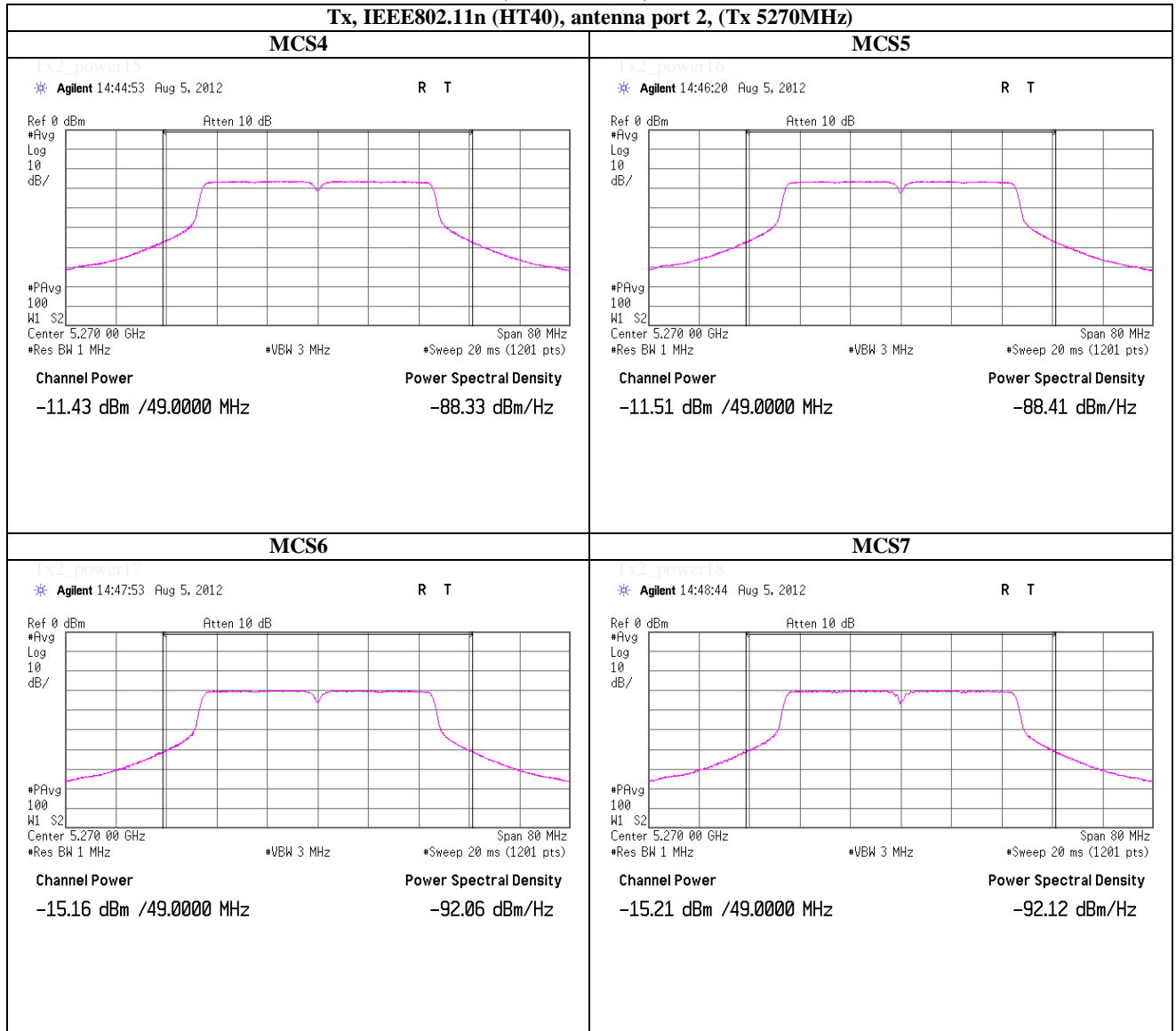
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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Maximum Conducted Output Power (Conducted)

Test place: UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date: August 22, 2012
 Temperature / Humidity: 25 deg.C , 50 %RH
 Engineer: Hikaru Shirasawa
 Mode: Tx, IEEE802.11n (HT40), PN9, worst antenna : 1 worst data mode : 0 (MCS)

Antenna terminal power (* S/A: Spectrum Analyzer)

Ch	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result		Limit		Margin [dB]
						[dBm]	[mW]	[dBm]	[mW]	
Low	5510.0	-12.78	3.32	20.21	0.04	10.79	11.99	23.98	250.00	13.19
Mid	5550.0	-12.10	3.32	20.21	0.04	11.47	14.03	23.98	250.00	12.51
High	5670.0	-11.99	3.25	20.21	0.04	11.51	14.16	23.98	250.00	12.47

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss

EIRP (* S/A: Spectrum Analyzer) **Reference Data**

Ch	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
							(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	
Low	5510.0	-12.78	3.32	20.21	0.04	4.02	14.81	30.27	-	-	-
Mid	5550.0	-12.10	3.32	20.21	0.04	4.02	15.49	35.40	-	-	-
High	5670.0	-11.99	3.25	20.21	0.04	4.02	15.53	35.73	-	-	-

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss + Antenna Gain

[Pre check]

Antenna 1

	Mode	Freq.	S/A (Peak) Reading	Cable Loss	Atten. Loss	Duty factor	Result
	(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]
1	0	5510.0	-12.78	3.32	20.21	0.04	10.79
1	1	5510.0	-12.93	3.32	20.21	0.08	10.68
1	2	5510.0	-13.04	3.32	20.21	0.12	10.61
1	3	5510.0	-12.96	3.32	20.21	0.15	10.72
1	4	5510.0	-13.00	3.32	20.21	0.22	10.75
1	5	5510.0	-13.16	3.32	20.21	0.27	10.64
1	6	5510.0	-16.08	3.32	20.21	0.30	7.75
1	7	5510.0	-16.07	3.32	20.21	0.32	7.78

Worst

Antenna 2

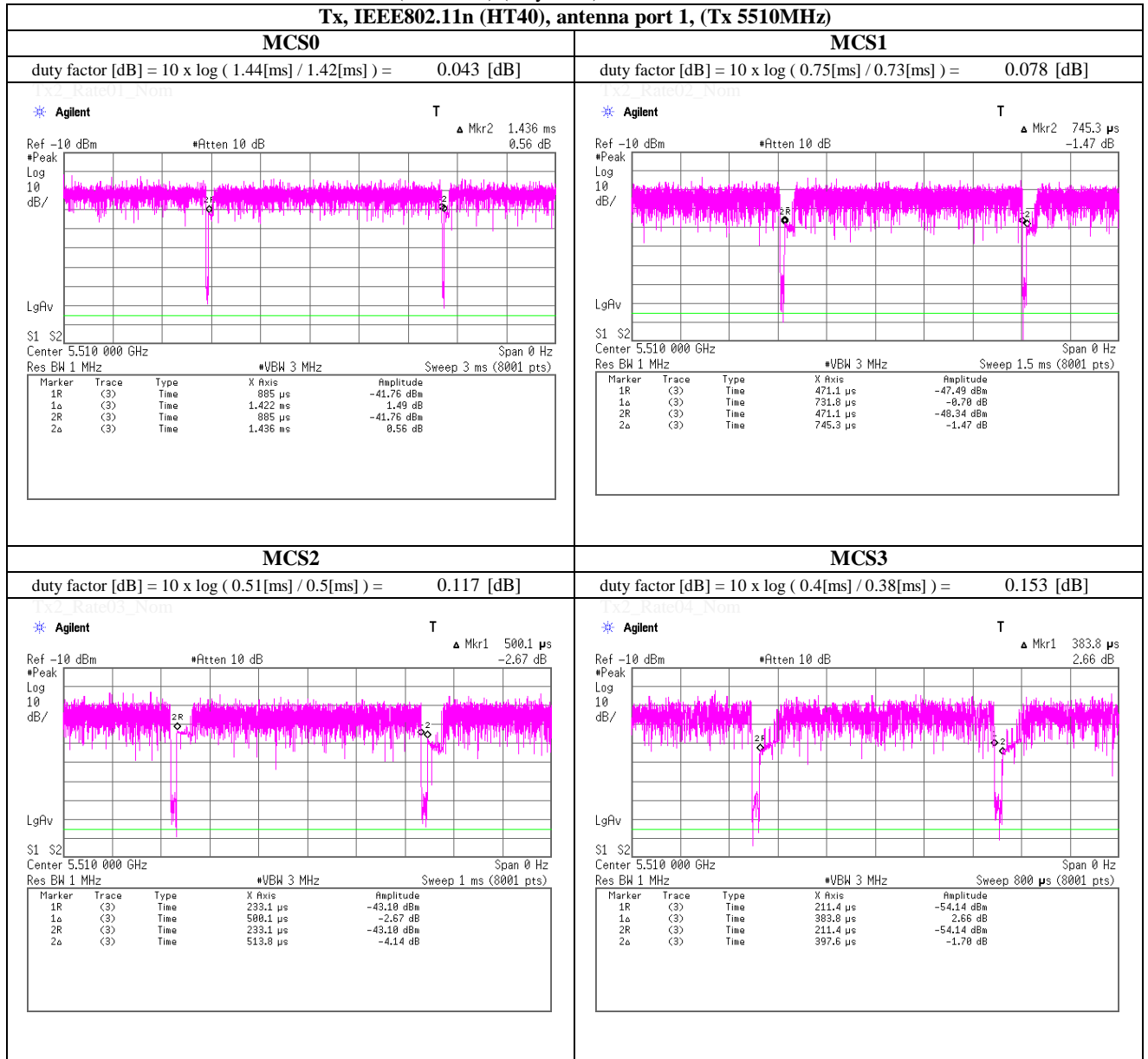
	Mode	Freq.	S/A (Peak) Reading	Cable Loss	Atten. Loss	Duty factor	Result
	(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]
2	0	5510.0	-13.13	3.32	20.21	0.04	10.44
2	1	5510.0	-13.23	3.32	20.21	0.08	10.38
2	2	5510.0	-13.23	3.32	20.21	0.12	10.42
2	3	5510.0	-13.33	3.32	20.21	0.15	10.35
2	4	5510.0	-13.42	3.32	20.21	0.22	10.33
2	5	5510.0	-13.53	3.32	20.21	0.27	10.27
2	6	5510.0	-17.10	3.32	20.21	0.30	6.73
2	7	5510.0	-17.10	3.32	20.21	0.32	6.75

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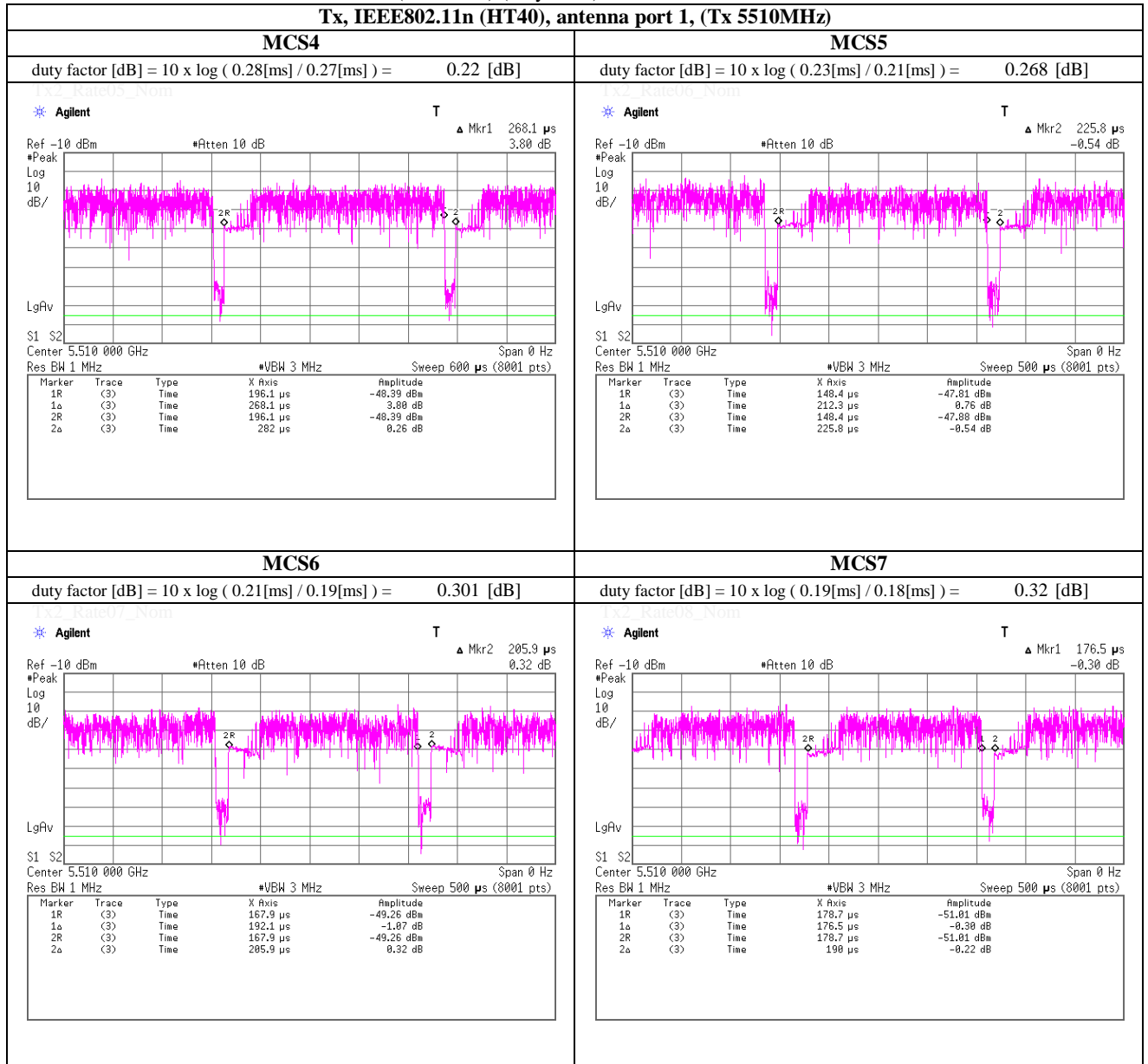
Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



UL Japan, Inc.

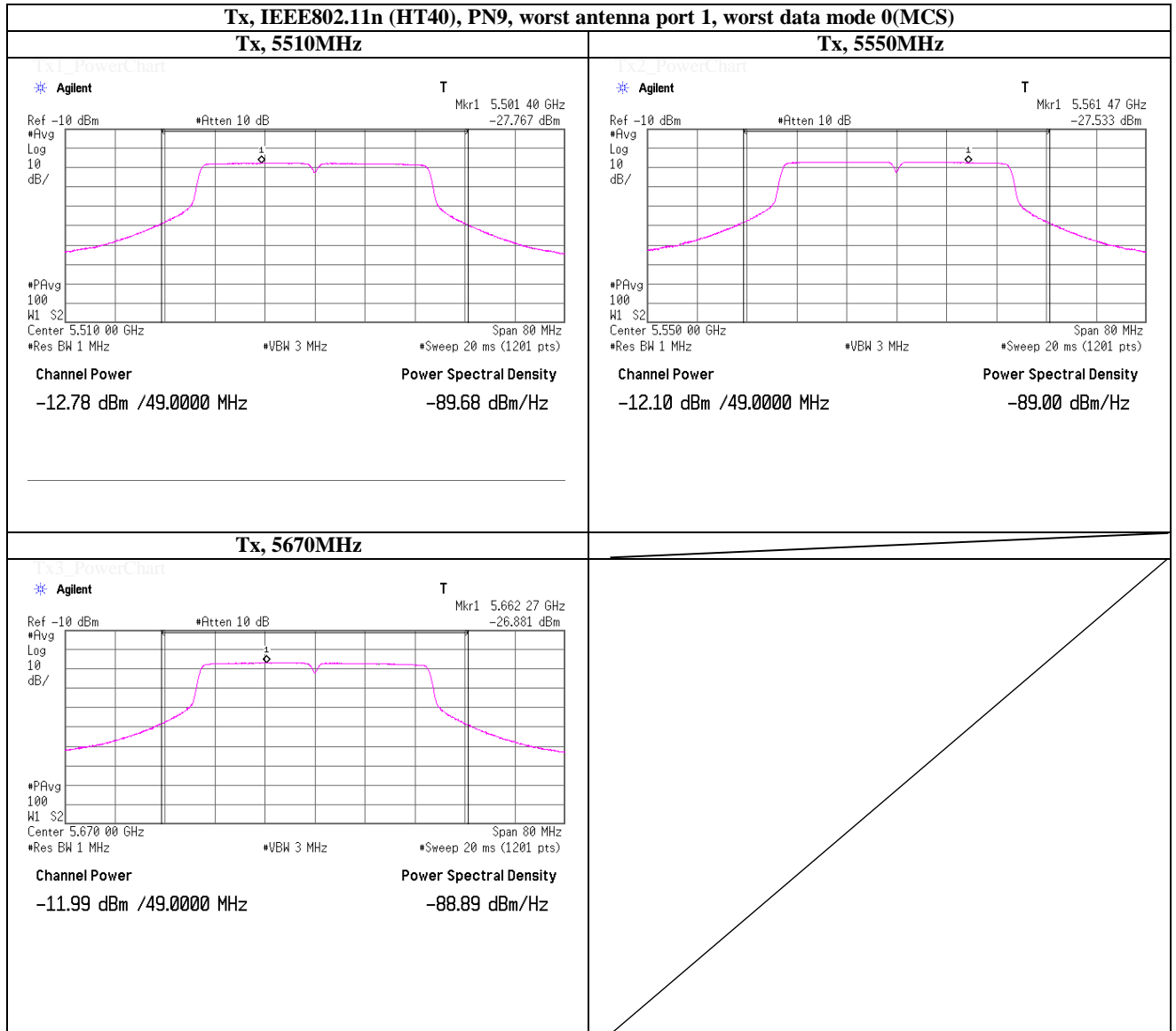
Shonan EMC Lab.

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

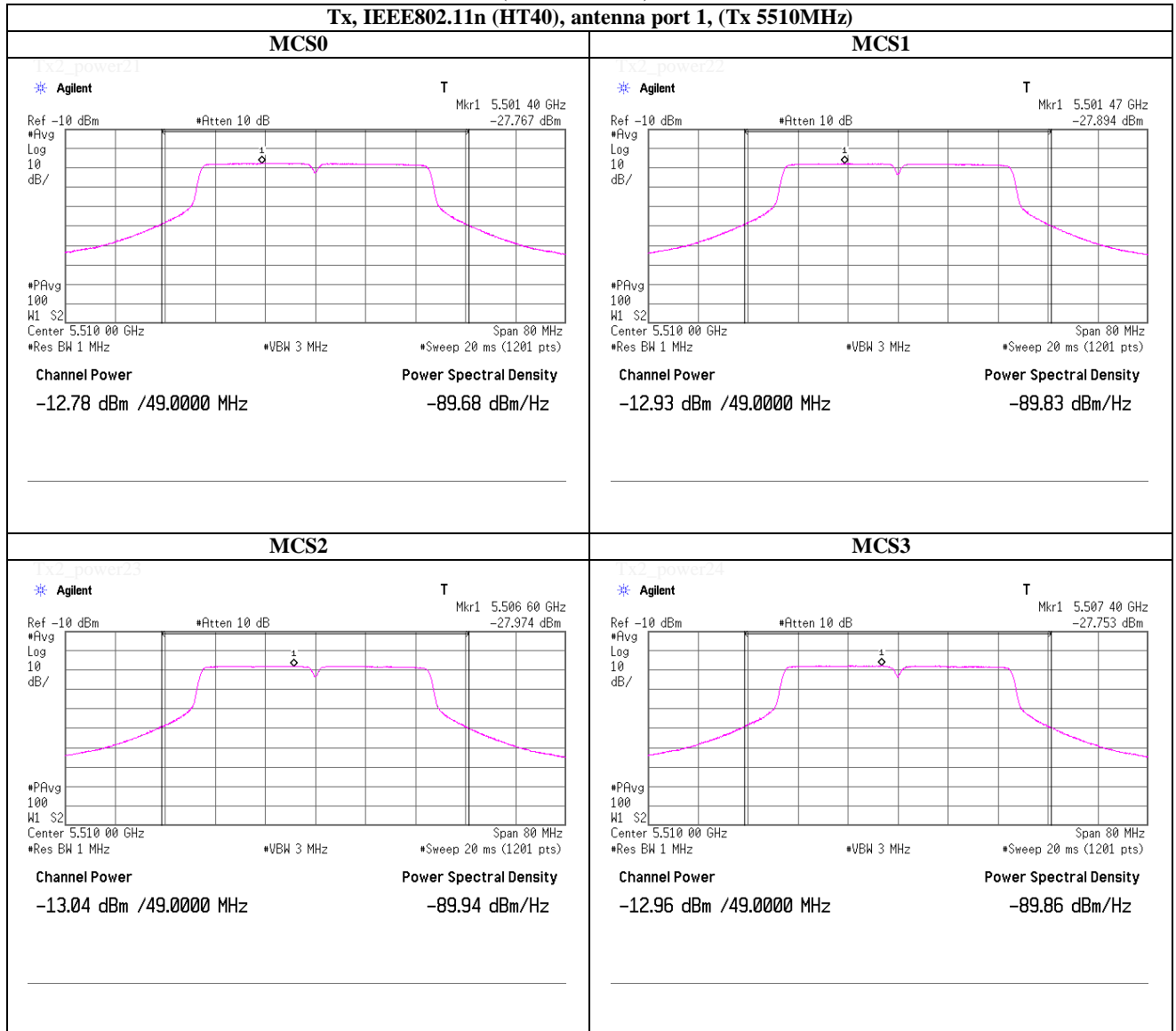


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Maximum Conducted Output Power (Conducted)

(Reference chart)

Tx, IEEE802.11n (HT40), antenna port 1, (Tx 5510MHz)



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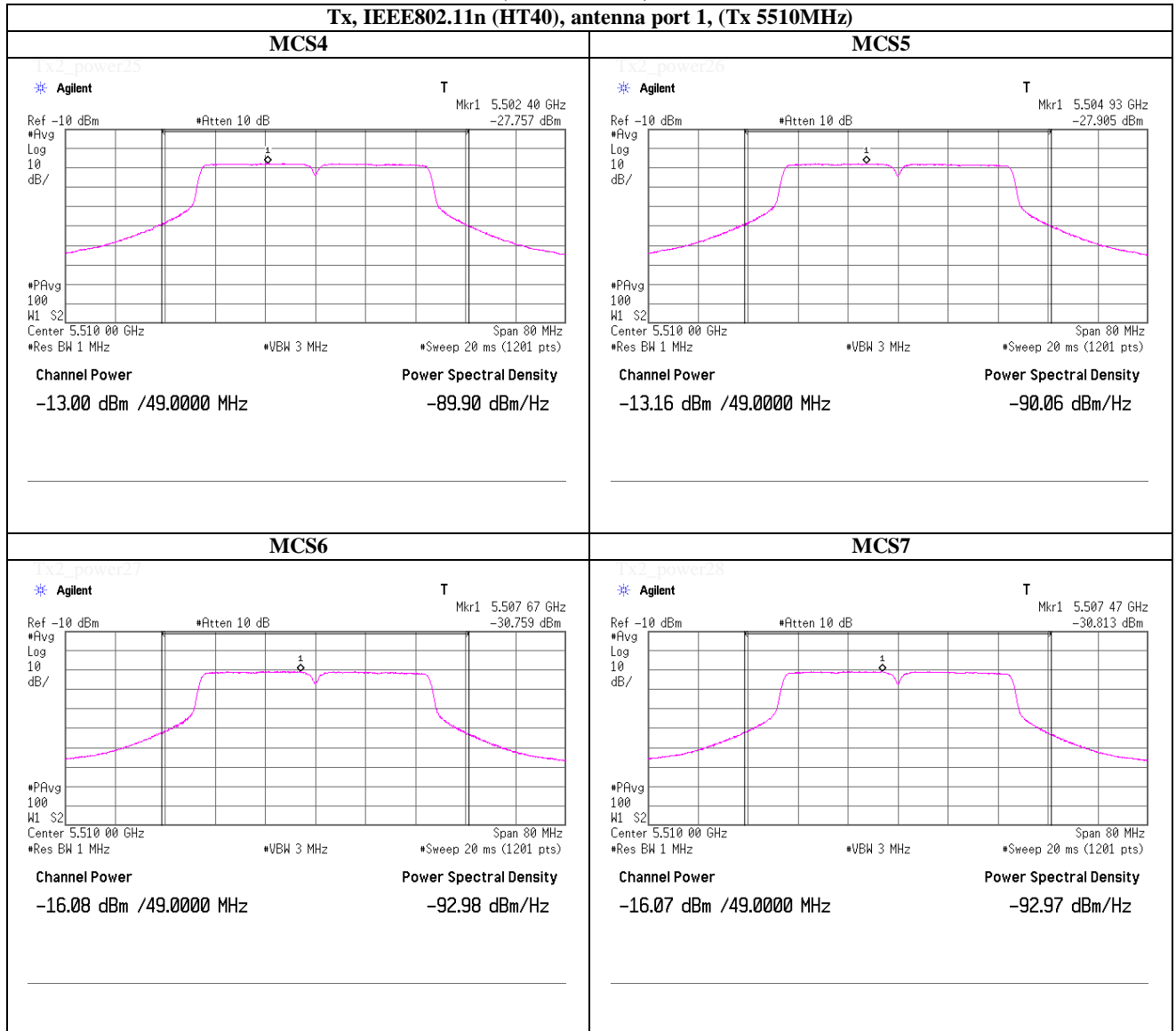
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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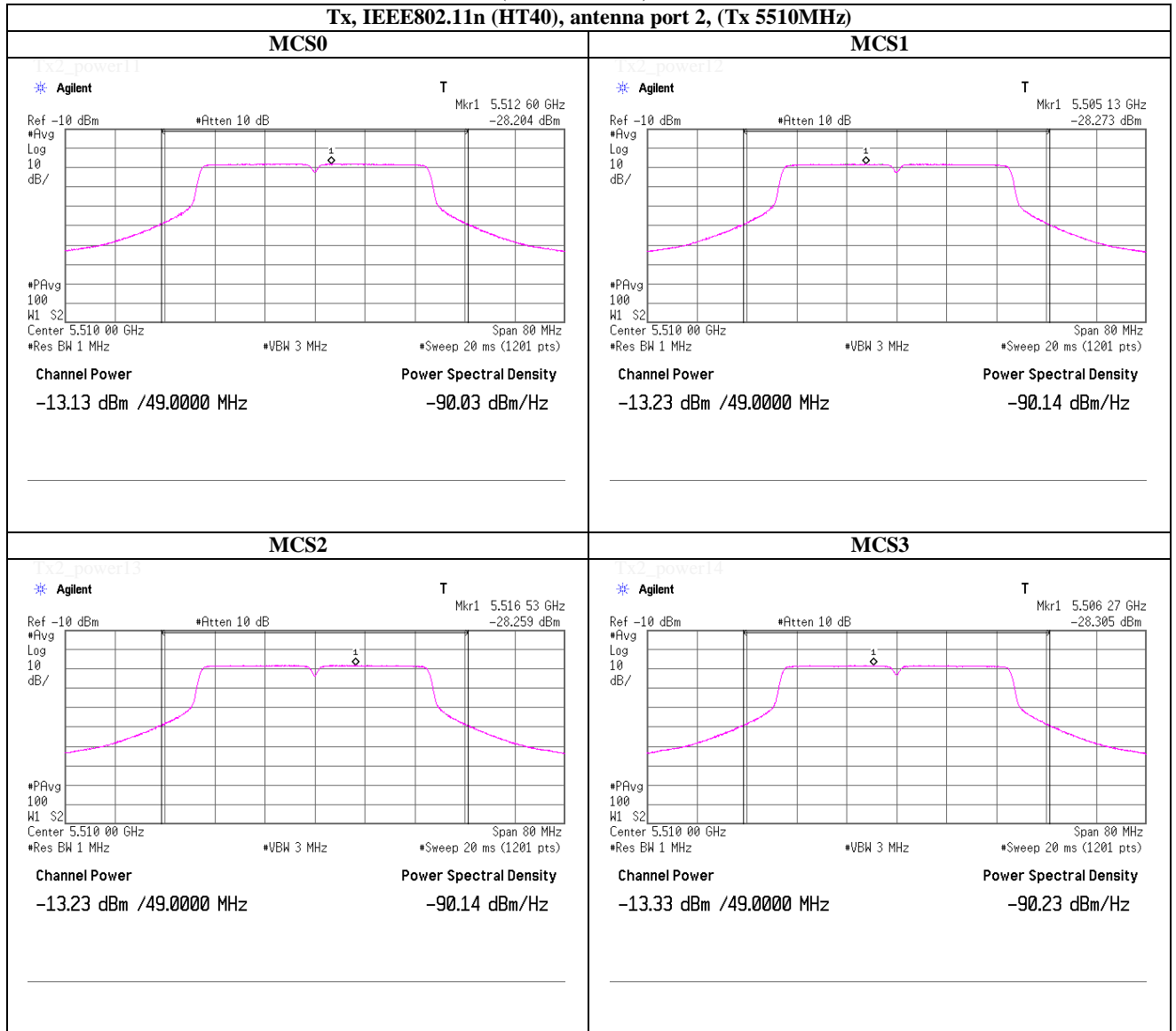
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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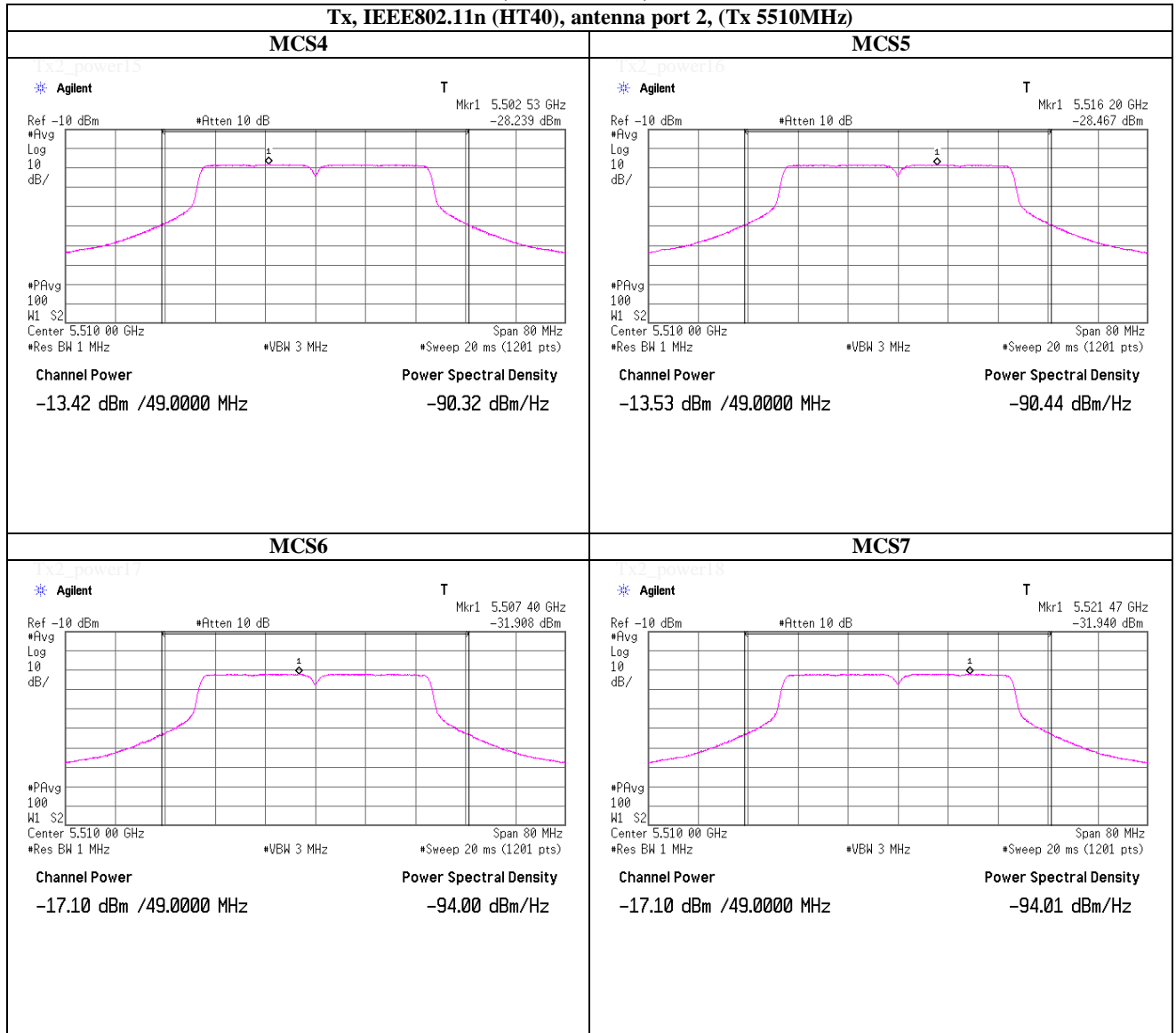
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Maximum Conducted Output Power (Conducted)

(Reference chart)



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Maximum Conducted Output Power (Conducted)

Test place UL Japan, Inc. Shonan EMC Lab.
 Date August 24, 2012
 Temperature / Humidity 28 deg.C , 50 %RH
 Engineer Hikaru Shirasawa
 Mode Tx, IEEE802.11n (HT40), PN9,

No.5 Shielded Room

worst data mode : 8 (MCS)

Antenna terminal power (* S/A: Spectrum Analyzer)

Antenna	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]	Total Result		Limit		Margin [dB]
							[dBm]	[mW]	[dBm]	[mW]	
Ant1	5190.0	-11.81	3.02	20.24	0.08	11.53	14.41	27.59	16.99	50.00	2.58
	5230.0	-11.78	3.03	20.24	0.08	11.57	14.37	27.33	16.99	50.00	2.62
Ant2	5190.0	-12.08	3.02	20.24	0.08	11.26					
	5230.0	-12.22	3.03	20.24	0.08	11.13					

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss

EIRP (* S/A: Spectrum Analyzer)

Reference Data

Antenna	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Antenna Gain [dBi]	Result (e.i.r.p.) [dBm]	Total Result		Limit		Margin [dB]
								(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	
Ant1	5190.0	-11.81	3.02	20.24	0.08	5.18	16.71	19.59	90.94	-	-	-
	5230.0	-11.78	3.03	20.24	0.08	5.18	16.75	19.55	90.07	-	-	-
Ant2	5190.0	-12.08	3.02	20.24	0.08	5.18	16.44					
	5230.0	-12.22	3.03	20.24	0.08	5.18	16.31					

Sample Calculation: Result = Reading + Cable Loss + Atten. Loss + Antenna Gain

[Pre check]

Antenna 1

	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
1	8	5190.0	-11.81	3.02	20.24	0.08	11.53
1	9	5190.0	-11.94	3.02	20.24	0.15	11.47
1	10	5190.0	-12.05	3.02	20.24	0.21	11.42
1	11	5190.0	-12.07	3.02	20.24	0.28	11.47
1	12	5190.0	-12.28	3.02	20.24	0.35	11.33
1	13	5190.0	-12.41	3.02	20.24	0.45	11.30
1	14	5190.0	-15.58	3.02	20.24	0.46	8.14
1	15	5190.0	-15.51	3.02	20.24	0.51	8.26

Antenna 1 + 2

Result [dBm]
14.41
14.37
14.34
14.30
14.21
14.22
10.76
10.83

Worst

Antenna 2

	Mode (MCS)	Freq. [MHz]	S/A (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
2	8	5190.0	-12.08	3.02	20.24	0.08	11.26
2	9	5190.0	-12.16	3.02	20.24	0.15	11.25
2	10	5190.0	-12.24	3.02	20.24	0.21	11.23
2	11	5190.0	-12.44	3.02	20.24	0.28	11.10
2	12	5190.0	-12.56	3.02	20.24	0.35	11.05
2	13	5190.0	-12.59	3.02	20.24	0.45	11.12
2	14	5190.0	-16.39	3.02	20.24	0.46	7.33
2	15	5190.0	-16.44	3.02	20.24	0.51	7.33

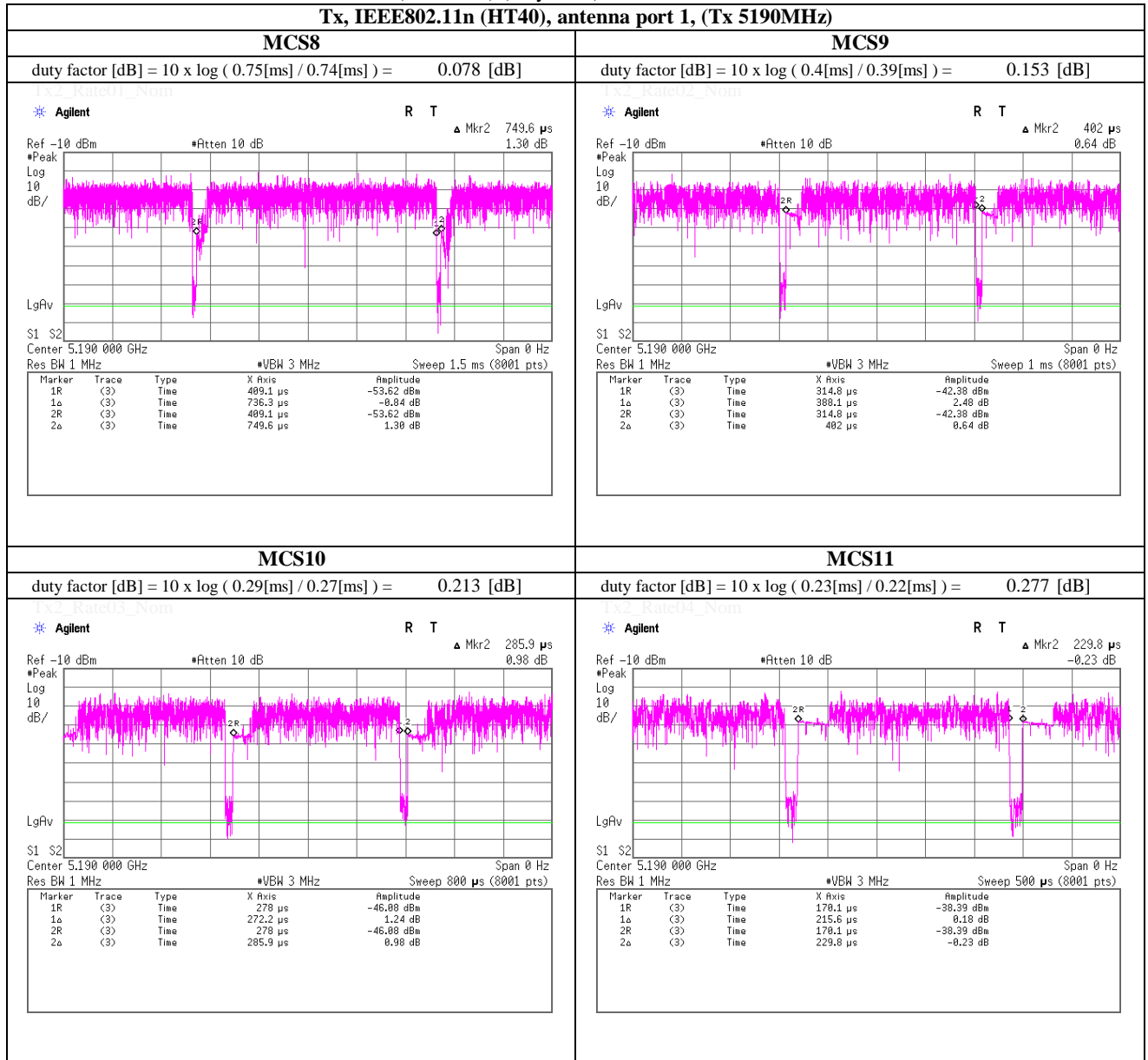
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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11n (HT40), antenna port 1, (Tx 5190MHz)



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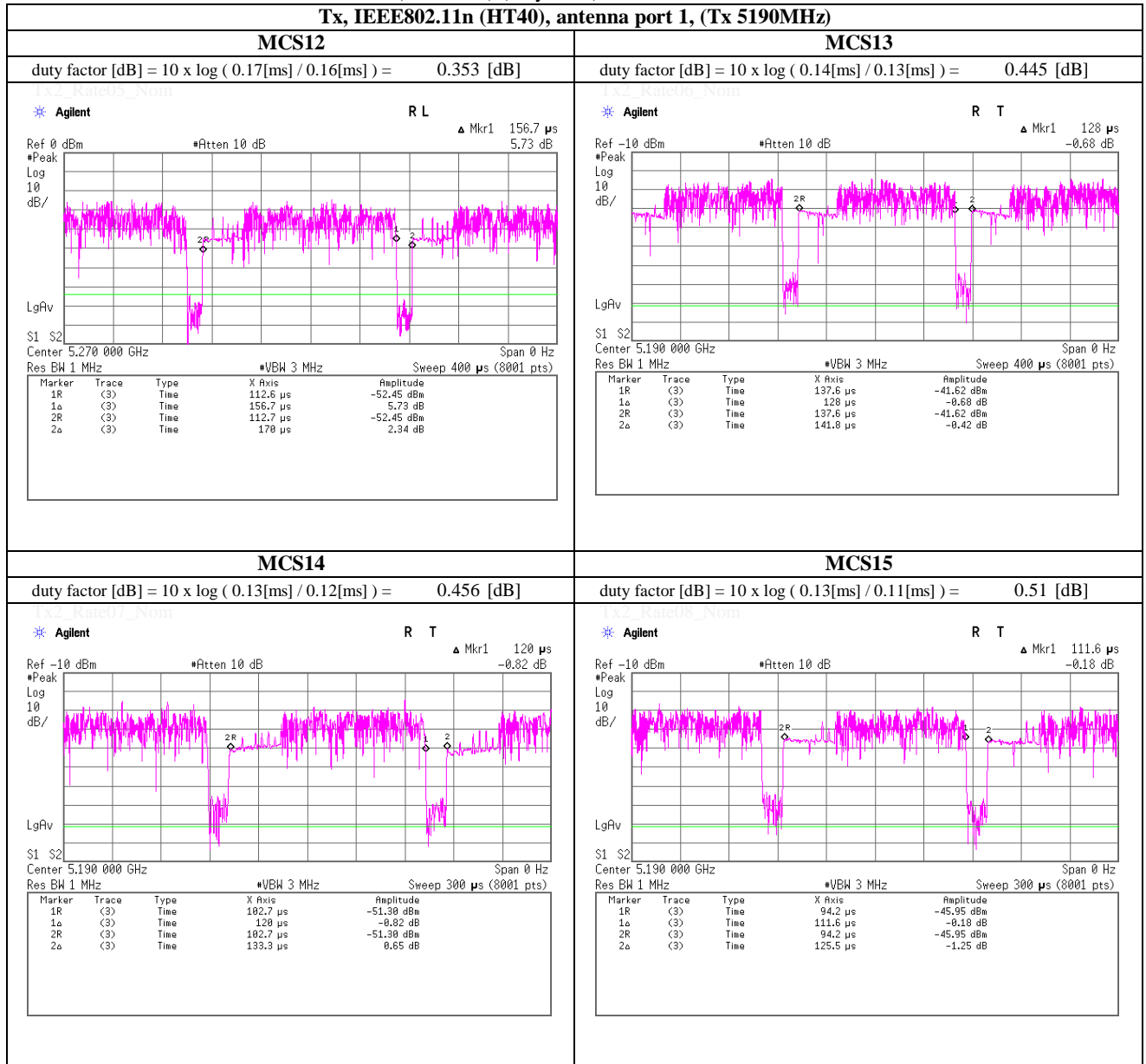
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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



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