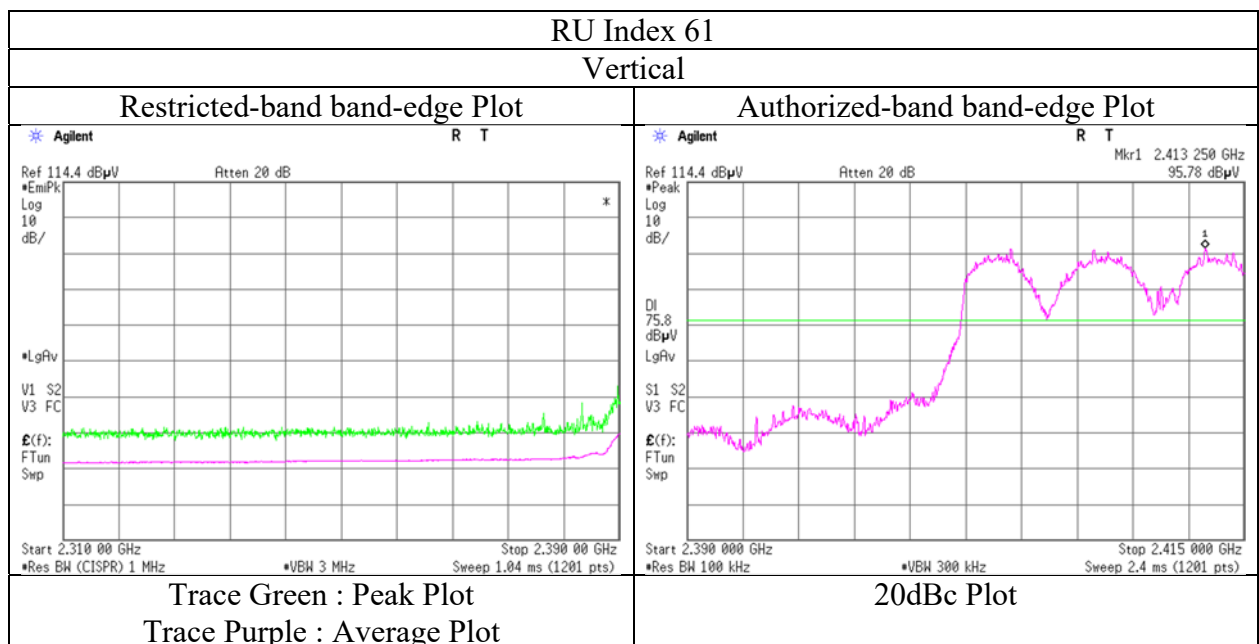
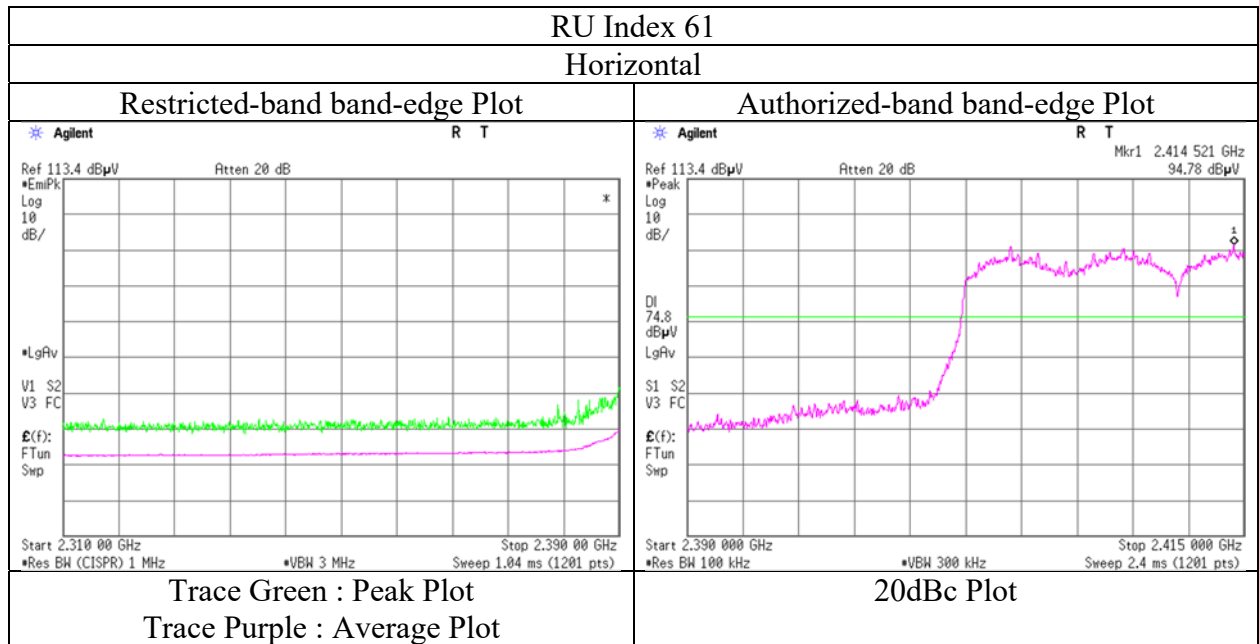


Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	April 10, 2020
Temperature / Humidity	20 deg. C / 28 % RH
Engineer	Yuta Moriya
	Band edge
Mode	Tx 11ax-20 2412 MHz (242-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

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Radiated Spurious Emission (IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 25, 2019 January 8, 2020
Temperature / Humidity 21 deg. C / 41 % RH 23 deg. C / 35 % RH
Engineer Yuta Moriya Tomohisa Nakagawa
(1 GHz - 10 GHz) (18 GHz - 26.5 GHz)
Mode Tx 11ax-20 2437 MHz (OFDM)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4874.000	PK	40.2	31.6	7.5	31.8	-	47.5	73.9	26.4	Floor noise
Hori.	7311.000	PK	40.2	36.2	8.9	32.7	-	52.6	73.9	21.3	Floor noise
Hori.	9748.000	PK	41.0	38.8	9.4	33.4	-	55.7	73.9	18.2	Floor noise
Hori.	4874.000	AV	32.4	31.6	7.5	31.8	-	39.7	53.9	14.2	Floor noise
Hori.	7311.000	AV	32.9	36.2	8.9	32.7	-	45.3	53.9	8.7	Floor noise
Hori.	9748.000	AV	32.7	38.8	9.4	33.4	-	47.4	53.9	6.5	Floor noise
Vert.	4874.000	PK	40.1	31.6	7.5	31.8	-	47.4	73.9	26.5	Floor noise
Vert.	7311.000	PK	41.8	36.2	8.9	32.7	-	54.2	73.9	19.7	Floor noise
Vert.	9748.000	PK	41.0	38.8	9.4	33.4	-	55.8	73.9	18.1	Floor noise
Vert.	4874.000	AV	32.4	31.6	7.5	31.8	-	39.7	53.9	14.2	Floor noise
Vert.	7311.000	AV	32.9	36.2	8.9	32.7	-	45.3	53.9	8.6	Floor noise
Vert.	9748.000	AV	32.7	38.8	9.4	33.4	-	47.5	53.9	6.4	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz 20log(3.9 m / 3.0 m) = 2.28 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission (IFA Antenna)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	December 25, 2019	January 8, 2020	January 10, 2020
Temperature / Humidity	21 deg. C / 41 % RH	23 deg. C / 35 % RH	23 deg. C / 35 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)	Tomohisa Nakagawa (Below 1GHz)
Mode	Tx 11ax-20 2462 MHz (OFDM)		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	49.093	QP	26.2	11.5	7.4	32.2	-	12.9	40.0	27.1	
Hori.	59.516	QP	26.5	8.0	7.5	32.2	-	9.9	40.0	30.2	
Hori.	95.560	QP	23.5	9.5	8.0	32.2	-	8.8	43.5	34.7	
Hori.	429.874	QP	22.2	16.2	10.9	32.0	-	17.3	46.0	28.7	
Hori.	600.800	QP	22.2	19.2	11.9	32.0	-	21.3	46.0	24.7	
Hori.	938.304	QP	21.1	22.0	13.7	30.7	-	26.1	46.0	20.0	
Hori.	2483.500	PK	50.2	27.5	5.5	32.7	-	50.5	73.9	23.4	
Hori.	4924.000	PK	39.9	31.5	7.5	31.8	-	47.1	73.9	26.8	Floor noise
Hori.	7386.000	PK	41.4	36.3	8.9	32.7	-	53.9	73.9	20.0	Floor noise
Hori.	9848.000	PK	40.6	39.0	9.4	33.4	-	55.5	73.9	18.4	Floor noise
Hori.	2483.500	AV	39.9	27.5	5.5	32.7	0.3	40.4	53.9	13.5	*1)
Hori.	4924.000	AV	32.7	31.5	7.5	31.8	-	39.9	53.9	14.0	Floor noise
Hori.	7386.000	AV	32.6	36.3	8.9	32.7	-	45.1	53.9	8.8	Floor noise
Hori.	9848.000	AV	32.8	39.0	9.4	33.4	-	47.7	53.9	6.2	Floor noise
Vert.	49.249	QP	28.0	11.5	7.4	32.2	-	14.6	40.0	25.4	
Vert.	59.552	QP	32.8	8.0	7.5	32.2	-	16.1	40.0	23.9	
Vert.	95.520	QP	26.5	9.5	8.0	32.2	-	11.8	43.5	31.7	
Vert.	431.048	QP	22.5	16.2	10.9	32.0	-	17.6	46.0	28.4	
Vert.	598.110	QP	22.2	19.1	11.9	32.0	-	21.3	46.0	24.7	
Vert.	933.312	QP	21.3	22.0	13.7	30.8	-	26.2	46.0	19.8	
Vert.	2483.500	PK	50.0	27.5	5.5	32.7	-	50.2	73.9	23.7	
Vert.	4924.000	PK	39.9	31.5	7.5	31.8	-	47.1	73.9	26.8	Floor noise
Vert.	7386.000	PK	41.4	36.3	8.9	32.7	-	53.9	73.9	20.0	Floor noise
Vert.	9848.000	PK	40.7	39.0	9.4	33.4	-	55.6	73.9	18.3	Floor noise
Vert.	2483.500	AV	38.4	27.5	5.5	32.7	0.3	38.8	53.9	15.1	*1)
Vert.	4924.000	AV	32.6	31.5	7.5	31.8	-	39.9	53.9	14.1	Floor noise
Vert.	7386.000	AV	32.8	36.3	8.9	32.7	-	45.2	53.9	8.7	Floor noise
Vert.	9848.000	AV	32.7	39.0	9.4	33.4	-	47.6	53.9	6.3	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

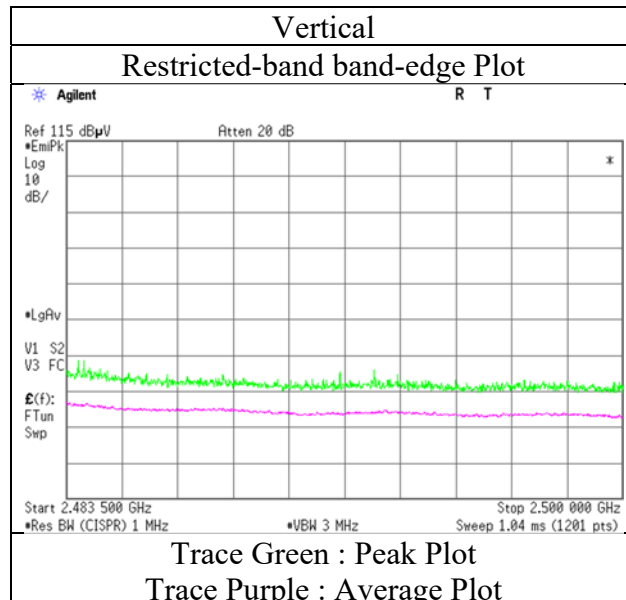
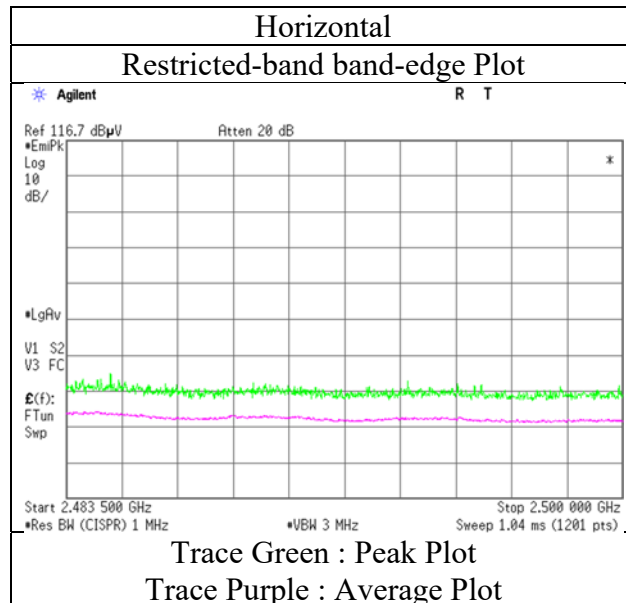
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 25, 2019
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)
Mode	Tx 11ax-20 2462 MHz (OFDM)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

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Radiated Spurious Emission (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 2, 2020
Temperature / Humidity	21 deg. C / 34 % RH
Engineer	Tomohisa Nakagawa
	Band edge
Mode	Tx 11ax-20 2462 MHz (26-tone RU)

RU Index 8

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	44.5	27.5	4.7	32.7	-	44.0	73.9	29.9	
Hori.	2483.500	AV	35.2	27.5	4.7	32.7	0.4	35.2	53.9	18.7	*1)
Vert.	2483.500	PK	48.3	27.5	4.7	32.7	-	47.8	73.9	26.1	
Vert.	2483.500	AV	32.3	27.5	4.7	32.7	0.4	32.3	53.9	21.6	*1)

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

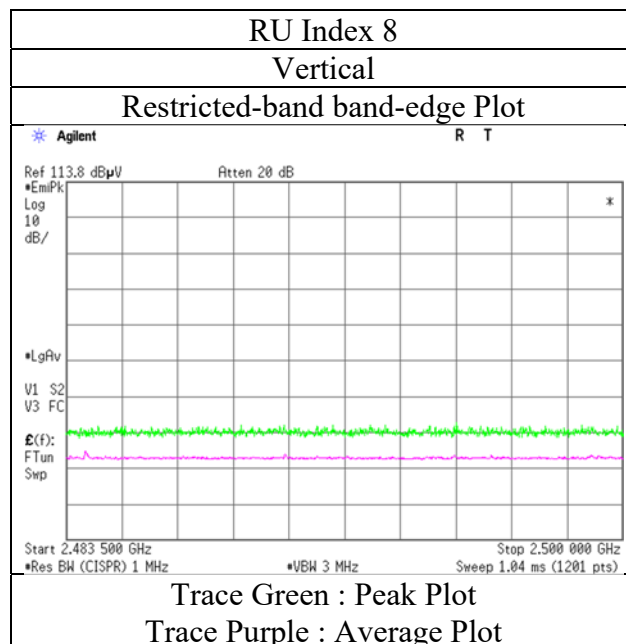
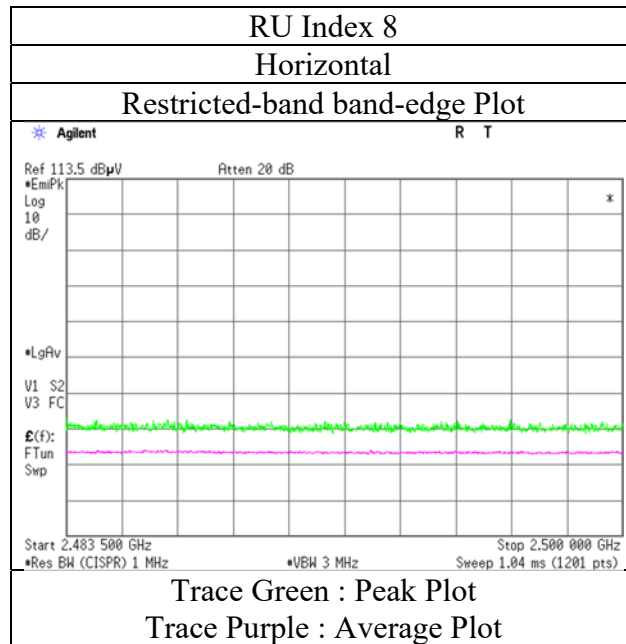
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (3.0 m / 3.0 m) = 2.28 dB
 10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 2, 2020
Temperature / Humidity	21 deg. C / 34 % RH
Engineer	Tomohisa Nakagawa
	Band edge
Mode	Tx 11ax-20 2462 MHz (26-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

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Radiated Spurious Emission (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 2, 2020
Temperature / Humidity	21 deg. C / 34 % RH
Engineer	Tomohisa Nakagawa
	Band edge
Mode	Tx 11ax-20 2462 MHz (52-tone RU)

RU Index 40

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dBm]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	47.5	27.5	4.7	32.7	-	47.0	73.9	26.9	
Hori.	2483.500	AV	32.9	27.5	4.7	32.7	0.5	32.8	53.9	21.1	*1)
Vert.	2483.500	PK	45.0	27.5	4.7	32.7	-	44.5	73.9	29.4	
Vert.	2483.500	AV	31.5	27.5	4.7	32.7	0.5	31.5	53.9	22.5	*1)

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

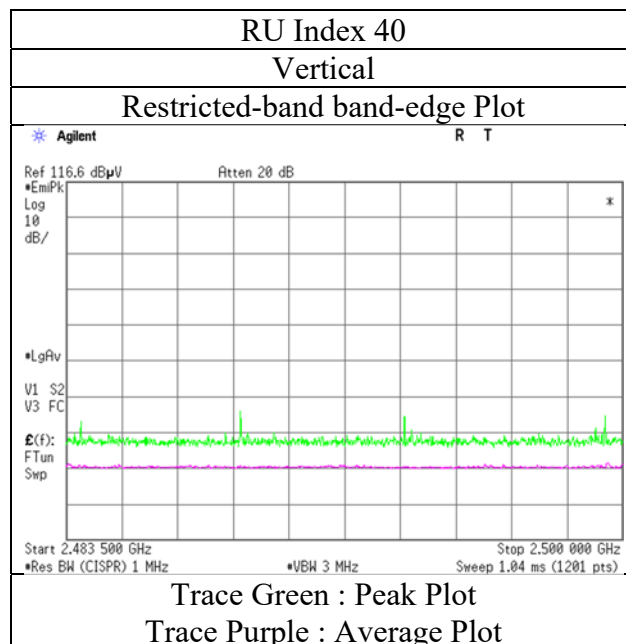
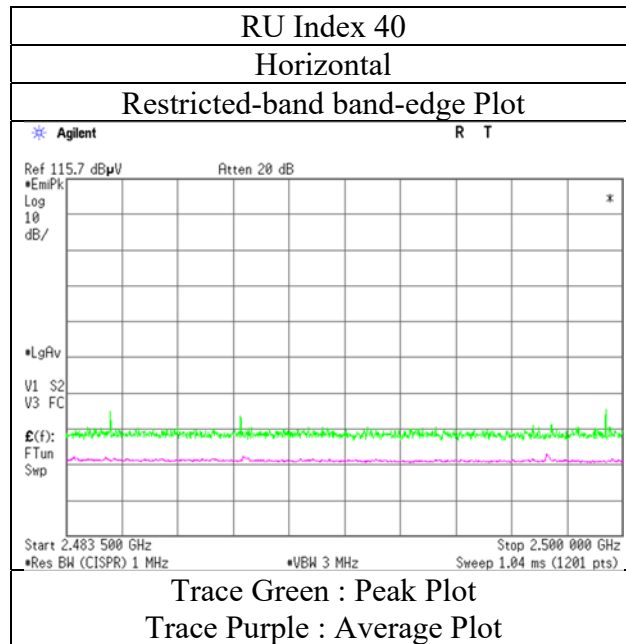
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
 10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 2, 2020
Temperature / Humidity	21 deg. C / 34 % RH
Engineer	Tomohisa Nakagawa
	Band edge
Mode	Tx 11ax-20 2462 MHz(52-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

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Radiated Spurious Emission (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 2, 2020
Temperature / Humidity	21 deg. C / 34 % RH
Engineer	Tomohisa Nakagawa
	Band edge
Mode	Tx 11ax-20 2462 MHz (106-tone RU)

RU Index 54

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	53.9	27.5	4.7	32.7	-	53.4	73.9	20.5	
Hori.	2483.500	AV	36.4	27.5	4.7	32.7	0.5	36.3	53.9	17.6	*1)
Vert.	2483.500	PK	49.4	27.5	4.7	32.7	-	48.9	73.9	25.0	
Vert.	2483.500	AV	34.1	27.5	4.7	32.7	0.5	34.0	53.9	19.9	*1)

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

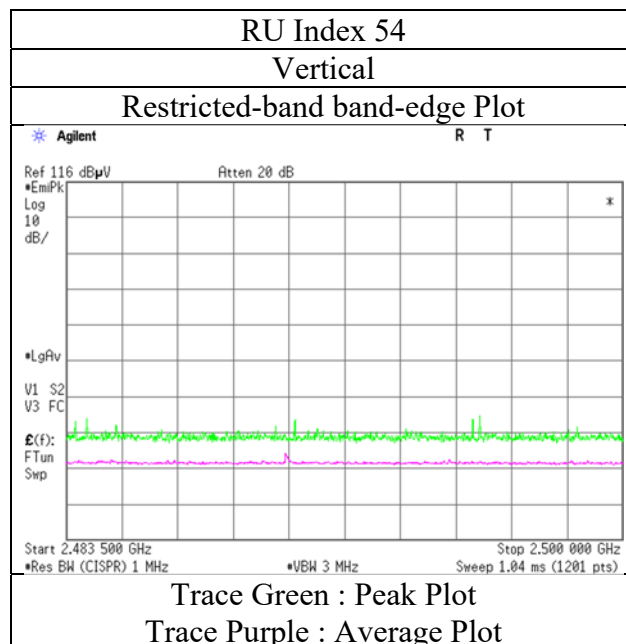
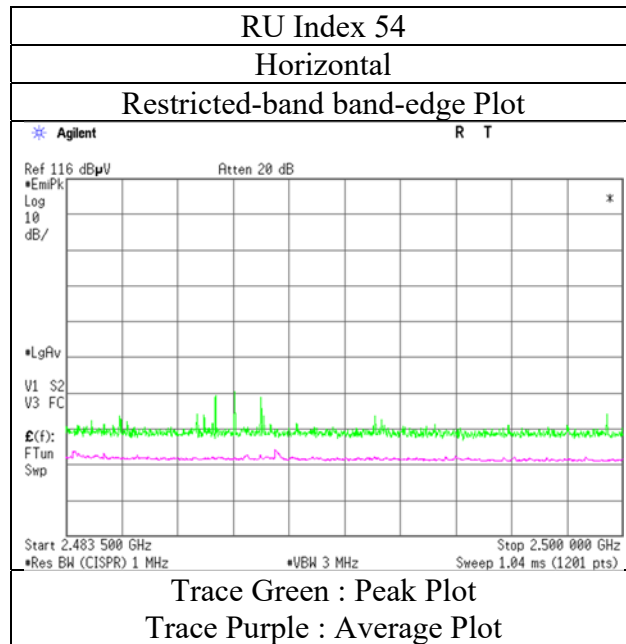
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz $20\log(3.9\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$
 10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)
(IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 2, 2020
Temperature / Humidity	21 deg. C / 34 % RH
Engineer	Tomohisa Nakagawa
	Band edge
Mode	Tx 11ax-20 2462 MHz (106-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
 Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	April 10, 2020
Temperature / Humidity	20 deg. C / 28 % RH
Engineer	Yuta Moriya
	Band edge
Mode	Tx 11ax-20 2462 MHz (242-tone RU)

RU Index 61

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	63.5	27.7	5.1	31.8	-	64.4	73.9	9.5	
Hori.	2483.500	AV	45.6	27.7	5.1	31.8	0.5	47.0	53.9	6.9	*1)
Vert.	2483.500	PK	63.6	27.7	5.1	31.8	-	64.5	73.9	9.4	
Vert.	2483.500	AV	45.5	27.7	5.1	31.8	0.5	46.9	53.9	7.0	*1)

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

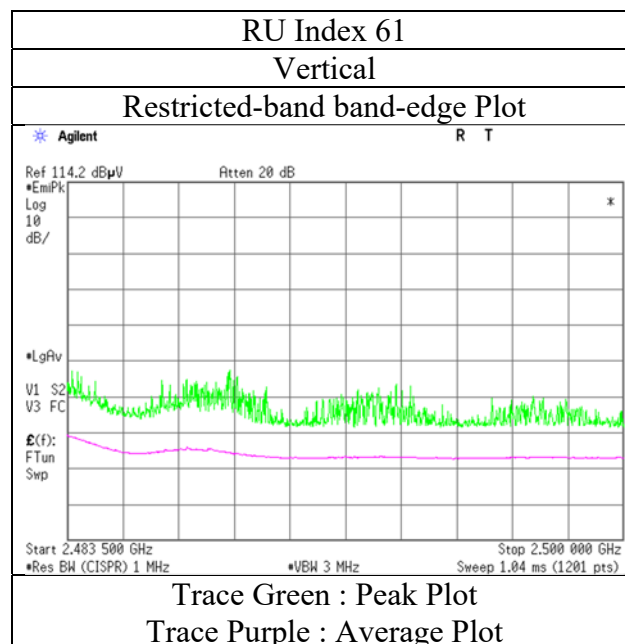
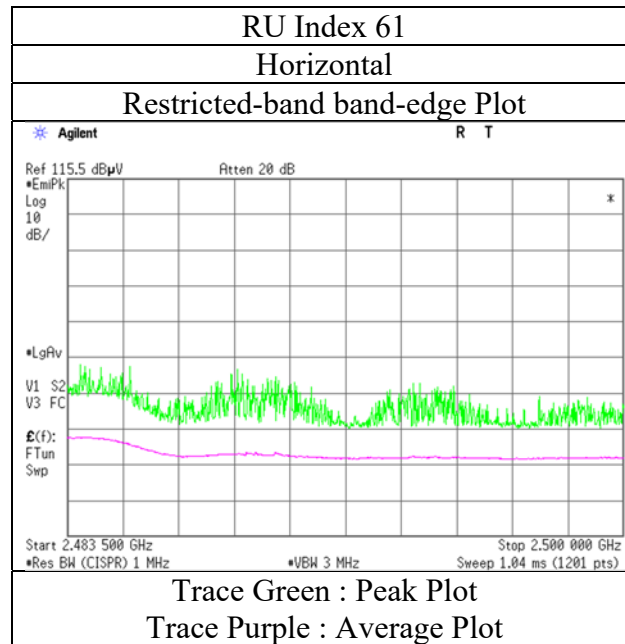
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log(3.9 m / 3.0 m) = 2.28 dB

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	April 10, 2020
Temperature / Humidity	20 deg. C / 28 % RH
Engineer	Yuta Moriya
	Band edge
Mode	Tx 11ax-20 2462 MHz (242-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

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Ise EMC Lab.

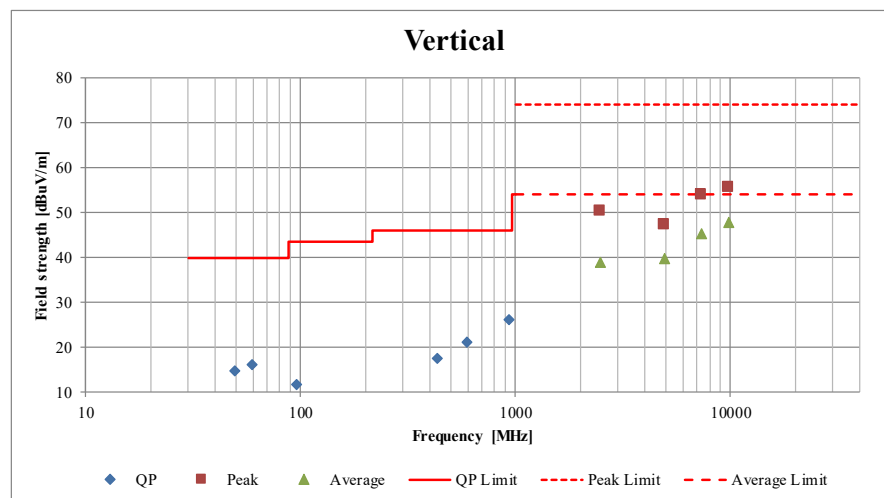
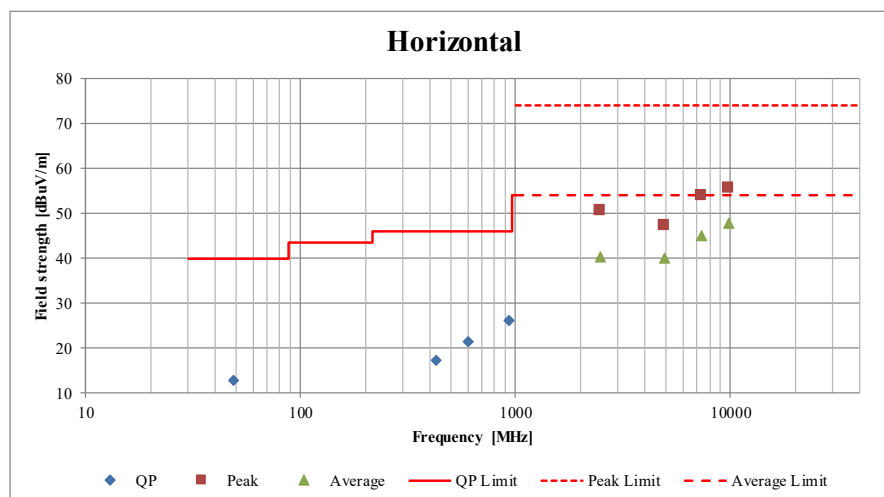
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Radiated Spurious Emission
(Reference Plot for band-edge)
(IFA Antenna WLAN)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	December 25, 2019	January 8, 2020	January 10, 2020
Temperature / Humidity	21 deg. C / 41 % RH	23 deg. C / 35 % RH	23 deg. C / 35 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)	Tomohisa Nakagawa (Below 1GHz)
Mode	Tx 11ax-20 2462 MHz (OFDM)		



Radiated Spurious Emission (IFA Antenna BT1)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 6, 2020	January 8, 2020	January 12, 2020
Temperature / Humidity	23 deg. C / 40 % RH	23 deg. C / 35 % RH	22 deg. C / 33 % RH
Engineer	Takumi Shimada (1 GHz -10 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 1M-PHY 2402 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.167	QP	24.5	8.1	7.5	32.2	-	7.9	40.0	32.1	
Hori.	62.939	QP	23.2	7.3	7.6	32.2	-	5.9	40.0	34.2	
Hori.	153.573	QP	22.6	15.3	8.7	32.1	-	14.5	43.5	29.1	
Hori.	335.229	QP	22.3	14.7	10.2	31.9	-	15.3	46.0	30.7	
Hori.	563.195	QP	21.8	18.2	11.7	32.0	-	19.7	46.0	26.3	
Hori.	959.849	QP	33.3	22.2	13.8	30.6	-	38.6	46.0	7.4	
Hori.	2340.500	PK	46.7	27.8	5.4	32.8	-	47.1	73.9	26.8	
Hori.	2390.000	PK	48.0	27.7	5.4	32.8	-	48.4	73.9	25.5	
Hori.	4804.000	PK	41.3	31.6	7.5	31.8	-	48.6	73.9	25.3	Floor noise
Hori.	7206.000	PK	41.4	36.0	8.9	32.7	-	53.6	73.9	20.3	Floor noise
Hori.	9608.000	PK	41.4	38.5	9.4	33.3	-	56.0	73.9	17.9	Floor noise
Hori.	2340.500	AV	38.4	27.8	5.4	32.8	2.0	40.8	53.9	13.1	*2)
Hori.	2390.000	AV	34.2	27.7	5.4	32.8	2.0	36.6	53.9	17.3	*1)
Hori.	4804.000	AV	31.3	31.6	7.5	31.8	-	38.6	53.9	15.3	Floor noise
Hori.	7206.000	AV	32.2	36.0	8.9	32.7	-	44.4	53.9	9.5	Floor noise
Hori.	9608.000	AV	32.6	38.5	9.4	33.3	-	47.2	53.9	6.7	Floor noise
Vert.	59.167	QP	28.7	8.1	7.5	32.2	-	12.1	40.0	27.9	
Vert.	62.939	QP	25.6	7.3	7.6	32.2	-	8.3	40.0	31.8	
Vert.	153.573	QP	22.5	15.3	8.7	32.1	-	14.4	43.5	29.2	
Vert.	335.229	QP	22.2	14.7	10.2	31.9	-	15.2	46.0	30.8	
Vert.	563.195	QP	22.0	18.2	11.7	32.0	-	19.9	46.0	26.1	
Vert.	959.849	QP	28.2	22.2	13.8	30.6	-	33.5	46.0	12.5	
Vert.	2340.500	PK	48.2	27.8	5.4	32.8	-	48.6	73.9	25.4	
Vert.	2390.000	PK	53.6	27.7	5.4	32.8	-	54.0	73.9	19.9	
Vert.	4804.000	PK	40.9	31.6	7.5	31.8	-	48.2	73.9	25.7	Floor noise
Vert.	7206.000	PK	41.5	36.0	8.9	32.7	-	53.8	73.9	20.2	Floor noise
Vert.	9608.000	PK	41.5	38.5	9.4	33.3	-	56.1	73.9	17.8	Floor noise
Vert.	2340.500	AV	38.7	27.8	5.4	32.8	2.0	41.1	53.9	12.8	*2)
Vert.	2390.000	AV	31.9	27.7	5.4	32.8	2.0	34.3	53.9	19.6	*1)
Vert.	4804.000	AV	31.3	31.6	7.5	31.8	-	38.6	53.9	15.3	Floor noise
Vert.	7206.000	AV	31.9	36.0	8.9	32.7	-	44.1	53.9	9.8	Floor noise
Vert.	9608.000	AV	32.6	38.5	9.4	33.3	-	47.2	53.9	6.7	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

*1) Not Out of Band emission(Leakage Power)

*2) Noise synchronized with duty of carrier frequency.

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	95.6	27.7	5.4	32.7	96.0	-	-	Carrier
Hori.	2400.000	PK	40.2	27.7	5.4	32.7	40.6	76.0	35.4	
Vert.	2402.000	PK	97.0	27.7	5.4	32.7	97.3	-	-	Carrier
Vert.	2400.000	PK	44.2	27.7	5.4	32.7	44.5	77.3	32.8	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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Ise EMC Lab.

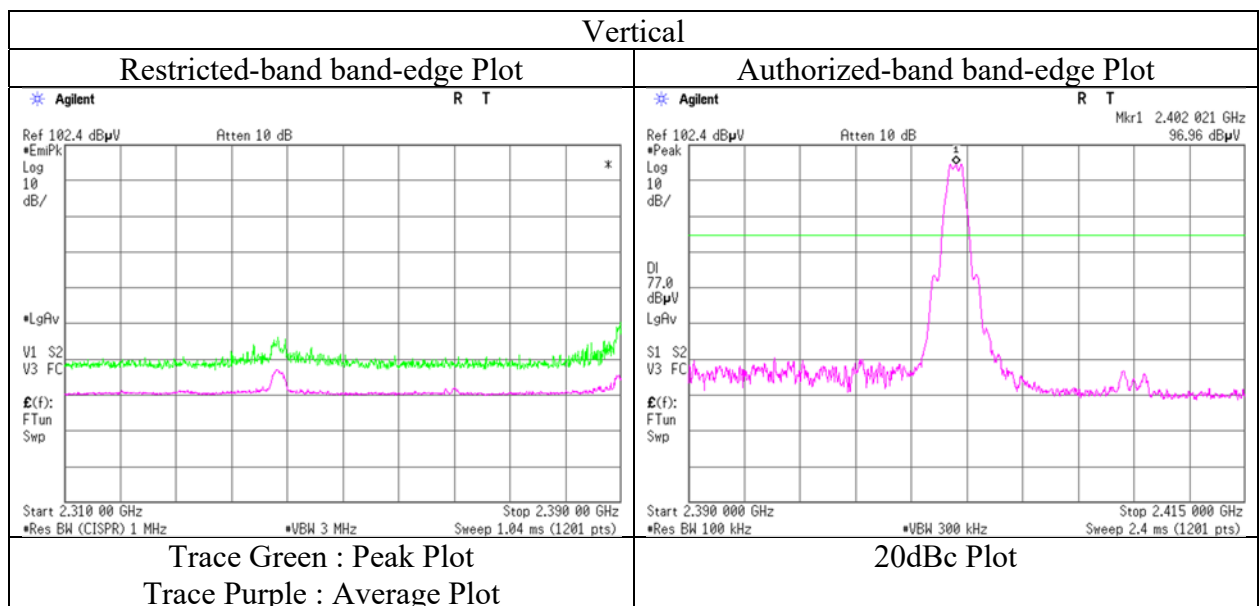
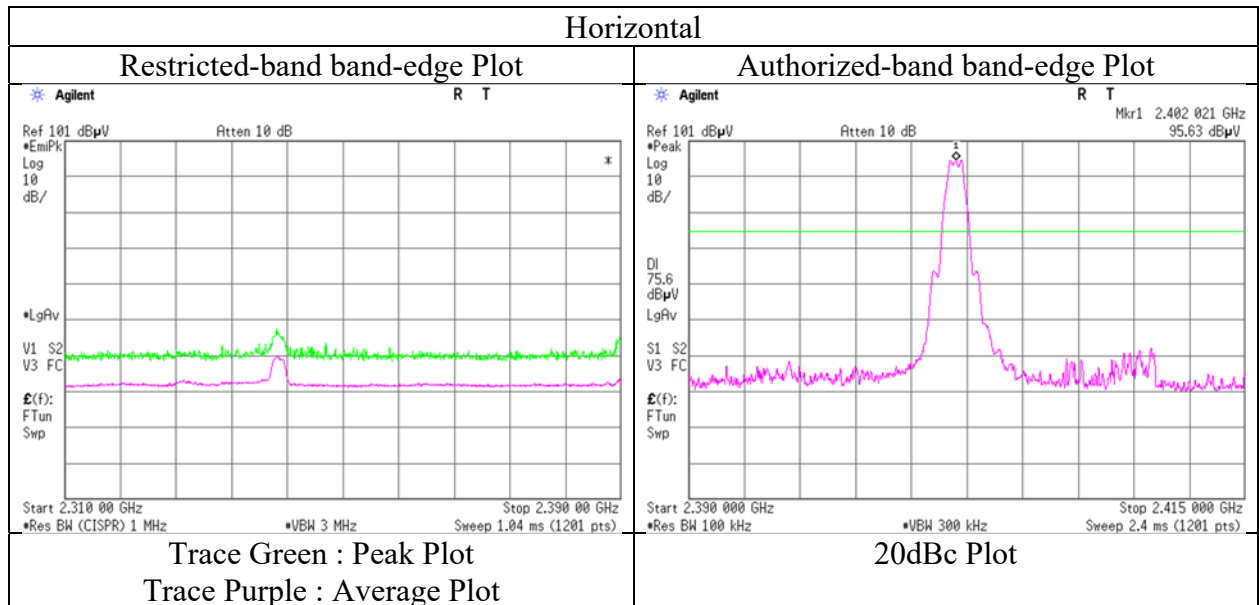
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Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna BT1)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	January 6, 2020
Temperature / Humidity	23 deg. C / 40 % RH
Engineer	Takumi Shimada (1 GHz -10 GHz)
Mode	Tx BT LE 1M-PHY 2402 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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Facsimile : +81 596 24 8124

Radiated Spurious Emission (IFA Antenna BT1)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 6, 2020	January 8, 2020	January 12, 2020
Temperature / Humidity	23 deg. C / 40 % RH	23 deg. C / 35 % RH	22 deg. C / 33 % RH
Engineer	Takumi Shimada (1 GHz -10 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 1M-PHY 2440 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.371	QP	24.3	8.0	7.5	32.2	-	7.7	40.0	32.3	
Hori.	62.327	QP	23.6	7.3	7.6	32.2	-	6.3	40.0	33.7	
Hori.	177.560	QP	22.5	16.2	8.9	32.1	-	15.5	43.5	28.0	
Hori.	345.433	QP	22.3	15.0	10.3	31.9	-	15.6	46.0	30.4	
Hori.	587.663	QP	22.1	18.9	11.9	32.0	-	20.9	46.0	25.1	
Hori.	959.886	QP	32.5	22.2	13.8	30.6	-	37.8	46.0	8.2	
Hori.	2374.000	PK	47.7	27.7	5.4	32.8	-	48.1	73.9	25.9	
Hori.	4880.000	PK	41.5	31.5	7.5	31.8	-	48.7	73.9	25.2	Floor noise
Hori.	7320.000	PK	41.6	36.2	8.9	32.7	-	54.0	73.9	19.9	Floor noise
Hori.	9760.000	PK	42.7	38.8	9.4	33.4	-	57.5	73.9	16.4	Floor noise
Hori.	2374.000	AV	38.9	27.7	5.4	32.8	2.0	41.2	53.9	12.7	*1)
Hori.	4880.000	AV	31.5	31.5	7.5	31.8	-	38.7	53.9	15.2	Floor noise
Hori.	7320.000	AV	32.0	36.2	8.9	32.7	-	44.4	53.9	9.5	Floor noise
Hori.	9760.000	AV	32.7	38.8	9.4	33.4	-	47.5	53.9	6.4	Floor noise
Vert.	59.371	QP	28.9	8.0	7.5	32.2	-	12.3	40.0	27.7	
Vert.	62.327	QP	25.5	7.3	7.6	32.2	-	8.2	40.0	31.8	
Vert.	177.560	QP	22.4	16.2	8.9	32.1	-	15.4	43.5	28.1	
Vert.	345.433	QP	22.2	15.0	10.3	31.9	-	15.5	46.0	30.5	
Vert.	587.663	QP	21.9	18.9	11.9	32.0	-	20.7	46.0	25.3	
Vert.	959.886	QP	27.8	22.2	13.8	30.6	-	33.1	46.0	12.9	
Vert.	2374.000	PK	48.9	27.7	5.4	32.8	-	49.3	73.9	24.6	
Vert.	4880.000	PK	41.5	31.5	7.5	31.8	-	48.8	73.9	25.2	Floor noise
Vert.	7320.000	PK	41.6	36.2	8.9	32.7	-	54.0	73.9	19.9	Floor noise
Vert.	9760.000	PK	42.6	38.8	9.4	33.4	-	57.4	73.9	16.5	Floor noise
Vert.	2374.000	AV	39.4	27.7	5.4	32.8	2.0	41.7	53.9	12.2	*1)
Vert.	4880.000	AV	31.4	31.5	7.5	31.8	-	38.7	53.9	15.2	Floor noise
Vert.	7320.000	AV	32.0	36.2	8.9	32.7	-	44.3	53.9	9.6	Floor noise
Vert.	9760.000	AV	32.8	38.8	9.4	33.4	-	47.6	53.9	6.3	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz 20log (3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission (IFA Antenna BT1)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 6, 2020	January 8, 2020	January 12, 2020
Temperature / Humidity	23 deg. C / 40 % RH	23 deg. C / 35 % RH	22 deg. C / 33 % RH
Engineer	Takumi Shimada (1 GHz -10 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 1M-PHY 2480 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.211	QP	24.3	8.1	7.5	32.2	-	7.7	40.0	32.3	
Hori.	62.809	QP	23.3	7.3	7.6	32.2	-	6.0	40.0	34.0	
Hori.	158.746	QP	22.5	15.4	8.7	32.1	-	14.5	43.5	29.0	
Hori.	346.203	QP	22.3	15.0	10.3	31.9	-	15.6	46.0	30.4	
Hori.	600.271	QP	21.8	19.2	11.9	32.0	-	20.9	46.0	25.1	
Hori.	959.743	QP	32.8	22.2	13.8	30.6	-	38.1	46.0	7.9	
Hori.	2483.500	PK	44.8	27.5	5.5	32.7	-	45.1	73.9	28.8	
Hori.	2548.806	PK	45.6	27.5	5.5	32.7	-	46.0	73.9	27.9	
Hori.	4960.000	PK	41.3	31.6	7.5	31.8	-	48.6	73.9	25.3	Floor noise
Hori.	7440.000	PK	42.3	36.3	8.9	32.7	-	54.8	73.9	19.2	Floor noise
Hori.	9920.000	PK	42.7	38.9	9.4	33.4	-	57.6	73.9	16.3	Floor noise
Hori.	2483.500	AV	35.1	27.5	5.5	32.7	2.0	37.3	53.9	16.6	*1)
Hori.	2548.806	AV	35.6	27.5	5.5	32.7	2.0	38.0	53.9	15.9	*2)
Hori.	4960.000	AV	31.5	31.6	7.5	31.8	-	38.8	53.9	15.1	Floor noise
Hori.	7440.000	AV	33.1	36.3	8.9	32.7	-	45.6	53.9	8.3	Floor noise
Hori.	9920.000	AV	32.6	38.9	9.4	33.4	-	47.5	53.9	6.4	Floor noise
Vert.	59.211	QP	29.0	8.1	7.5	32.2	-	12.4	40.0	27.6	
Vert.	62.809	QP	25.8	7.3	7.6	32.2	-	8.5	40.0	31.5	
Vert.	158.746	QP	22.5	15.4	8.7	32.1	-	14.5	43.5	29.0	
Vert.	346.203	QP	22.2	15.0	10.3	31.9	-	15.5	46.0	30.5	
Vert.	600.271	QP	21.8	19.2	11.9	32.0	-	20.9	46.0	25.1	
Vert.	959.743	QP	28.0	22.2	13.8	30.6	-	33.3	46.0	12.7	
Vert.	2483.500	PK	47.5	27.5	5.5	32.7	-	47.8	73.9	26.1	
Vert.	2548.806	PK	50.2	27.5	5.5	32.7	-	50.5	73.9	23.4	
Vert.	4960.000	PK	41.2	31.6	7.5	31.8	-	48.5	73.9	25.4	Floor noise
Vert.	7440.000	PK	42.1	36.3	8.9	32.7	-	54.6	73.9	19.3	Floor noise
Vert.	9920.000	PK	42.6	38.9	9.4	33.4	-	57.5	73.9	16.4	Floor noise
Vert.	2483.500	AV	37.1	27.5	5.5	32.7	2.0	39.3	53.9	14.6	*1)
Vert.	2548.806	AV	41.5	27.5	5.5	32.7	2.0	43.9	53.9	10.0	*2)
Vert.	4960.000	AV	31.5	31.6	7.5	31.8	-	38.8	53.9	15.1	Floor noise
Vert.	7440.000	AV	33.0	36.3	8.9	32.7	-	45.5	53.9	8.4	Floor noise
Vert.	9920.000	AV	32.6	38.9	9.4	33.4	-	47.5	53.9	6.4	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

*2) Noise synchronized with duty of carrier frequency.

UL Japan, Inc.

Ise EMC Lab.

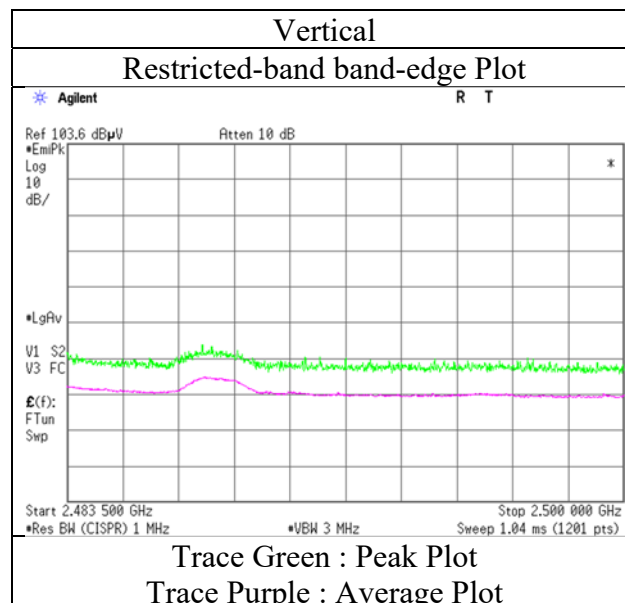
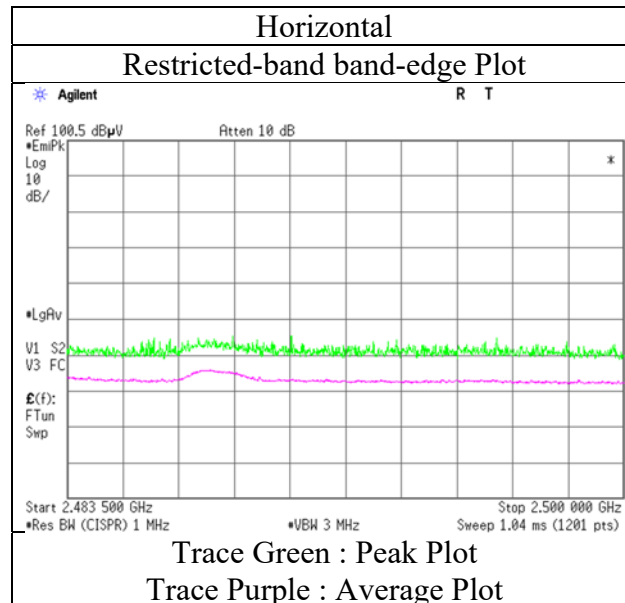
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Radiated Spurious Emission
(Reference Plot for band-edge)
(IFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 6, 2020
Temperature / Humidity 23 deg. C / 40 % RH
Engineer Takumi Shimada
(1 GHz -10 GHz)
Mode Tx BT LE 1M-PHY 2480 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

Ise EMC Lab.

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Radiated Spurious Emission (IFA Antenna BT1)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 6, 2020	January 8, 2020	January 12, 2020
Temperature / Humidity	23 deg. C / 32 % RH	23 deg. C / 35 % RH	22 deg. C / 33 % RH
Engineer	Tomohisa Nakagawa (1 GHz -10 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 2M-PHY 2402 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.334	QP	24.1	8.1	7.5	32.2	-	7.5	40.0	32.5	
Hori.	62.651	QP	23.2	7.3	7.6	32.2	-	5.9	40.0	34.1	
Hori.	177.947	QP	22.6	16.2	8.9	32.1	-	15.6	43.5	27.9	
Hori.	357.988	QP	22.2	15.0	10.4	31.9	-	15.7	46.0	30.3	
Hori.	555.810	QP	21.9	18.0	11.7	32.0	-	19.6	46.0	26.4	
Hori.	959.831	QP	33.1	22.2	13.8	30.6	-	38.4	46.0	7.6	
Hori.	2336.250	PK	49.1	27.8	5.4	32.8	-	49.5	73.9	24.4	
Hori.	2390.000	PK	44.3	27.7	5.4	32.8	-	44.6	73.9	29.3	
Hori.	4804.000	PK	41.1	31.6	7.5	31.8	-	48.3	73.9	25.6	Floor noise
Hori.	7206.000	PK	42.0	36.0	8.9	32.7	-	54.2	73.9	19.7	Floor noise
Hori.	9608.000	PK	43.0	38.5	9.4	33.3	-	57.6	73.9	16.4	Floor noise
Hori.	2336.250	AV	33.6	27.8	5.4	32.8	4.8	38.7	53.9	15.2	*2)
Hori.	2390.000	AV	31.7	27.7	5.4	32.8	4.8	36.8	53.9	17.1	*1)
Hori.	4804.000	AV	32.4	31.6	7.5	31.8	-	39.7	53.9	14.2	Floor noise
Hori.	7206.000	AV	31.8	36.0	8.9	32.7	-	44.0	53.9	9.9	Floor noise
Hori.	9608.000	AV	31.5	38.5	9.4	33.3	-	46.1	53.9	7.8	Floor noise
Vert.	59.334	QP	28.9	8.1	7.5	32.2	-	12.3	40.0	27.7	
Vert.	62.651	QP	25.5	7.3	7.6	32.2	-	8.2	40.0	31.8	
Vert.	177.947	QP	22.4	16.2	8.9	32.1	-	15.4	43.5	28.1	
Vert.	357.988	QP	22.3	15.0	10.4	31.9	-	15.8	46.0	30.2	
Vert.	555.810	QP	22.0	18.0	11.7	32.0	-	19.7	46.0	26.3	
Vert.	959.831	QP	28.3	22.2	13.8	30.6	-	33.6	46.0	12.4	
Vert.	2336.250	PK	51.4	27.8	5.4	32.8	-	51.8	73.9	22.1	
Vert.	2390.000	PK	48.6	27.7	5.4	32.8	-	49.0	73.9	25.0	
Vert.	4804.000	PK	40.7	31.6	7.5	31.8	-	48.0	73.9	25.9	Floor noise
Vert.	7206.000	PK	43.8	36.0	8.9	32.7	-	56.0	73.9	17.9	Floor noise
Vert.	9608.000	PK	42.5	38.5	8.8	33.3	-	56.6	73.9	17.3	Floor noise
Vert.	2336.250	AV	40.2	27.8	5.4	32.8	4.8	45.4	53.9	8.5	*2)
Vert.	2390.000	AV	34.5	27.7	5.4	32.8	4.8	39.6	53.9	14.3	*1)
Vert.	4804.000	AV	32.4	31.6	7.5	31.8	-	39.7	53.9	14.2	Floor noise
Vert.	7206.000	AV	31.8	36.0	8.9	32.7	-	44.0	53.9	9.9	Floor noise
Vert.	9608.000	AV	31.3	38.5	8.8	33.3	-	45.3	53.9	8.6	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz 20log (3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

*2) Noise synchronized with duty of carrier frequency.

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	95.6	27.7	5.4	32.7	96.0	-	-	Carrier
Hori.	2400.000	PK	68.4	27.7	5.4	32.7	68.7	76.0	7.3	
Vert.	2402.000	PK	95.6	27.7	5.4	32.7	95.9	-	-	Carrier
Vert.	2400.000	PK	63.1	27.7	5.4	32.7	63.4	75.9	12.5	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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Ise EMC Lab.

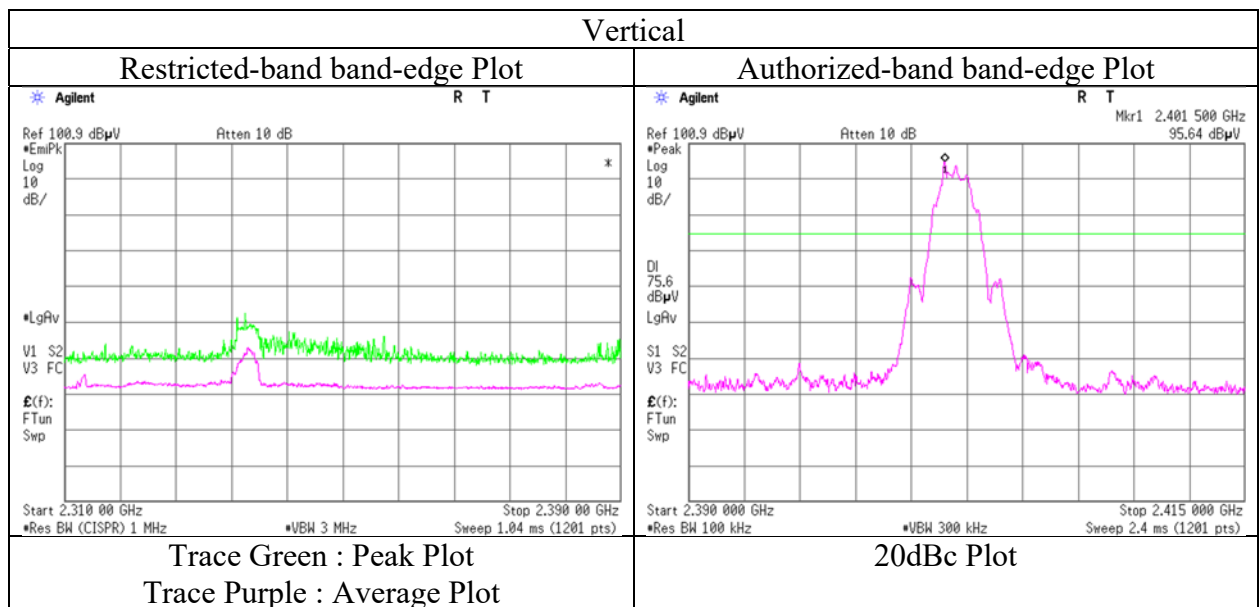
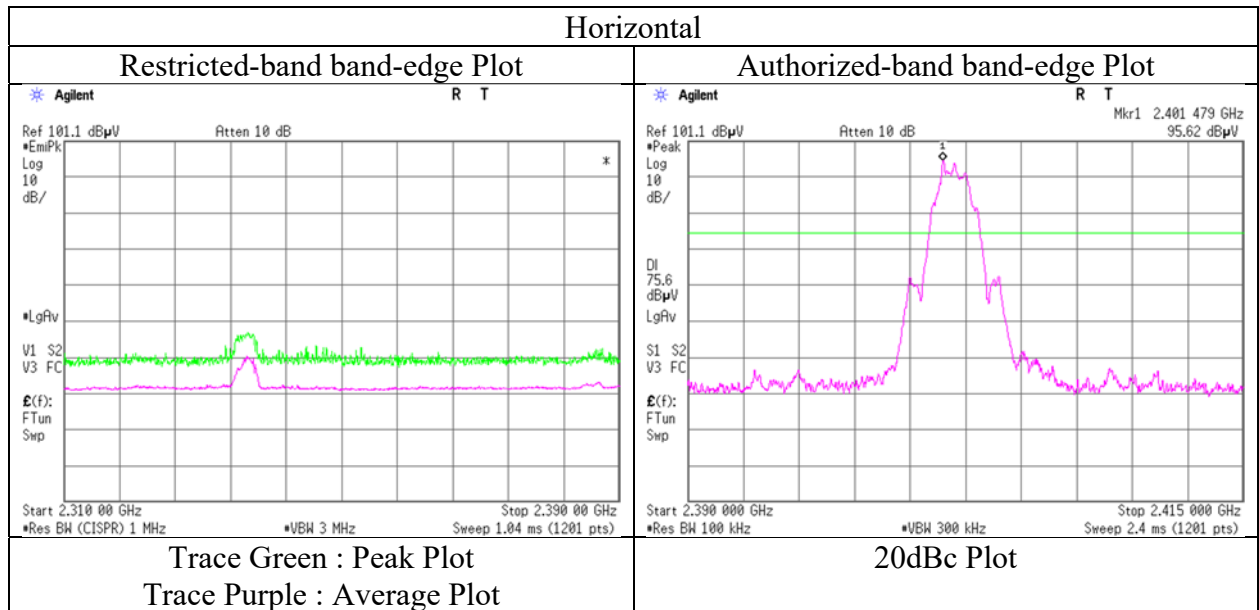
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Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna BT1)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	January 6, 2020
Temperature / Humidity	23 deg. C / 32 % RH
Engineer	Tomohisa Nakagawa (1 GHz -10 GHz)
Mode	Tx BT LE 2M-PHY 2402 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

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Radiated Spurious Emission (IFA Antenna BT1)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 6, 2020	January 8, 2020	January 12, 2020
Temperature / Humidity	23 deg. C / 32 % RH	23 deg. C / 35 % RH	22 deg. C / 33 % RH
Engineer	Tomohisa Nakagawa (1 GHz -10 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 2M-PHY 2440 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.381	QP	24.4	8.0	7.5	32.2	-	7.8	40.0	32.2	
Hori.	62.963	QP	23.5	7.3	7.6	32.2	-	6.1	40.0	33.9	
Hori.	170.298	QP	22.5	15.8	8.8	32.1	-	15.1	43.5	28.4	
Hori.	356.747	QP	22.3	15.0	10.4	31.9	-	15.8	46.0	30.2	
Hori.	560.837	QP	22.0	18.1	11.7	32.0	-	19.8	46.0	26.2	
Hori.	959.754	QP	32.9	22.2	13.8	30.6	-	38.2	46.0	7.8	
Hori.	2371.500	PK	50.9	27.7	5.4	32.8	-	51.2	73.9	22.7	
Hori.	4880.000	PK	41.3	31.5	7.5	31.8	-	48.6	73.9	25.4	Floor noise
Hori.	7320.000	PK	41.7	36.2	8.9	32.7	-	54.1	73.9	19.8	Floor noise
Hori.	9760.000	PK	42.6	38.8	9.4	33.4	-	57.4	73.9	16.5	Floor noise
Hori.	2371.500	AV	40.1	27.7	5.4	32.8	4.8	45.2	53.9	8.7	*1)
Hori.	4880.000	AV	31.1	31.5	7.5	31.8	-	38.4	53.9	15.5	Floor noise
Hori.	7320.000	AV	32.7	36.2	8.9	32.7	-	45.1	53.9	8.8	Floor noise
Hori.	9760.000	AV	32.7	38.8	9.4	33.4	-	47.5	53.9	6.4	Floor noise
Vert.	59.381	QP	29.1	8.0	7.5	32.2	-	12.5	40.0	27.5	
Vert.	62.963	QP	25.3	7.3	7.6	32.2	-	7.9	40.0	32.1	
Vert.	170.298	QP	22.6	15.8	8.8	32.1	-	15.2	43.5	28.3	
Vert.	356.747	QP	22.3	15.0	10.4	31.9	-	15.8	46.0	30.2	
Vert.	560.837	QP	22.1	18.1	11.7	32.0	-	19.9	46.0	26.1	
Vert.	959.754	QP	27.7	22.2	13.8	30.6	-	33.0	46.0	13.0	
Vert.	2371.500	PK	51.3	27.7	5.4	32.8	-	51.7	73.9	22.3	
Vert.	4880.000	PK	40.6	31.5	7.5	31.8	-	47.9	73.9	26.1	Floor noise
Vert.	7320.000	PK	41.9	36.2	8.9	32.7	-	54.3	73.9	19.6	Floor noise
Vert.	9760.000	PK	42.2	38.8	9.4	33.4	-	57.0	73.9	16.9	Floor noise
Vert.	2371.500	AV	40.1	27.7	5.4	32.8	4.8	45.2	53.9	8.7	*1)
Vert.	4880.000	AV	31.1	31.5	7.5	31.8	-	38.3	53.9	15.6	Floor noise
Vert.	7320.000	AV	32.4	36.2	8.9	32.7	-	44.8	53.9	9.1	Floor noise
Vert.	9760.000	AV	32.4	38.8	9.4	33.4	-	47.2	53.9	6.7	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission (IFA Antenna BT1)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 6, 2020	January 8, 2020	January 12, 2020
Temperature / Humidity	23 deg. C / 32 % RH	23 deg. C / 35 % RH	22 deg. C / 33 % RH
Engineer	Tomohisa Nakagawa (1 GHz -10 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 2M-PHY 2480 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.222	QP	24.5	8.1	7.5	32.2	-	7.9	40.0	32.1	
Hori.	62.803	QP	23.3	7.3	7.6	32.2	-	6.0	40.0	34.0	
Hori.	177.530	QP	22.5	16.2	8.9	32.1	-	15.5	43.5	28.0	
Hori.	326.356	QP	22.4	14.4	10.2	31.9	-	15.0	46.0	31.0	
Hori.	564.623	QP	22.1	18.2	11.7	32.0	-	20.0	46.0	26.0	
Hori.	959.860	QP	32.7	22.2	13.8	30.6	-	38.0	46.0	8.0	
Hori.	2483.500	PK	51.9	27.5	5.5	32.7	-	52.1	73.9	21.8	
Hori.	2552.000	PK	49.8	27.5	5.5	32.7	-	50.2	73.9	23.7	
Hori.	4960.000	PK	40.2	31.6	7.5	31.8	-	47.5	73.9	26.4	Floor noise
Hori.	7440.000	PK	42.7	36.3	8.9	32.7	-	55.2	73.9	18.7	Floor noise
Hori.	9920.000	PK	41.9	38.9	9.4	33.4	-	56.7	73.9	17.2	Floor noise
Hori.	2483.500	AV	32.9	27.5	5.5	32.7	4.8	37.9	53.9	16.0	*1)
Hori.	2552.000	AV	33.0	27.5	5.5	32.7	4.8	38.1	53.9	15.8	*2)
Hori.	4960.000	AV	30.3	31.6	7.5	31.8	-	37.6	53.9	16.3	Floor noise
Hori.	7440.000	AV	32.7	36.3	8.9	32.7	-	45.2	53.9	8.7	Floor noise
Hori.	9920.000	AV	31.6	38.9	9.4	33.4	-	46.5	53.9	7.4	Floor noise
Vert.	59.222	QP	29.1	8.1	7.5	32.2	-	12.5	40.0	27.5	
Vert.	62.803	QP	25.3	7.3	7.6	32.2	-	8.0	40.0	32.0	
Vert.	177.530	QP	22.6	16.2	8.9	32.1	-	15.6	43.5	27.9	
Vert.	326.356	QP	22.3	14.4	10.2	31.9	-	14.9	46.0	31.1	
Vert.	564.623	QP	22.3	18.2	11.7	32.0	-	20.2	46.0	25.8	
Vert.	959.860	QP	27.0	22.2	13.8	30.6	-	32.3	46.0	13.7	
Vert.	2483.500	PK	52.2	27.5	5.5	32.7	-	52.4	73.9	21.5	
Vert.	2552.000	PK	51.3	27.5	5.5	32.7	-	51.7	73.9	22.2	
Vert.	4960.000	PK	40.5	31.6	7.5	31.8	-	47.8	73.9	26.1	Floor noise
Vert.	7440.000	PK	42.7	36.3	8.9	32.7	-	55.2	73.9	18.7	Floor noise
Vert.	9920.000	PK	41.4	38.9	9.4	33.4	-	56.3	73.9	17.6	Floor noise
Vert.	2483.500	AV	32.9	27.5	5.5	32.7	4.8	37.9	53.9	16.0	*1)
Vert.	2552.000	AV	33.6	27.5	5.5	32.7	4.8	38.8	53.9	15.1	*2)
Vert.	4960.000	AV	29.8	31.6	7.5	31.8	-	37.1	53.9	16.8	Floor noise
Vert.	7440.000	AV	32.5	36.3	8.9	32.7	-	44.9	53.9	9.0	Floor noise
Vert.	9920.000	AV	31.8	38.9	9.4	33.4	-	46.7	53.9	7.2	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

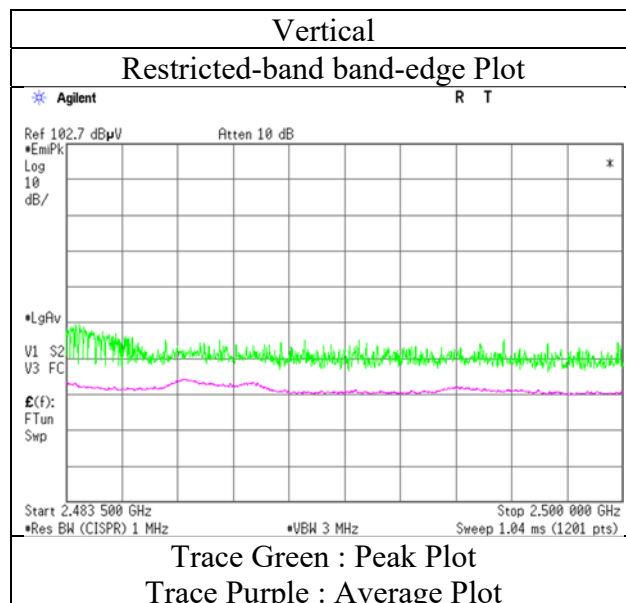
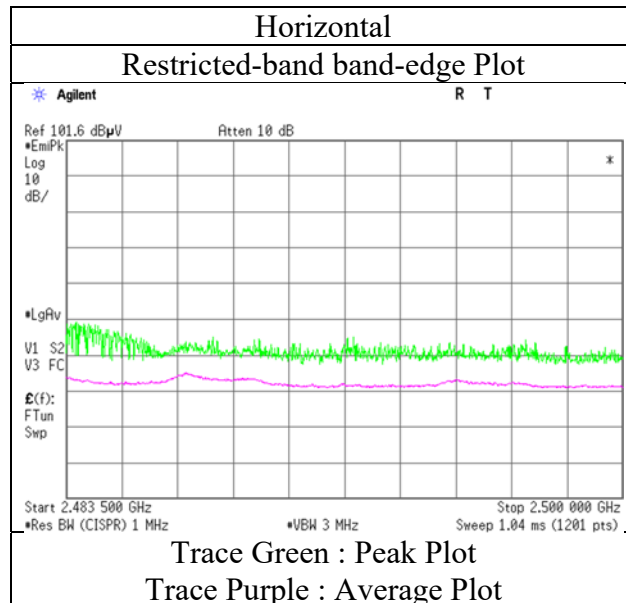
Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

*2) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna BT1)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	January 6, 2020
Temperature / Humidity	23 deg. C / 32 % RH
Engineer	Tomohisa Nakagawa (1 GHz -10 GHz)
Mode	Tx BT LE 2M-PHY 2480 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

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Radiated Spurious Emission (IFA Antenna BT2)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 6, 2020	January 8, 2020	January 12, 2020
Temperature / Humidity	23 deg. C / 32 % RH	23 deg. C / 35 % RH	22 deg. C / 33 % RH
Engineer	Tomohisa Nakagawa (1 GHz -10 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 1M-PHY 2402 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.515	QP	24.2	8.0	7.5	32.2	-	7.6	40.0	32.5	
Hori.	64.019	QP	23.0	7.0	7.6	32.2	-	5.4	40.0	34.6	
Hori.	173.786	QP	22.4	16.0	8.9	32.1	-	15.2	43.5	28.4	
Hori.	361.205	QP	22.3	15.0	10.4	31.9	-	15.8	46.0	30.2	
Hori.	561.811	QP	21.8	18.2	11.7	32.0	-	19.7	46.0	26.3	
Hori.	959.821	QP	33.2	22.2	13.8	30.6	-	38.5	46.0	7.5	
Hori.	2339.750	PK	45.6	27.8	5.4	32.8	-	46.0	73.9	27.9	
Hori.	2390.000	PK	46.5	27.7	5.4	32.8	-	46.8	73.9	27.1	
Hori.	4804.000	PK	41.7	31.6	7.5	31.8	-	49.0	73.9	24.9	Floor noise
Hori.	7206.000	PK	42.8	36.0	8.9	32.7	-	55.0	73.9	18.9	Floor noise
Hori.	9608.000	PK	42.0	38.5	9.4	33.3	-	56.6	73.9	17.3	Floor noise
Hori.	2339.750	AV	32.8	27.8	5.4	32.8	2.0	35.2	53.9	18.7	*2)
Hori.	2390.000	AV	31.6	27.7	5.4	32.8	2.0	34.0	53.9	19.9	*1)
Hori.	4804.000	AV	30.5	31.6	7.5	31.8	-	37.8	53.9	16.1	Floor noise
Hori.	7206.000	AV	31.5	36.0	8.9	32.7	-	43.7	53.9	10.2	Floor noise
Hori.	9608.000	AV	31.2	38.5	9.4	33.3	-	45.8	53.9	8.1	Floor noise
Vert.	59.515	QP	28.8	8.0	7.5	32.2	-	12.2	40.0	27.9	
Vert.	64.019	QP	25.6	7.0	7.6	32.2	-	8.0	40.0	32.0	
Vert.	173.786	QP	22.6	16.0	8.9	32.1	-	15.4	43.5	28.2	
Vert.	361.205	QP	22.3	15.0	10.4	31.9	-	15.8	46.0	30.2	
Vert.	561.811	QP	22.2	18.2	11.7	32.0	-	20.1	46.0	25.9	
Vert.	959.821	QP	28.6	22.2	13.8	30.6	-	33.9	46.0	12.1	
Vert.	2339.750	PK	50.5	27.8	5.4	32.8	-	50.9	73.9	23.0	
Vert.	2390.000	PK	48.0	27.7	5.4	32.8	-	48.4	73.9	25.5	
Vert.	4804.000	PK	41.3	31.6	7.5	31.8	-	48.5	73.9	25.4	Floor noise
Vert.	7206.000	PK	42.6	36.0	8.9	32.7	-	54.8	73.9	19.1	Floor noise
Vert.	9608.000	PK	42.5	38.5	9.4	33.3	-	57.0	73.9	16.9	Floor noise
Vert.	2339.750	AV	38.7	27.8	5.4	32.8	2.0	41.1	53.9	12.8	*2)
Vert.	2390.000	AV	34.1	27.7	5.4	32.8	2.0	36.5	53.9	17.4	*1)
Vert.	4804.000	AV	30.8	31.6	7.5	31.8	-	38.1	53.9	15.8	Floor noise
Vert.	7206.000	AV	31.8	36.0	8.9	32.7	-	44.1	53.9	9.9	Floor noise
Vert.	9608.000	AV	31.2	38.5	9.4	33.3	-	45.8	53.9	8.1	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

*1) Not Out of Band emission(Leakage Power)

*2) Noise synchronized with duty of carrier frequency.

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	95.1	27.7	5.4	32.7	95.4	-	-	Carrier
Hori.	2400.000	PK	39.4	27.7	5.4	32.7	39.8	75.4	35.6	
Vert.	2402.000	PK	97.2	27.7	5.4	32.7	97.5	-	-	Carrier
Vert.	2400.000	PK	39.9	27.7	5.4	32.7	40.3	77.5	37.2	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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Ise EMC Lab.

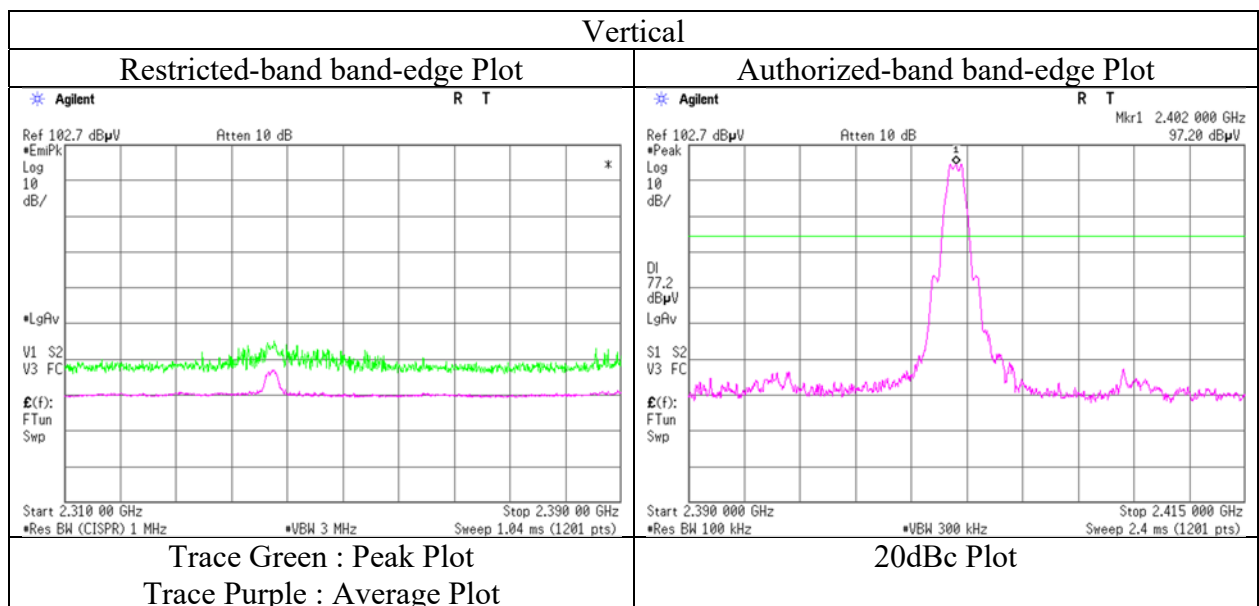
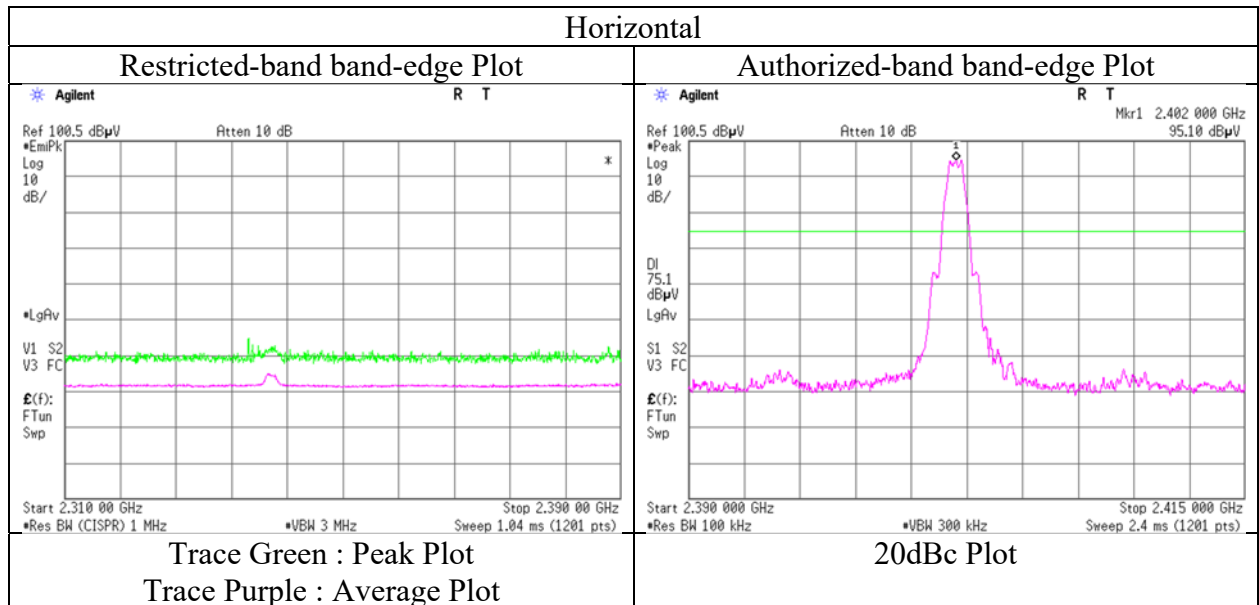
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Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna BT2)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	January 6, 2020
Temperature / Humidity	23 deg. C / 32 % RH
Engineer	Tomohisa Nakagawa (1 GHz -10 GHz)
Mode	Tx BT LE 1M-PHY 2402 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Radiated Spurious Emission (IFA Antenna BT2)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 6, 2020	January 8, 2020	January 12, 2020
Temperature / Humidity	23 deg. C / 32 % RH	23 deg. C / 35 % RH	22 deg. C / 33 % RH
Engineer	Tomohisa Nakagawa (1 GHz -10 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 1M-PHY 2440 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	49.549	QP	23.3	11.4	7.4	32.2	-	9.8	40.0	30.2	
Hori.	59.756	QP	24.1	7.9	7.5	32.2	-	7.4	40.0	32.6	
Hori.	160.191	QP	22.5	15.5	8.8	32.1	-	14.7	43.5	28.8	
Hori.	350.378	QP	22.3	15.0	10.3	31.9	-	15.7	46.0	30.3	
Hori.	561.847	QP	21.8	18.2	11.7	32.0	-	19.7	46.0	26.3	
Hori.	959.851	QP	32.8	22.2	13.8	30.6	-	38.1	46.0	7.9	
Hori.	2374.000	PK	46.1	27.7	5.4	32.8	-	46.5	73.9	27.4	
Hori.	4880.000	PK	41.1	31.5	7.5	31.8	-	48.3	73.9	25.6	Floor noise
Hori.	7320.000	PK	42.3	36.2	8.9	32.7	-	54.7	73.9	19.3	Floor noise
Hori.	9760.000	PK	42.5	38.8	9.4	33.4	-	57.3	73.9	16.6	Floor noise
Hori.	2374.000	AV	36.1	27.7	5.4	32.8	2.0	38.4	53.9	15.5	*1)
Hori.	4880.000	AV	32.0	31.5	7.5	31.8	-	39.3	53.9	14.6	Floor noise
Hori.	7320.000	AV	32.6	36.2	8.9	32.7	-	45.0	53.9	8.9	Floor noise
Hori.	9760.000	AV	32.6	38.8	9.4	33.4	-	47.4	53.9	6.5	Floor noise
Vert.	49.549	QP	25.6	11.4	7.4	32.2	-	12.1	40.0	27.9	
Vert.	59.756	QP	29.2	7.9	7.5	32.2	-	12.5	40.0	27.5	
Vert.	160.191	QP	22.6	15.5	8.8	32.1	-	14.8	43.5	28.7	
Vert.	350.378	QP	22.4	15.0	10.3	31.9	-	15.8	46.0	30.2	
Vert.	561.847	QP	22.1	18.2	11.7	32.0	-	20.0	46.0	26.0	
Vert.	959.851	QP	28.9	22.2	13.8	30.6	-	34.2	46.0	11.8	
Vert.	2374.000	PK	47.4	27.7	5.4	32.8	-	47.7	73.9	26.2	
Vert.	4880.000	PK	41.4	31.5	7.5	31.8	-	48.6	73.9	25.3	Floor noise
Vert.	7320.000	PK	42.1	36.2	8.9	32.7	-	54.4	73.9	19.5	Floor noise
Vert.	9760.000	PK	42.0	38.8	9.4	33.4	-	56.8	73.9	17.1	Floor noise
Vert.	2374.000	AV	39.1	27.7	5.4	32.8	2.0	41.5	53.9	12.4	*1)
Vert.	4880.000	AV	32.8	31.5	7.5	31.8	-	40.0	53.9	13.9	Floor noise
Vert.	7320.000	AV	32.5	36.2	8.9	32.7	-	44.9	53.9	9.0	Floor noise
Vert.	9760.000	AV	32.6	38.8	9.4	33.4	-	47.4	53.9	6.5	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$

10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission (IFA Antenna BT2)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 6, 2020	January 8, 2020	January 12, 2020
Temperature / Humidity	23 deg. C / 32 % RH	23 deg. C / 35 % RH	22 deg. C / 33 % RH
Engineer	Tomohisa Nakagawa (1 GHz -10 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 1M-PHY 2480 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	49.386	QP	23.3	11.4	7.4	32.2	-	9.9	40.0	30.1	
Hori.	59.586	QP	24.3	8.0	7.5	32.2	-	7.6	40.0	32.4	
Hori.	162.796	QP	22.6	15.5	8.8	32.1	-	14.8	43.5	28.7	
Hori.	336.681	QP	22.3	14.8	10.2	31.9	-	15.3	46.0	30.7	
Hori.	587.814	QP	22.0	18.9	11.9	32.0	-	20.8	46.0	25.2	
Hori.	959.889	QP	33.0	22.2	13.8	30.6	-	38.3	46.0	7.7	
Hori.	2483.500	PK	46.0	27.5	5.5	32.7	-	46.2	73.9	27.7	
Hori.	2549.872	PK	46.6	27.5	5.5	32.7	-	46.9	73.9	27.0	
Hori.	4960.000	PK	40.4	31.6	7.5	31.8	-	47.7	73.9	26.2	Floor noise
Hori.	7440.000	PK	42.2	36.3	8.9	32.7	-	54.7	73.9	19.2	Floor noise
Hori.	9920.000	PK	42.0	38.9	9.4	33.4	-	56.9	73.9	17.0	Floor noise
Hori.	2483.500	AV	33.0	27.5	5.5	32.7	2.0	35.2	53.9	18.7	*1)
Hori.	2549.872	AV	33.2	27.5	5.5	32.7	2.0	35.6	53.9	18.3	*2)
Hori.	4960.000	AV	30.2	31.6	7.5	31.8	-	37.5	53.9	16.5	Floor noise
Hori.	7440.000	AV	32.2	36.3	8.9	32.7	-	44.7	53.9	9.2	Floor noise
Hori.	9920.000	AV	31.7	38.9	9.4	33.4	-	46.5	53.9	7.4	Floor noise
Vert.	49.386	QP	25.5	11.4	7.4	32.2	-	12.1	40.0	27.9	
Vert.	59.586	QP	28.7	8.0	7.5	32.2	-	12.0	40.0	28.0	
Vert.	162.796	QP	22.7	15.5	8.8	32.1	-	14.9	43.5	28.6	
Vert.	336.681	QP	22.4	14.8	10.2	31.9	-	15.4	46.0	30.6	
Vert.	587.814	QP	22.1	18.9	11.9	32.0	-	20.9	46.0	25.1	
Vert.	959.889	QP	29.0	22.2	13.8	30.6	-	34.3	46.0	11.7	
Vert.	2483.500	PK	47.8	27.5	5.5	32.7	-	48.1	73.9	25.8	
Vert.	2549.872	PK	47.2	27.5	5.5	32.7	-	47.6	73.9	26.3	
Vert.	4960.000	PK	42.2	31.6	7.5	31.8	-	49.5	73.9	24.5	Floor noise
Vert.	7440.000	PK	42.6	36.3	8.9	32.7	-	55.1	73.9	18.8	Floor noise
Vert.	9920.000	PK	42.7	38.9	9.4	33.4	-	57.5	73.9	16.4	Floor noise
Vert.	2483.500	AV	35.8	27.5	5.5	32.7	2.0	38.0	53.9	15.9	*1)
Vert.	2549.872	AV	38.1	27.5	5.5	32.7	2.0	40.5	53.9	13.4	*2)
Vert.	4960.000	AV	30.7	31.6	7.5	31.8	-	38.0	53.9	15.9	Floor noise
Vert.	7440.000	AV	32.1	36.3	8.9	32.7	-	44.6	53.9	9.3	Floor noise
Vert.	9920.000	AV	31.6	38.9	9.4	33.4	-	46.4	53.9	7.5	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

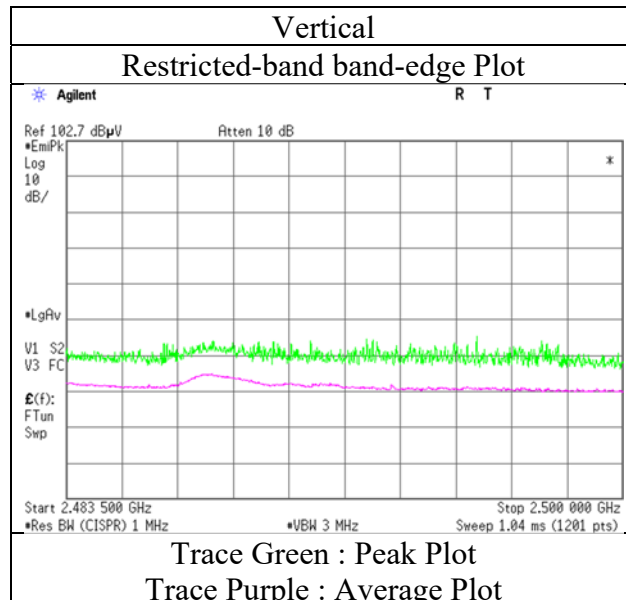
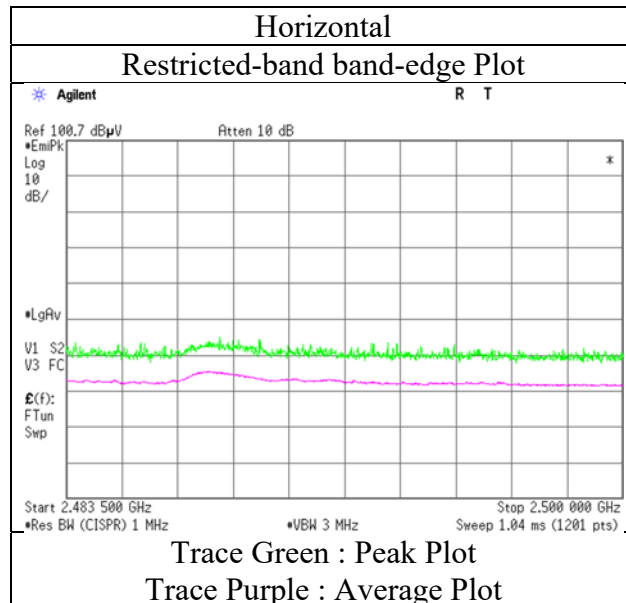
Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

*2) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission
(Reference Plot for band-edge)
(IFA Antenna BT2)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 6, 2020
Temperature / Humidity 23 deg. C / 32 % RH
Engineer Tomohisa Nakagawa
(1 GHz -10 GHz)
Mode Tx BT LE 1M-PHY 2480 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

Ise EMC Lab.

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Radiated Spurious Emission (IFA Antenna BT2)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 6, 2020 No.3 January 8, 2020 No.3 January 12, 2020
Temperature / Humidity 23 deg. C / 32 % RH 23 deg. C / 35 % RH 22 deg. C / 33 % RH
Engineer Tomohisa Nakagawa Tomohisa Nakagawa Koji Yamamoto
(1 GHz -10 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 2M-PHY 2402 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.367	QP	24.2	8.0	7.5	32.2	-	7.6	40.0	32.4	
Hori.	62.625	QP	23.5	7.3	7.6	32.2	-	6.2	40.0	33.8	
Hori.	167.041	QP	22.6	15.7	8.8	32.1	-	15.1	43.5	28.4	
Hori.	330.524	QP	22.2	14.5	10.2	31.9	-	15.0	46.0	31.0	
Hori.	573.310	QP	22.2	18.5	11.8	32.0	-	20.5	46.0	25.6	
Hori.	959.801	QP	32.5	22.2	13.8	30.6	-	37.8	46.0	8.2	
Hori.	2337.500	PK	47.3	27.8	5.4	32.8	-	47.7	73.9	26.2	
Hori.	2390.000	PK	45.1	27.7	5.4	32.8	-	45.5	73.9	28.5	
Hori.	4804.000	PK	44.9	31.6	7.5	31.8	-	52.2	73.9	21.7	Floor noise
Hori.	7206.000	PK	41.8	36.0	8.9	32.7	-	54.0	73.9	19.9	Floor noise
Hori.	9608.000	PK	41.9	38.5	9.4	33.3	-	56.4	73.9	17.5	Floor noise
Hori.	2337.500	AV	32.6	27.8	5.4	32.8	4.8	37.8	53.9	16.1	*2)
Hori.	2390.000	AV	31.4	27.7	5.4	32.8	4.8	36.5	53.9	17.4	*1)
Hori.	4804.000	AV	30.4	31.6	7.5	31.8	-	37.6	53.9	16.3	Floor noise
Hori.	7206.000	AV	31.5	36.0	8.9	32.7	-	43.7	53.9	10.2	Floor noise
Hori.	9608.000	AV	31.4	38.5	9.4	33.3	-	46.0	53.9	7.9	Floor noise
Vert.	59.367	QP	29.1	8.0	7.5	32.2	-	12.5	40.0	27.5	
Vert.	62.625	QP	25.5	7.3	7.6	32.2	-	8.2	40.0	31.8	
Vert.	167.041	QP	22.7	15.7	8.8	32.1	-	15.2	43.5	28.3	
Vert.	330.524	QP	22.3	14.5	10.2	31.9	-	15.1	46.0	30.9	
Vert.	573.310	QP	21.9	18.5	11.8	32.0	-	20.2	46.0	25.9	
Vert.	959.801	QP	29.1	22.2	13.8	30.6	-	34.4	46.0	11.6	
Vert.	2337.500	PK	52.3	27.8	5.4	32.8	-	52.7	73.9	21.2	
Vert.	2390.000	PK	48.7	27.7	5.4	32.8	-	49.1	73.9	24.8	
Vert.	4804.000	PK	41.4	31.6	7.5	31.8	-	48.7	73.9	25.2	Floor noise
Vert.	7206.000	PK	42.5	36.0	8.9	32.7	-	54.7	73.9	19.2	Floor noise
Vert.	9608.000	PK	42.9	38.5	9.4	33.3	-	57.5	73.9	16.4	Floor noise
Vert.	2337.500	AV	40.7	27.8	5.4	32.8	4.8	45.9	53.9	8.0	*2)
Vert.	2390.000	AV	35.2	27.7	5.4	32.8	4.8	40.3	53.9	13.6	*1)
Vert.	4804.000	AV	30.6	31.6	7.5	31.8	-	37.9	53.9	16.0	Floor noise
Vert.	7206.000	AV	32.0	36.0	8.9	32.7	-	44.2	53.9	9.7	Floor noise
Vert.	9608.000	AV	31.4	38.5	9.4	33.3	-	46.0	53.9	7.9	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

*2) Noise synchronized with duty of carrier frequency.

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	93.4	27.7	5.4	32.7	93.8	-	-	Carrier
Hori.	2400.000	PK	61.5	27.7	5.4	32.7	61.9	73.8	11.9	
Vert.	2402.000	PK	97.9	27.7	5.4	32.7	98.2	-	-	Carrier
Vert.	2400.000	PK	65.8	27.7	5.4	32.7	66.2	78.2	12.1	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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Ise EMC Lab.

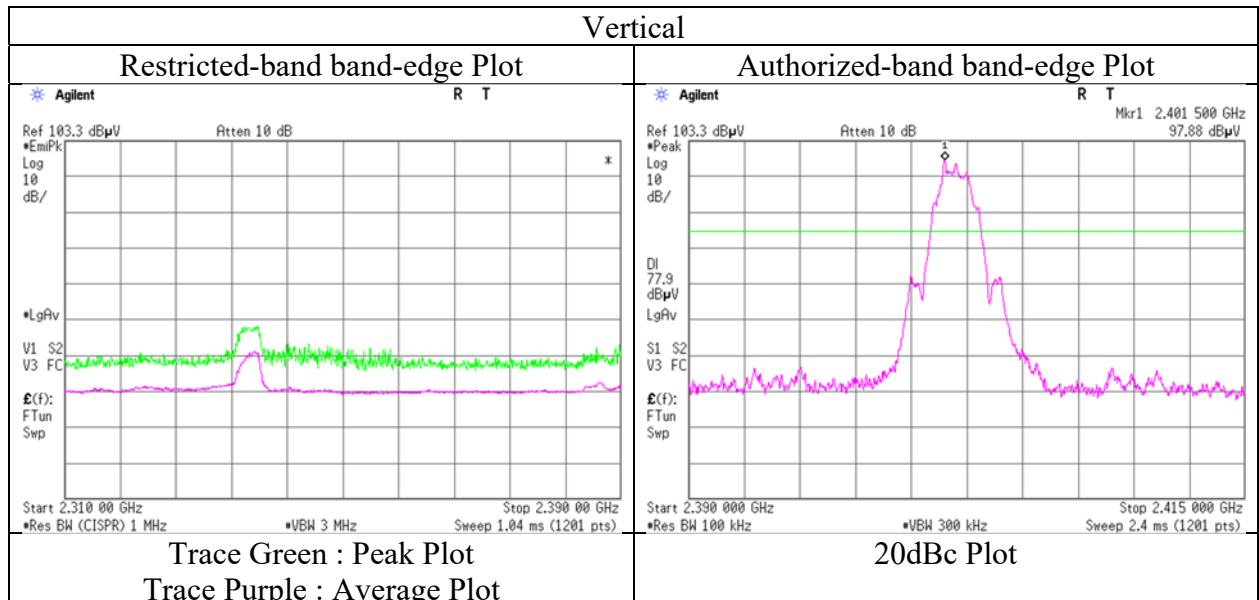
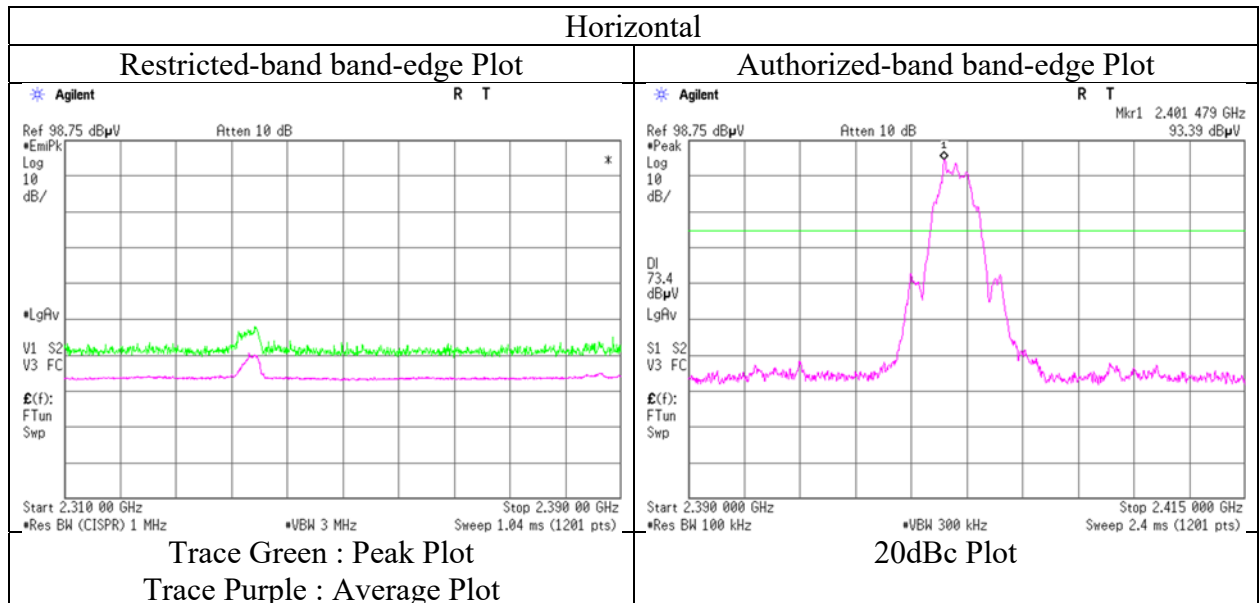
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Telephone : +81 596 24 8999

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Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna BT2)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	January 6, 2020
Temperature / Humidity	23 deg. C / 32 % RH
Engineer	Tomohisa Nakagawa (1 GHz -10 GHz)
Mode	Tx BT LE 2M-PHY 2402 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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Radiated Spurious Emission (IFA Antenna BT2)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 6, 2020	January 8, 2020	January 12, 2020
Temperature / Humidity	23 deg. C / 32 % RH	23 deg. C / 35 % RH	22 deg. C / 33 % RH
Engineer	Tomohisa Nakagawa (1 GHz -10 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 2M-PHY 2440 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	49.211	QP	23.5	11.5	7.4	32.2	-	10.2	40.0	29.9	
Hori.	59.752	QP	24.3	7.9	7.5	32.2	-	7.6	40.0	32.4	
Hori.	181.308	QP	22.6	16.4	8.9	32.1	-	15.9	43.5	27.6	
Hori.	344.711	QP	22.5	15.0	10.3	31.9	-	15.8	46.0	30.2	
Hori.	566.422	QP	22.1	18.3	11.7	32.0	-	20.1	46.0	25.9	
Hori.	959.763	QP	32.7	22.2	13.8	30.6	-	38.0	46.0	8.0	
Hori.	2371.501	PK	48.7	27.7	5.4	32.8	-	49.0	73.9	24.9	
Hori.	4880.000	PK	40.3	31.5	7.5	31.8	-	47.6	73.9	26.3	Floor noise
Hori.	7320.000	PK	43.0	36.2	8.9	32.7	-	55.4	73.9	18.5	Floor noise
Hori.	9760.000	PK	42.4	38.8	9.4	33.4	-	57.2	73.9	16.7	Floor noise
Hori.	2371.501	AV	37.5	27.7	5.4	32.8	4.8	42.7	53.9	11.3	*1)
Hori.	4880.000	AV	32.4	31.5	7.5	31.8	-	39.6	53.9	14.3	Floor noise
Hori.	7320.000	AV	32.6	36.2	8.9	32.7	-	45.0	53.9	8.9	Floor noise
Hori.	9760.000	AV	32.5	38.8	9.4	33.4	-	47.3	53.9	6.6	Floor noise
Vert.	49.211	QP	25.8	11.5	7.4	32.2	-	12.5	40.0	27.6	
Vert.	59.752	QP	28.9	7.9	7.5	32.2	-	12.2	40.0	27.8	
Vert.	181.308	QP	22.4	16.4	8.9	32.1	-	15.7	43.5	27.8	
Vert.	344.711	QP	22.2	15.0	10.3	31.9	-	15.5	46.0	30.5	
Vert.	566.422	QP	22.1	18.3	11.7	32.0	-	20.1	46.0	25.9	
Vert.	959.763	QP	27.8	22.2	13.8	30.6	-	33.1	46.0	12.9	
Vert.	2371.501	PK	51.8	27.7	5.4	32.8	-	52.2	73.9	21.7	
Vert.	4880.000	PK	41.7	31.5	7.5	31.8	-	48.9	73.9	25.0	Floor noise
Vert.	7320.000	PK	41.6	36.2	8.9	32.7	-	54.0	73.9	19.9	Floor noise
Vert.	9760.000	PK	41.7	38.8	9.4	33.4	-	56.5	73.9	17.4	Floor noise
Vert.	2371.501	AV	40.8	27.7	5.4	32.8	4.8	45.9	53.9	8.0	*1)
Vert.	4880.000	AV	32.7	31.5	7.5	31.8	-	39.9	53.9	14.0	Floor noise
Vert.	7320.000	AV	32.5	36.2	8.9	32.7	-	44.9	53.9	9.0	Floor noise
Vert.	9760.000	AV	32.7	38.8	9.4	33.4	-	47.5	53.9	6.4	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission (IFA Antenna BT2)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 6, 2020	January 8, 2020	January 12, 2020
Temperature / Humidity	23 deg. C / 32 % RH	23 deg. C / 35 % RH	22 deg. C / 33 % RH
Engineer	Tomohisa Nakagawa (1 GHz -10 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 2M-PHY 2480 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	49.084	QP	23.6	11.5	7.4	32.2	-	10.3	40.0	29.7	
Hori.	59.424	QP	24.2	8.0	7.5	32.2	-	7.6	40.0	32.4	
Hori.	154.507	QP	22.6	15.3	8.7	32.1	-	14.5	43.5	29.0	
Hori.	347.958	QP	22.3	15.0	10.3	31.9	-	15.7	46.0	30.3	
Hori.	548.641	QP	22.1	17.8	11.6	32.0	-	19.6	46.0	26.4	
Hori.	959.798	QP	32.1	22.2	13.8	30.6	-	37.4	46.0	8.6	
Hori.	2483.500	PK	56.5	27.5	5.5	32.7	-	56.7	73.9	17.2	
Hori.	2552.177	PK	50.3	27.5	5.5	32.7	-	50.7	73.9	23.3	
Hori.	4960.000	PK	41.3	31.6	7.5	31.8	-	48.6	73.9	25.3	Floor noise
Hori.	7440.000	PK	42.7	36.3	8.9	32.7	-	55.2	73.9	18.7	Floor noise
Hori.	9920.000	PK	41.9	38.9	9.4	33.4	-	56.8	73.9	17.1	Floor noise
Hori.	2483.500	AV	33.0	27.5	5.5	32.7	4.8	38.0	53.9	16.0	*1)
Hori.	2552.177	AV	33.1	27.5	5.5	32.7	4.8	38.2	53.9	15.7	*2)
Hori.	4960.000	AV	30.4	31.6	7.5	31.8	-	37.7	53.9	16.2	Floor noise
Hori.	7440.000	AV	32.3	36.3	8.9	32.7	-	44.8	53.9	9.1	Floor noise
Hori.	9920.000	AV	31.3	38.9	9.4	33.4	-	46.2	53.9	7.7	Floor noise
Vert.	49.084	QP	25.8	11.5	7.4	32.2	-	12.5	40.0	27.5	
Vert.	59.424	QP	29.1	8.0	7.5	32.2	-	12.5	40.0	27.5	
Vert.	154.507	QP	22.6	15.3	8.7	32.1	-	14.5	43.5	29.0	
Vert.	347.958	QP	22.2	15.0	10.3	31.9	-	15.6	46.0	30.4	
Vert.	548.641	QP	22.2	17.8	11.6	32.0	-	19.7	46.0	26.3	
Vert.	959.798	QP	28.1	22.2	13.8	30.6	-	33.4	46.0	12.6	
Vert.	2483.500	PK	57.3	27.5	5.5	32.7	-	57.5	73.9	16.4	
Vert.	2552.177	PK	50.9	27.5	5.5	32.7	-	51.3	73.9	22.7	
Vert.	4960.000	PK	40.7	31.6	7.5	31.8	-	48.0	73.9	25.9	Floor noise
Vert.	7440.000	PK	43.6	36.3	8.9	32.7	-	56.1	73.9	17.8	Floor noise
Vert.	9920.000	PK	41.6	38.9	9.4	33.4	-	56.5	73.9	17.4	Floor noise
Vert.	2483.500	AV	41.1	27.5	5.5	32.7	4.8	46.1	53.9	7.8	*1)
Vert.	2552.177	AV	38.4	27.5	5.5	32.7	4.8	43.5	53.9	10.4	*2)
Vert.	4960.000	AV	32.4	31.6	7.5	31.8	-	39.7	53.9	14.2	Floor noise
Vert.	7440.000	AV	34.4	36.3	8.9	32.7	-	46.9	53.9	7.0	Floor noise
Vert.	9920.000	AV	31.9	38.9	9.4	33.4	-	46.8	53.9	7.1	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

*2) Noise synchronized with duty of carrier frequency.

UL Japan, Inc.

Ise EMC Lab.

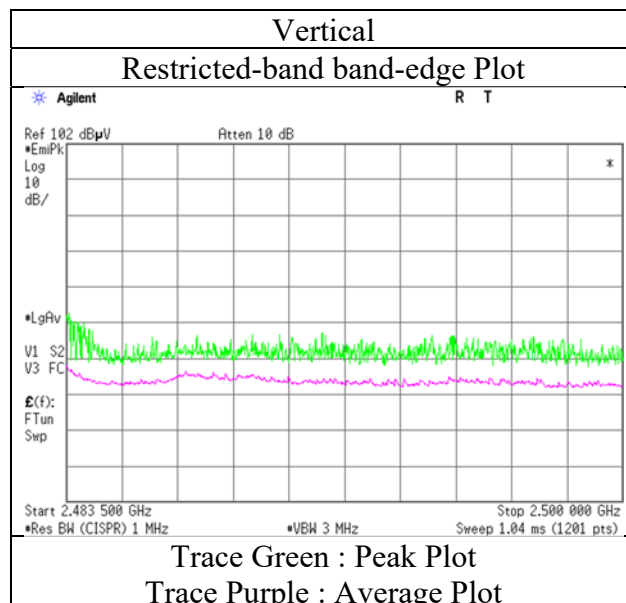
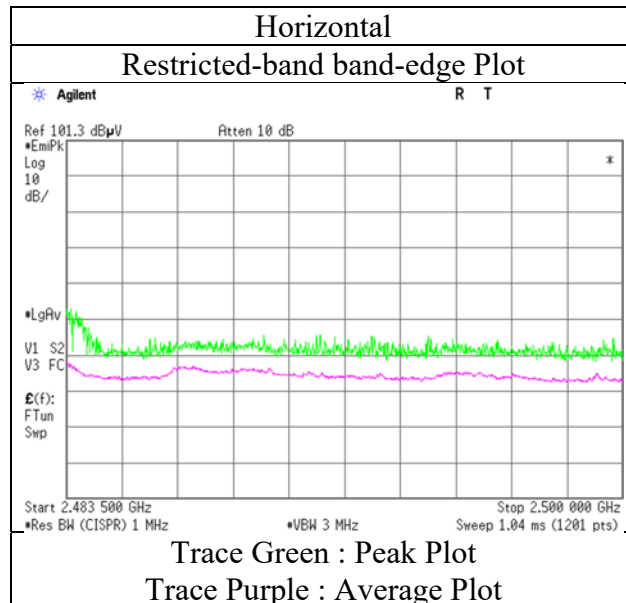
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Radiated Spurious Emission
(Reference Plot for band-edge)
(IFA Antenna BT2)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 6, 2020
Temperature / Humidity 23 deg. C / 32 % RH
Engineer Tomohisa Nakagawa
(1 GHz -10 GHz)
Mode Tx BT LE 2M-PHY 2480 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

Ise EMC Lab.

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Radiated Spurious Emission (IFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date January 20, 2020
Temperature / Humidity 22 deg. C / 30 % RH
Engineer Koji Yamamoto
(1 GHz -10 GHz)
Mode Tx BT LE 2M-PHY 2402 MHz + Tx 11ax-40 5755MHz (OFDM)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2336.662	PK	50.0	27.8	5.0	35.3	-	47.5	73.9	26.4	
Hori.	2390.000	PK	50.9	27.6	5.1	35.2	-	48.3	73.9	25.6	
Hori.	2336.662	AV	38.9	27.8	5.0	35.3	4.8	41.1	53.9	12.8	*2)
Hori.	2390.000	AV	38.4	27.6	5.1	35.2	4.8	40.6	53.9	13.3	*1)
Vert.	2336.662	PK	56.6	27.8	5.0	35.3	-	54.1	73.9	19.8	
Vert.	2390.000	PK	59.1	27.6	5.1	35.2	-	56.5	73.9	17.4	
Vert.	2336.662	AV	43.3	27.8	5.0	35.3	4.8	45.6	53.9	8.3	*2)
Vert.	2390.000	AV	42.5	27.6	5.1	35.2	4.8	44.7	53.9	9.2	*1)

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz $20\log(3.7\text{ m} / 3.0\text{ m}) = 1.83\text{ dB}$
10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

*1) Not Out of Band emission(Leakage Power)

*2) Noise synchronized with duty of carrier frequency.

20dBc Data Sheet

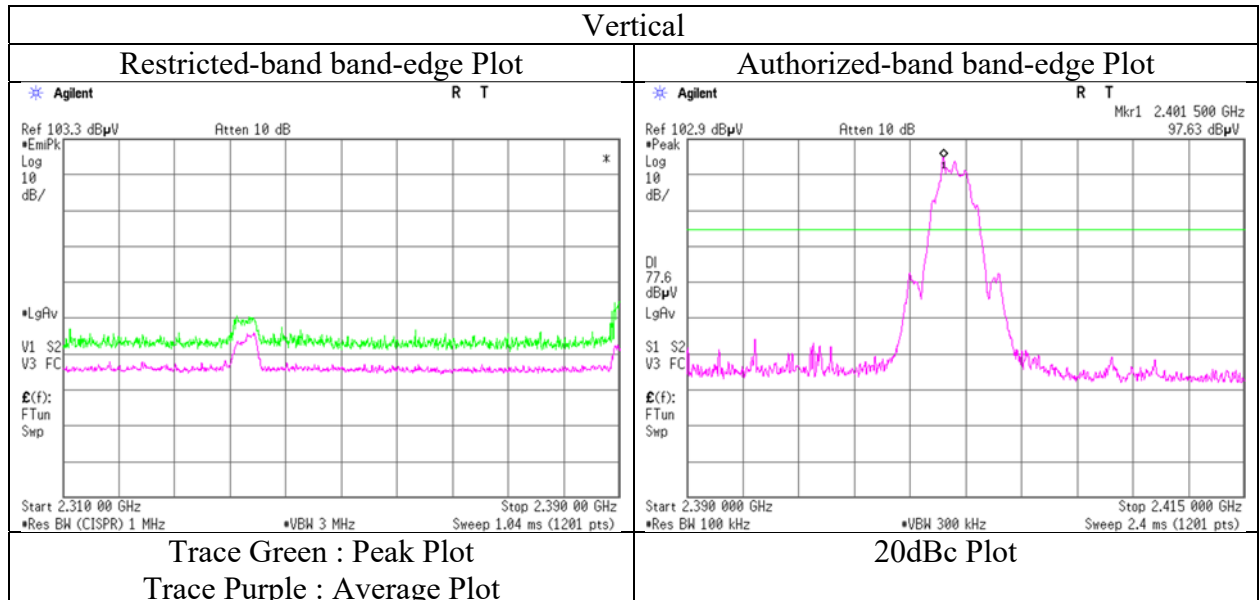
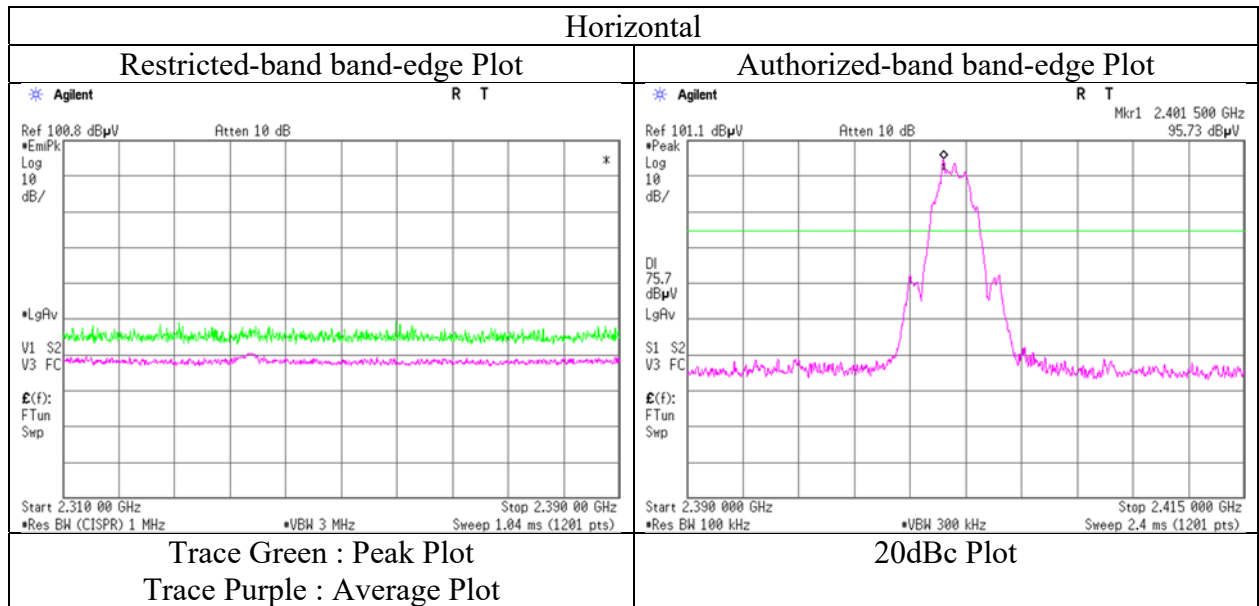
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	95.7	27.6	5.1	35.2	93.1	-	-	Carrier
Hori	2400.000	PK	63.3	27.6	5.1	35.2	60.7	73.1	12.5	
Vert	2402.000	PK	97.6	27.6	5.1	35.2	95.0	-	-	Carrier
Vert	2400.000	PK	66.2	27.6	5.1	35.2	63.5	75.0	11.5	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

Distance factor: 1 GHz - 10 GHz $20\log(3.7\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna BT1)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	January 20, 2020
Temperature / Humidity	22 deg. C / 30 % RH
Engineer	Koji Yamamoto
	(1 GHz -10 GHz)
Mode	Tx BT LE 2M-PHY 2402 MHz + Tx 11ax-40 5755MHz (OFDM)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission (IFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date January 20, 2020 No.2 January 21, 2020 No.2 January 22, 2020
Temperature / Humidity 22 deg. C / 30 % RH 22 deg. C / 30 % RH 21 deg. C / 41 % RH
Engineer Koji Yamamoto Koji Yamamoto Takumi Shimada
(1 GHz -10 GHz) (10 GHz -26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 2M-PHY 2440 MHz + Tx 11ax-40 5755MHz (OFDM)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	34.044	QP	26.6	17.1	7.1	30.5	-	20.4	40.0	19.6	
Hori.	52.967	QP	25.0	10.2	7.4	30.4	-	12.2	40.0	27.8	
Hori.	125.878	QP	24.1	13.4	8.3	30.0	-	15.7	43.5	27.8	
Hori.	350.329	QP	23.6	15.0	10.2	29.5	-	19.4	46.0	26.7	
Hori.	491.522	QP	23.7	17.4	11.0	30.0	-	22.1	46.0	23.9	
Hori.	979.093	QP	22.2	22.3	13.3	27.8	-	29.9	54.0	24.1	
Hori.	2371.275	PK	54.1	27.6	5.0	35.2	-	51.6	73.9	22.3	
Hori.	4880.000	PK	47.0	31.6	7.4	34.4	-	51.5	73.9	22.5	Floor noise
Hori.	7320.000	PK	46.4	36.1	8.3	34.4	-	56.4	73.9	17.6	Floor noise
Hori.	9760.000	PK	46.3	39.2	9.4	34.9	-	60.1	73.9	13.8	Floor noise
Hori.	2371.275	AV	43.0	27.6	5.0	35.2	4.8	45.2	53.9	8.7	*1)
Hori.	4880.000	AV	36.6	31.6	7.4	34.4	-	41.1	53.9	12.8	Floor noise
Hori.	7320.000	AV	34.2	36.1	8.3	34.4	-	44.2	53.9	9.7	Floor noise
Hori.	9760.000	AV	33.4	39.2	9.4	34.9	-	47.2	53.9	6.7	Floor noise
Vert.	34.044	QP	31.1	17.1	7.1	30.5	-	24.9	40.0	15.1	
Vert.	52.967	QP	31.4	10.2	7.4	30.4	-	18.6	40.0	21.4	
Vert.	125.878	QP	24.6	13.4	8.3	30.0	-	16.2	43.5	27.3	
Vert.	350.329	QP	25.0	15.0	10.2	29.5	-	20.8	46.0	25.3	
Vert.	491.522	QP	24.0	17.4	11.0	30.0	-	22.4	46.0	23.6	
Vert.	979.093	QP	22.2	22.3	13.3	27.8	-	29.9	54.0	24.1	
Vert.	2371.275	PK	55.2	27.6	5.0	35.2	-	52.6	73.9	21.3	
Vert.	4880.000	PK	48.3	31.6	7.4	34.4	-	52.8	73.9	21.1	Floor noise
Vert.	7320.000	PK	47.3	36.1	8.3	34.4	-	57.3	73.9	16.6	Floor noise
Vert.	9760.000	PK	46.8	39.2	9.4	34.9	-	60.6	73.9	13.3	Floor noise
Vert.	2371.275	AV	42.9	27.6	5.0	35.2	4.8	45.1	53.9	8.8	*1)
Vert.	4880.000	AV	36.4	31.6	7.4	34.4	-	40.9	53.9	13.0	Floor noise
Vert.	7320.000	AV	34.1	36.1	8.3	34.4	-	44.1	53.9	9.8	Floor noise
Vert.	9760.000	AV	33.2	39.2	9.4	34.9	-	47.0	53.9	6.9	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz $20\log(3.7\text{ m} / 3.0\text{ m}) = 1.83\text{ dB}$
10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission (IFA Antenna BT1)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	January 20, 2020
Temperature / Humidity	22 deg. C / 30 % RH
Engineer	Koji Yamamoto
	(1 GHz -10 GHz)
Mode	Tx BT LE 2M-PHY 2480 MHz + Tx 11ax-40 5755MHz (OFDM)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	60.6	27.5	5.1	35.2	-	58.0	73.9	15.9	
Hori.	2483.500	AV	43.8	27.5	5.1	35.2	4.8	46.0	53.9	8.0	*1)
Vert.	2483.500	PK	59.9	27.5	5.1	35.2	-	57.3	73.9	16.6	
Vert.	2483.500	AV	44.6	27.5	5.1	35.2	4.8	46.8	53.9	7.1	*1)

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

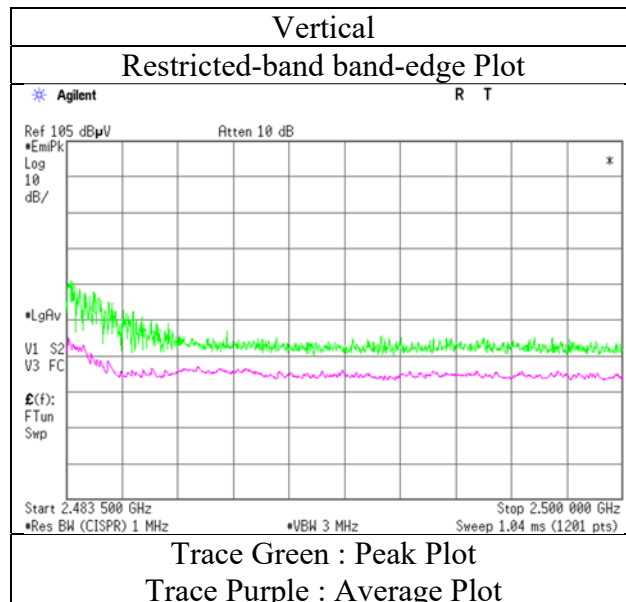
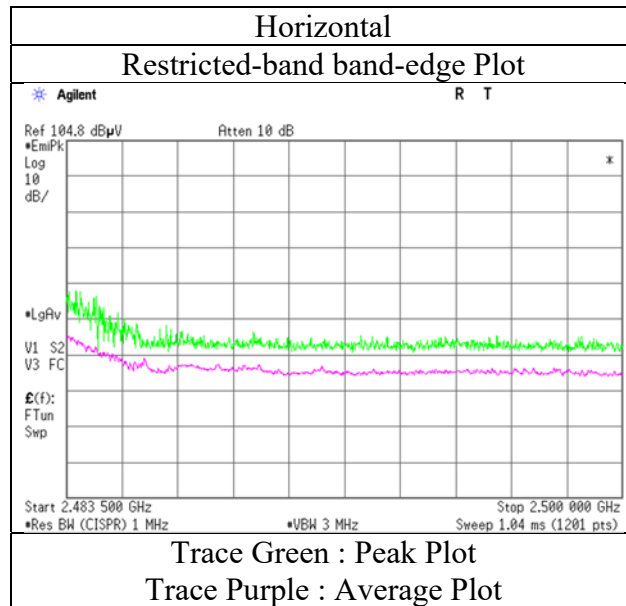
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz $20\log(3.7\text{ m} / 3.0\text{ m}) = 1.83\text{ dB}$
 10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna BT1)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	January 20, 2020
Temperature / Humidity	22 deg. C / 30 % RH
Engineer	Koji Yamamoto (1 GHz -10 GHz)
Mode	Tx BT LE 2M-PHY 2480 MHz + Tx 11ax-40 5755MHz (OFDM)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

Ise EMC Lab.

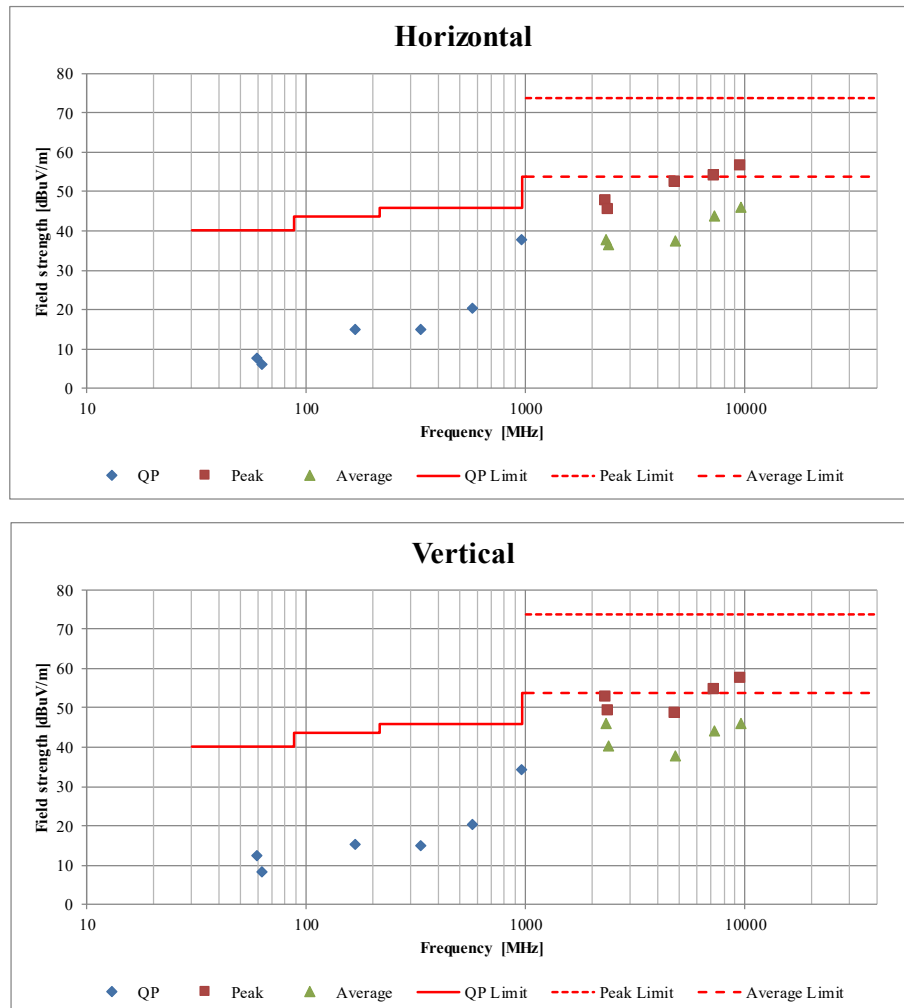
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Radiated Spurious Emission
(Plot data, Worst case)
(IFA Antenna BT2)

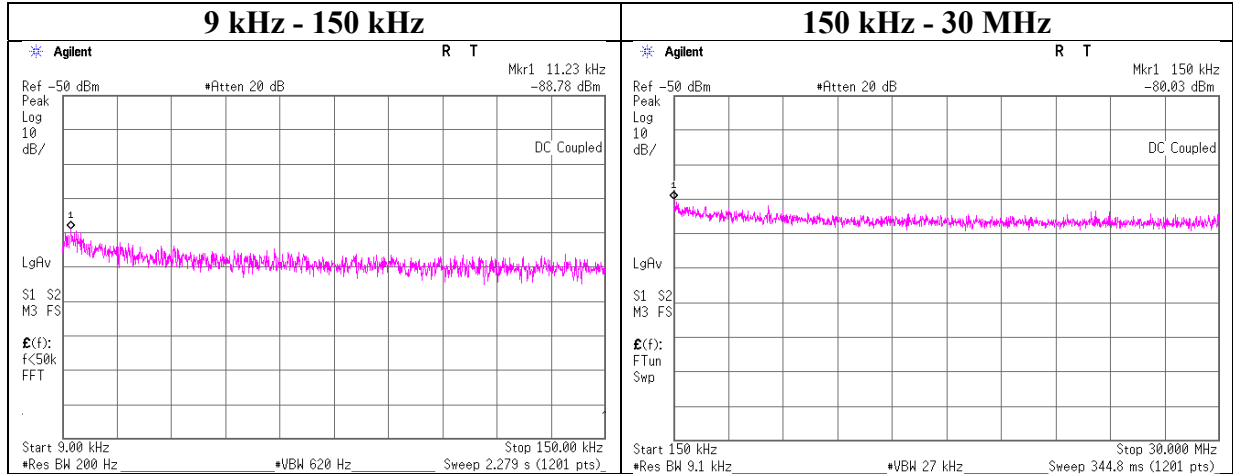
Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 6, 2020	January 8, 2020	January 12, 2020
Temperature / Humidity	23 deg. C / 32 % RH	23 deg. C / 35 % RH	22 deg. C / 33 % RH
Engineer	Tomohisa Nakagawa (1 GHz - 10 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 2M-PHY 2402 MHz		



*These plots data contains sufficient number to show the trend of characteristic features for EUT.

Conducted Spurious Emission

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 17, 2019
Temperature / Humidity	23 deg. C / 39 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ax-20 2462 MHz (OFDM)



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
11.23	-88.8	0.50	9.9	9.0	2	-66.4	300	6.0	-5.1	46.5	51.6	
150.00	-80.0	0.51	9.9	9.0	2	-57.6	300	6.0	3.6	24.0	20.4	

$$E \text{ [dBuV/m]} = \text{EIRP [dBm]} - 20 \log(\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$$

$$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$$

N: Number of output

The worst antenna gain was applied.

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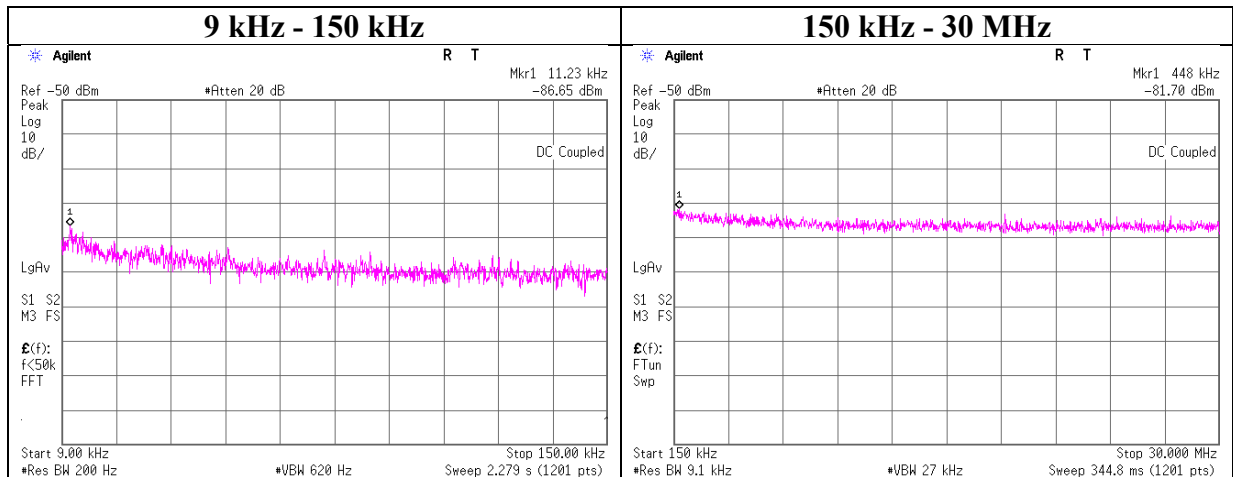
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 19, 2019
Temperature / Humidity	24 deg. C / 32 % RH
Engineer	Takafumi Noguchi
Mode	Tx BT LE 1M-PHY 2402 MHz

BT1



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
11.23	-86.7	0.50	9.9	5.8	1	-70.5	300	6.0	-9.2	46.5	55.7	
448.00	-81.7	0.51	9.9	5.8	1	-65.5	300	6.0	-4.3	14.5	18.8	

$$E \text{ [dBuV/m]} = \text{EIRP [dBm]} - 20 \log(\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$$

$$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$$

N: Number of output

The worst antenna gain was applied.

UL Japan, Inc.

Ise EMC Lab.

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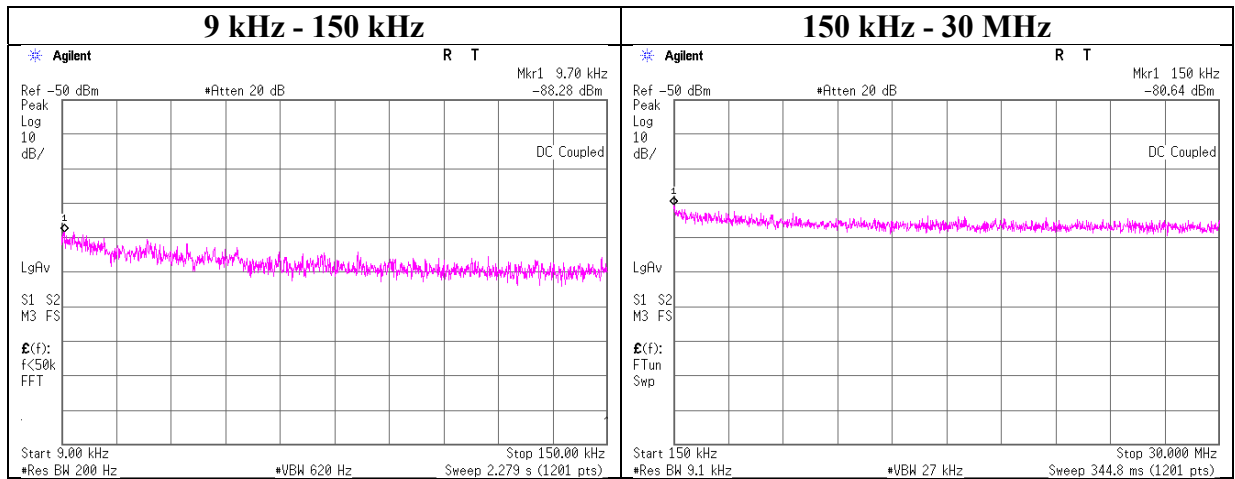
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 19, 2019
Temperature / Humidity	24 deg. C / 32 % RH
Engineer	Takafumi Noguchi
Mode	Tx BT LE 1M-PHY 2440 MHz

BT1



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
9.70	-88.3	0.50	9.9	5.8	1	-72.1	300	6.0	-10.9	47.8	58.7	
150.00	-80.6	0.51	9.9	5.8	1	-64.5	300	6.0	-3.2	24.0	27.2	

$$E \text{ [dBuV/m]} = \text{EIRP [dBm]} - 20 \log(\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$$

$$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$$

N: Number of output

The worst antenna gain was applied.

UL Japan, Inc.

Ise EMC Lab.

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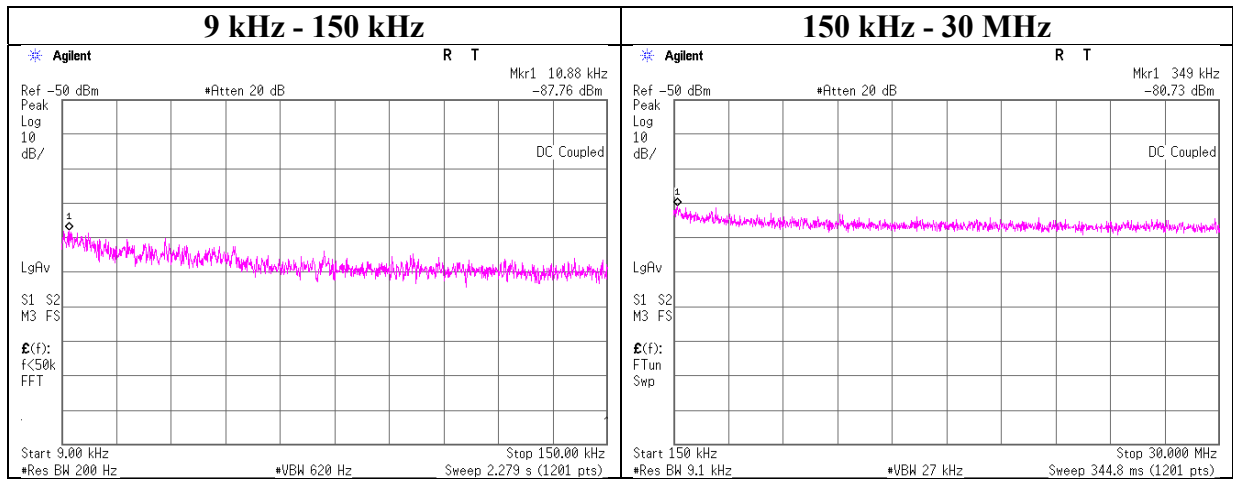
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 19, 2019
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Takafumi Noguchi
Mode Tx BT LE 1M-PHY 2480 MHz

BT1



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
10.88	-87.8	0.50	9.9	5.8	1	-71.6	300	6.0	-10.3	46.8	57.1	
349.00	-80.7	0.51	9.9	5.8	1	-64.6	300	6.0	-3.3	16.7	20.0	

$E [dBuV/m] = EIRP [dBm] - 20 \log (Distance [m]) + Ground\ bounce [dB] + 104.8 [dBuV/m]$

$EIRP [dBm] = Reading [dBm] + Cable\ loss [dB] + Attenuator\ Loss [dB] + Antenna\ gain [dBi] + 10 * \log (N)$

N: Number of output

The worst antenna gain was applied.

UL Japan, Inc.

Ise EMC Lab.

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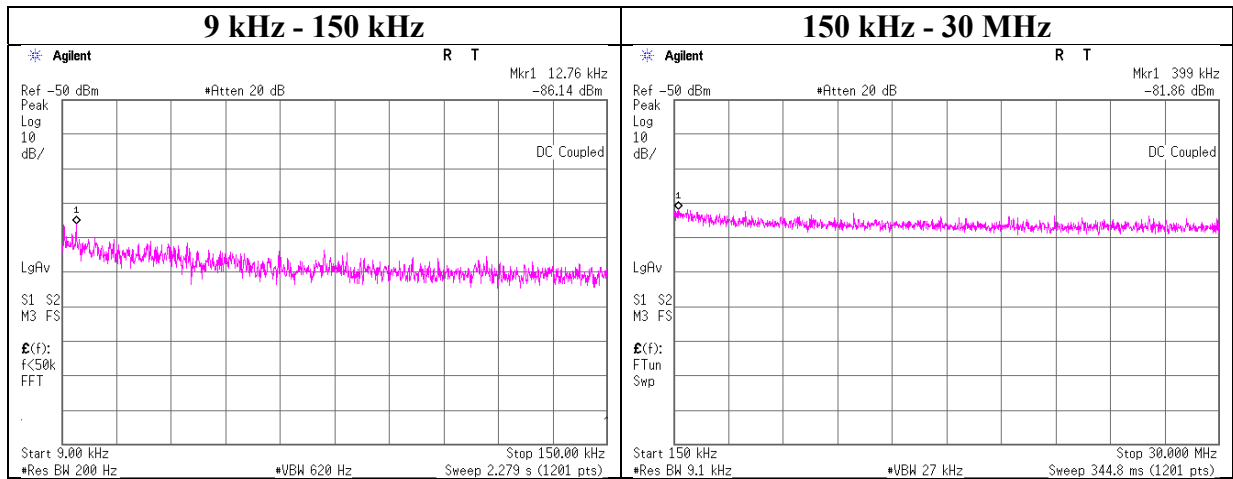
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 19, 2019
Temperature / Humidity	24 deg. C / 32 % RH
Engineer	Takafumi Noguchi
Mode	Tx BT LE 2M-PHY 2402 MHz

BT1



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
12.76	-86.1	0.50	9.9	5.8	1	-70.0	300	6.0	-8.7	45.4	54.1	
399.00	-81.9	0.51	9.9	5.8	1	-65.7	300	6.0	-4.4	15.5	19.9	

$$E \text{ [dBuV/m]} = \text{EIRP [dBm]} - 20 \log(\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$$

$$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$$

N: Number of output

The worst antenna gain was applied.

UL Japan, Inc.

Ise EMC Lab.

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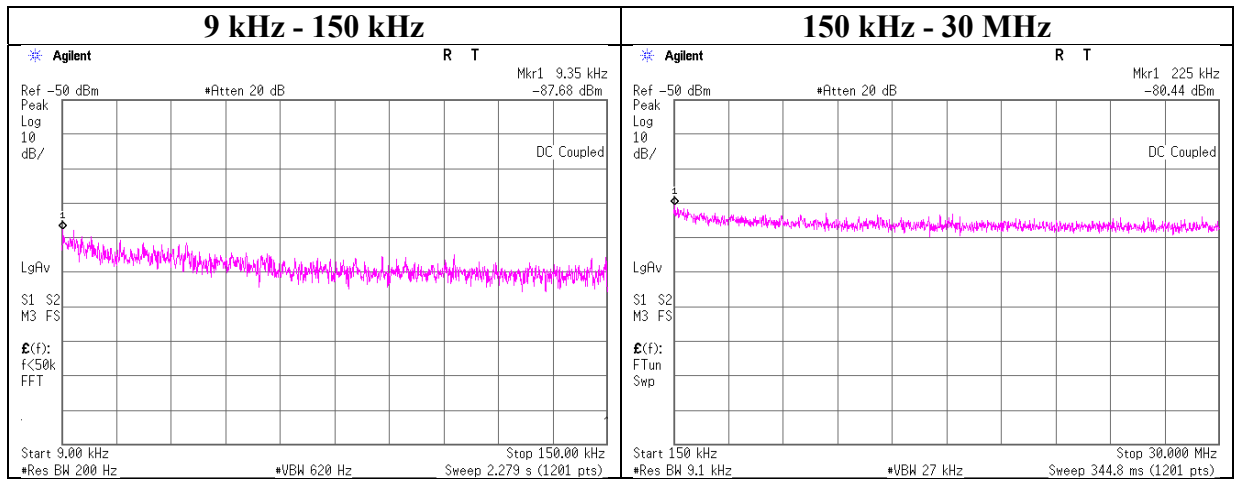
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 19, 2019
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Takafumi Noguchi
Mode Tx BT LE 2M-PHY 2440 MHz

BT1



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
9.35	-87.7	0.50	9.9	5.8	1	-71.5	300	6.0	-10.3	48.1	58.4	
225.00	-80.4	0.51	9.9	5.8	1	-64.3	300	6.0	-3.0	20.5	23.5	

$$E \text{ [dBuV/m]} = \text{EIRP [dBm]} - 20 \log (\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$$

$$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log (N)$$

N: Number of output

The worst antenna gain was applied.

UL Japan, Inc.

Ise EMC Lab.

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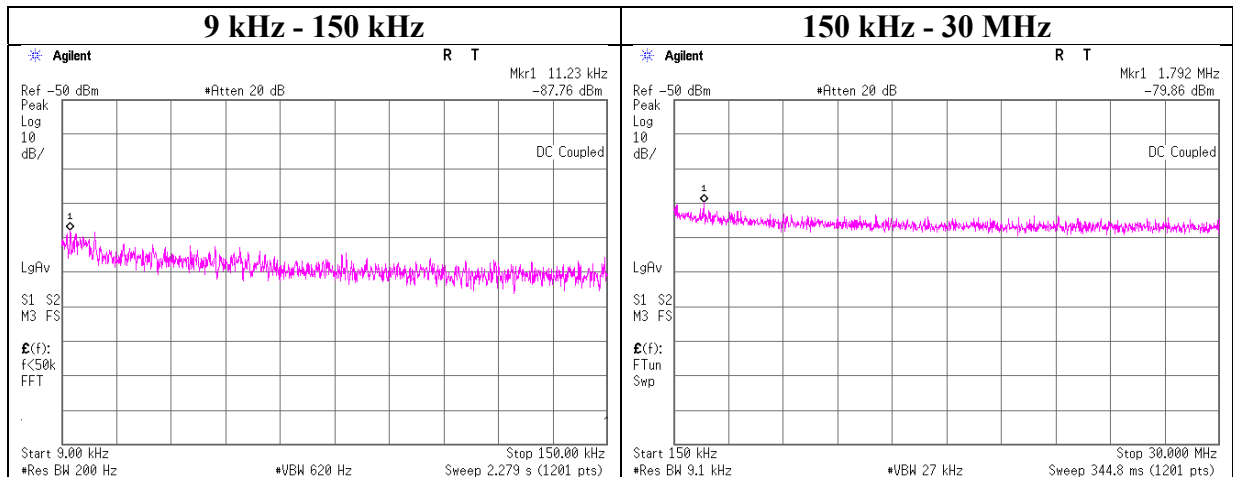
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 19, 2019
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Takafumi Noguchi
Mode Tx BT LE 2M-PHY 2480 MHz

BT1



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
11.23	-87.8	0.50	9.9	5.8	1	-71.6	300	6.0	-10.3	46.5	56.8	
1792.00	-79.9	0.53	9.9	5.8	1	-63.7	30	6.0	17.6	29.5	12.0	

$$E \text{ [dBuV/m]} = \text{EIRP [dBm]} - 20 \log(\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$$

$$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$$

N: Number of output

The worst antenna gain was applied.

UL Japan, Inc.

Ise EMC Lab.

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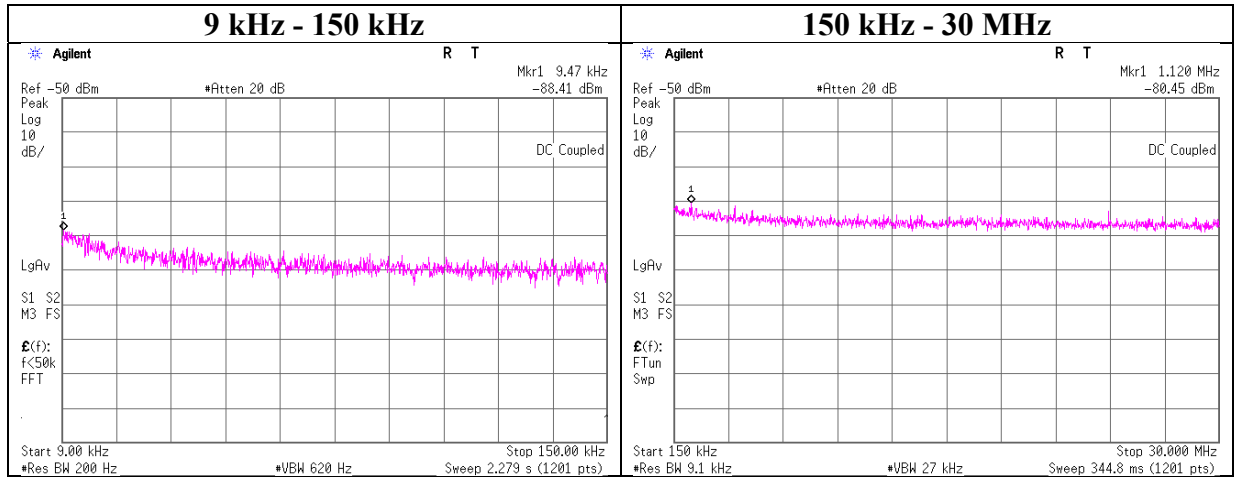
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 26, 2019
Temperature / Humidity	23 deg. C / 38 % RH
Engineer	Koji Yamamoto
Mode	Tx BT LE 1M-PHY 2402 MHz

BT2



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
9.47	-88.4	0.01	9.9	5.8	1	-72.7	300	6.0	-11.5	48.0	59.5	
1120.00	-80.5	0.02	9.9	5.8	1	-64.8	30	6.0	16.5	26.6	10.1	

$E \text{ [dBuV/m]} = \text{EIRP [dBm]} - 20 \log(\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$

$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$

N: Number of output

The worst antenna gain was applied.

UL Japan, Inc.

Ise EMC Lab.

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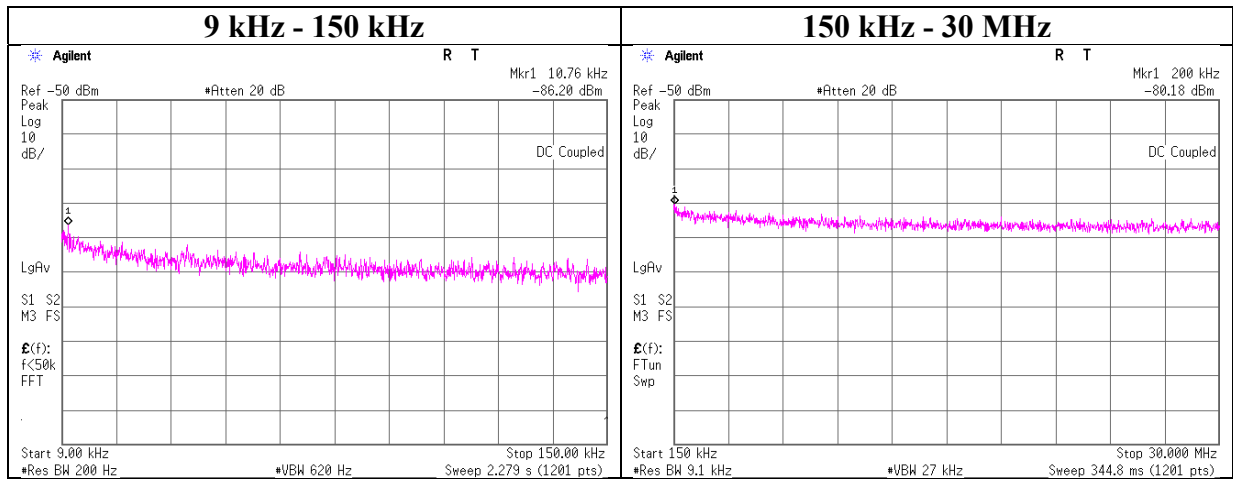
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 26, 2019
Temperature / Humidity 23 deg. C / 38 % RH
Engineer Koji Yamamoto
Mode Tx BT LE 1M-PHY 2440 MHz

BT2



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
10.76	-86.2	0.01	9.9	5.8	1	-70.5	300	6.0	-9.3	46.9	56.2	
200.00	-80.2	0.02	9.9	5.8	1	-64.5	300	6.0	-3.3	21.5	24.8	

$E [dBuV/m] = EIRP [dBm] - 20 \log (Distance [m]) + Ground\ bounce [dB] + 104.8 [dBuV/m]$

$EIRP [dBm] = Reading [dBm] + Cable\ loss [dB] + Attenuator\ Loss [dB] + Antenna\ gain [dBi] + 10 * \log (N)$

N: Number of output

The worst antenna gain was applied.

UL Japan, Inc.

Ise EMC Lab.

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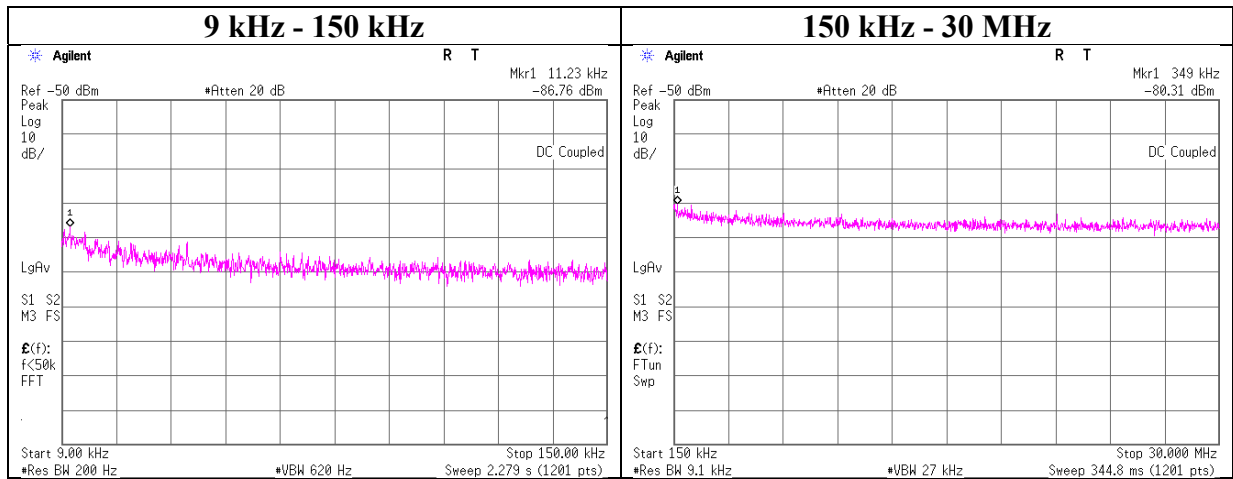
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 26, 2019
Temperature / Humidity 23 deg. C / 38 % RH
Engineer Koji Yamamoto
Mode Tx BT LE 1M-PHY 2480 MHz

BT2



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
11.23	-86.8	0.01	9.9	5.8	1	-71.1	300	6.0	-9.8	46.5	56.3	
349.00	-80.3	0.01	9.9	5.8	1	-64.7	300	6.0	-3.4	16.7	20.1	

$E [dBuV/m] = EIRP [dBm] - 20 \log (Distance [m]) + Ground\ bounce [dB] + 104.8 [dBuV/m]$

$EIRP [dBm] = Reading [dBm] + Cable\ loss [dB] + Attenuator\ Loss [dB] + Antenna\ gain [dBi] + 10 * \log (N)$

N: Number of output

The worst antenna gain was applied.

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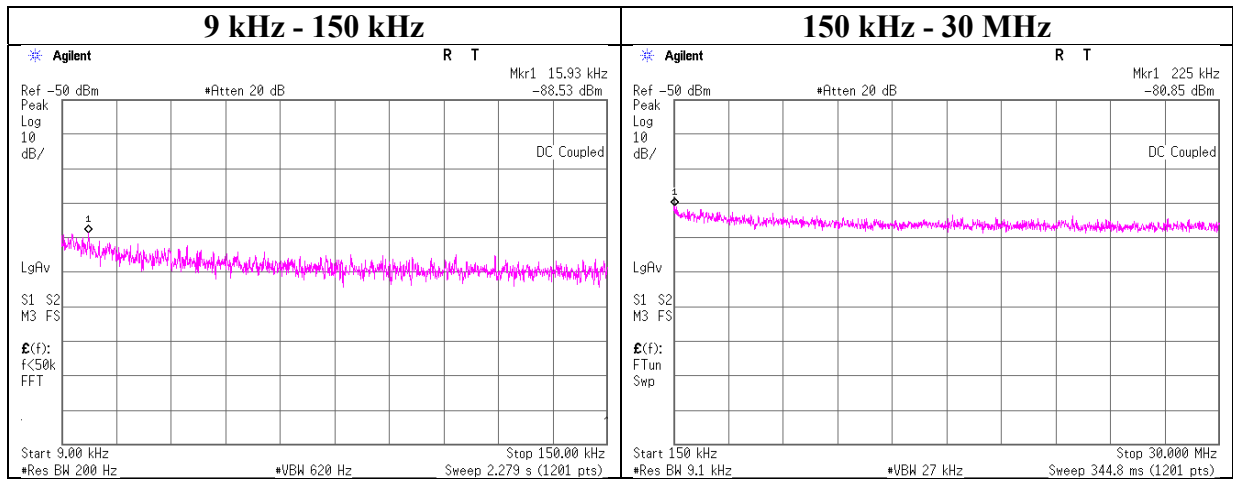
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 26, 2019
Temperature / Humidity	23 deg. C / 38 % RH
Engineer	Koji Yamamoto
Mode	Tx BT LE 2M-PHY 2402 MHz

BT2



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
15.93	-88.5	0.01	9.9	5.8	1	-72.9	300	6.0	-11.6	43.5	55.1	
225.00	-80.9	0.01	9.9	5.8	1	-65.2	300	6.0	-3.9	20.5	24.4	

$E \text{ [dBuV/m]} = \text{EIRP [dBm]} - 20 \log(\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$

$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$

N: Number of output

The worst antenna gain was applied.

UL Japan, Inc.

Ise EMC Lab.

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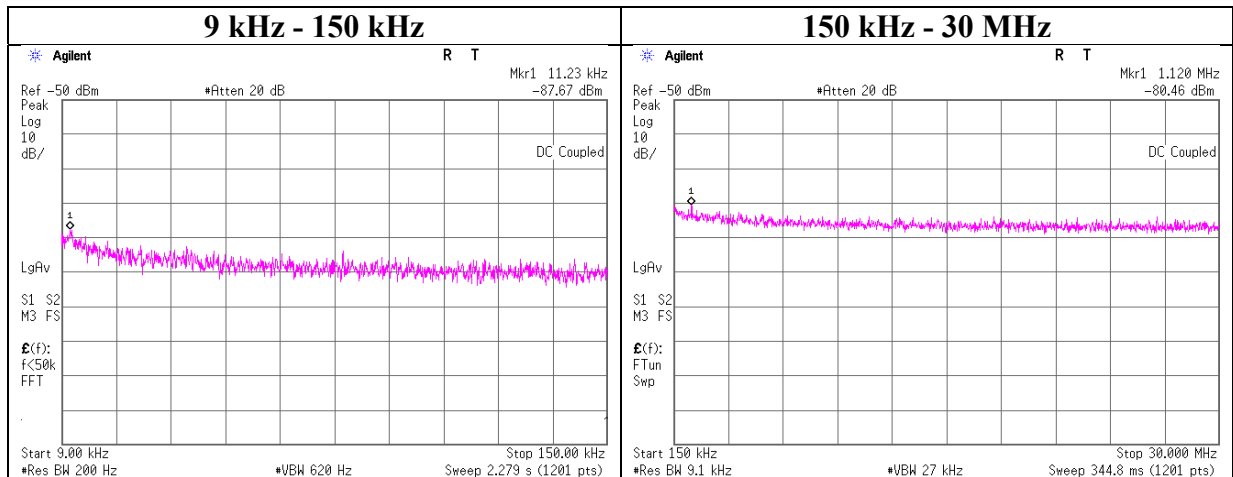
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 26, 2019
Temperature / Humidity	23 deg. C / 38 % RH
Engineer	Koji Yamamoto
Mode	Tx BT LE 2M-PHY 2440 MHz

BT2



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
11.23	-87.7	0.01	9.9	5.8	1	-72.0	300	6.0	-10.7	46.5	57.2	
1120.00	-80.5	0.02	9.9	5.8	1	-64.8	30	6.0	16.5	26.6	10.1	

$E [dBuV/m] = EIRP [dBm] - 20 \log (Distance [m]) + Ground\ bounce [dB] + 104.8 [dBuV/m]$

$EIRP [dBm] = Reading [dBm] + Cable\ loss [dB] + Attenuator\ Loss [dB] + Antenna\ gain [dBi] + 10 * \log (N)$

N: Number of output

The worst antenna gain was applied.

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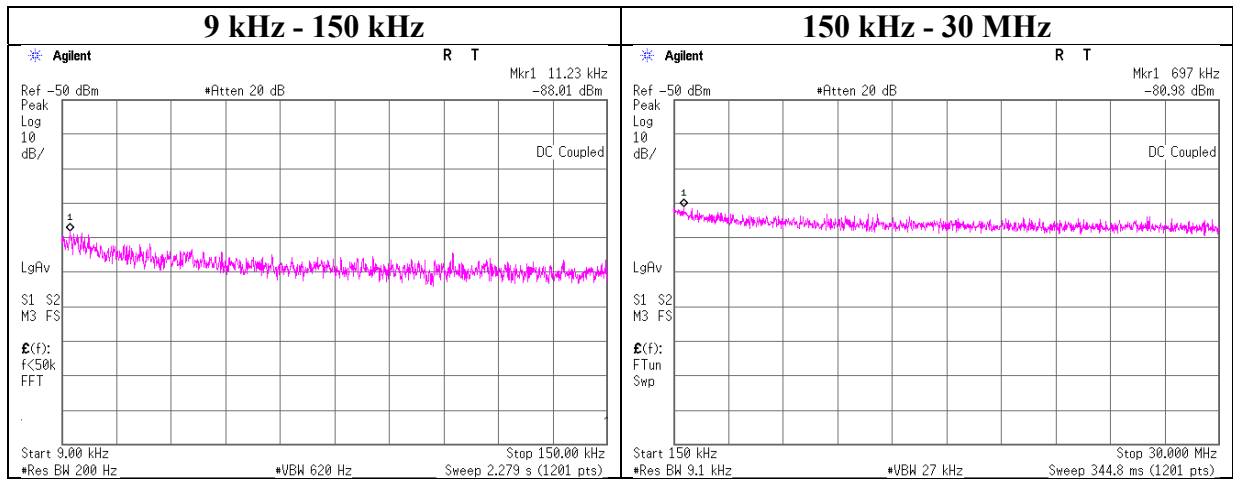
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 26, 2019
Temperature / Humidity	23 deg. C / 38 % RH
Engineer	Koji Yamamoto
Mode	Tx BT LE 2M-PHY 2480 MHz

BT2



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
11.23	-88.0	0.01	9.9	5.8	1	-72.3	300	6.0	-11.1	46.5	57.6	
697.00	-81.0	0.01	9.9	5.8	1	-65.3	30	6.0	15.9	30.7	14.8	

$E \text{ [dBuV/m]} = \text{EIRP [dBm]} - 20 \log(\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$

$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$

N: Number of output

The worst antenna gain was applied.

UL Japan, Inc.

Ise EMC Lab.

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Telephone : +81 596 24 8999

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Power Density

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 17, 2019
Temperature / Humidity	23 deg. C / 39 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11b

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1 Result	Antenna 2 Result	Result		Limit	Margin
	[mW]	[mW]	[dBm]	[mW]	[dBm]	[dB]
2412.00	0.065	0.074	-8.57	0.139	8.00	16.57
2437.00	0.068	0.079	-8.32	0.147	8.00	16.32
2462.00	0.063	0.084	-8.34	0.146	8.00	16.34

Sample Calculation:

Result = Antenna 1 + Antenna 2

Antenna 1

Freq. [MHz]	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2412.00	-22.40	0.78	9.73	-11.89	0.065	8.00	19.89
2437.00	-22.17	0.79	9.73	-11.65	0.068	8.00	19.65
2462.00	-22.56	0.79	9.73	-12.04	0.063	8.00	20.04

Antenna 2

Freq. [MHz]	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2412.00	-21.80	0.78	9.73	-11.29	0.074	8.00	19.29
2437.00	-21.55	0.79	9.73	-11.03	0.079	8.00	19.03
2462.00	-21.28	0.79	9.73	-10.76	0.084	8.00	18.76

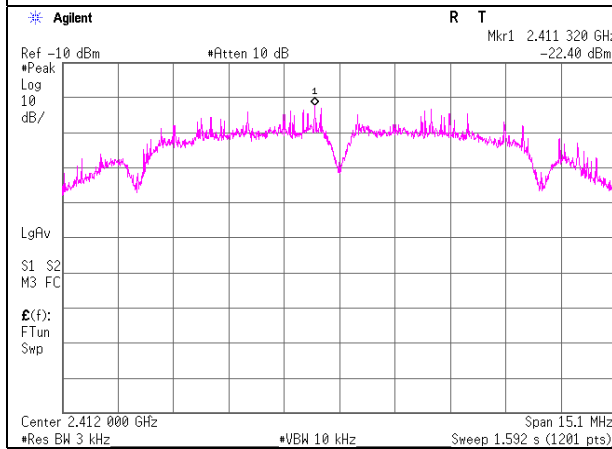
Sample Calculation:

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

Power Density

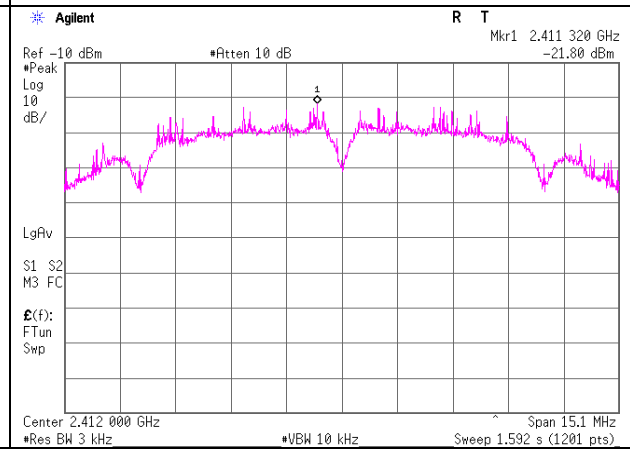
11b Antenna 1

2412 MHz

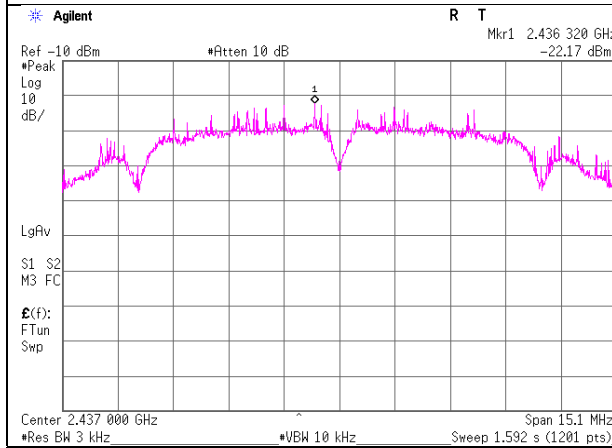


11b Antenna 2

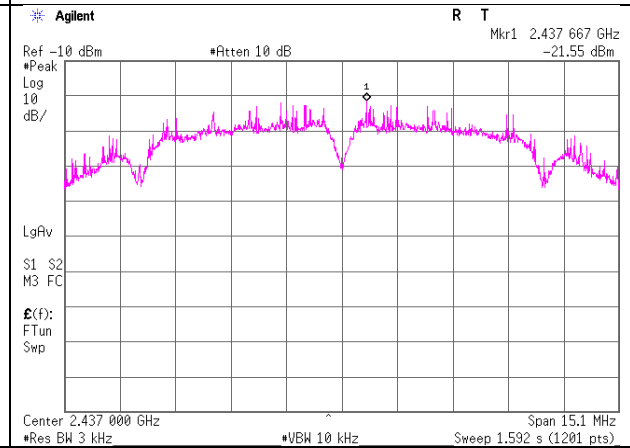
2412 MHz



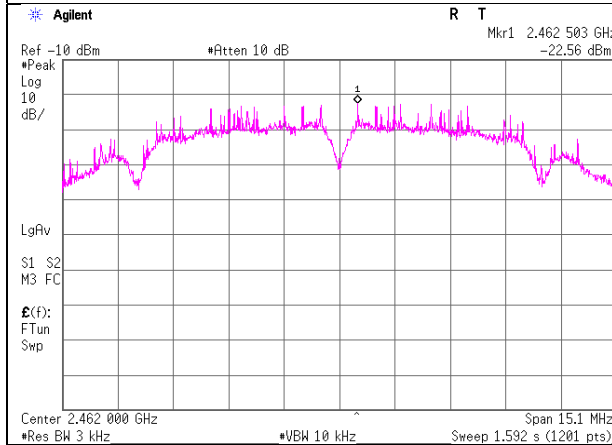
2437 MHz



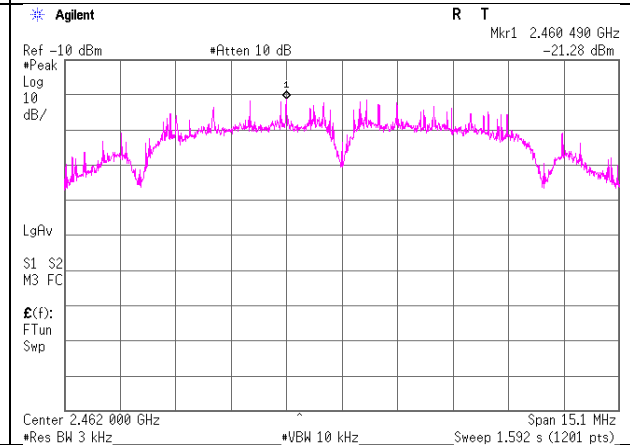
2437 MHz



2462 MHz



2462 MHz



Power Density

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 17, 2019
Temperature / Humidity 23 deg. C / 39 % RH
Engineer Takafumi Noguchi
Mode Tx 11g

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1 Result	Antenna 2 Result	Result		Limit	Margin
	[mW]	[mW]	[dBm]	[mW]	[dBm]	[dB]
2412.00	0.021	0.020	-13.95	0.040	8.00	21.95
2437.00	0.020	0.018	-14.30	0.037	8.00	22.30
2462.00	0.018	0.017	-14.53	0.035	8.00	22.53

Sample Calculation:

Result = Antenna 1 + Antenna 2

Antenna 1

Freq. [MHz]	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2412.00	-27.39	0.78	9.73	-16.88	0.021	8.00	24.88
2437.00	-27.59	0.79	9.73	-17.07	0.020	8.00	25.07
2462.00	-27.85	0.79	9.73	-17.33	0.018	8.00	25.33

Antenna 2

Freq. [MHz]	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2412.00	-27.55	0.78	9.73	-17.04	0.020	8.00	25.04
2437.00	-28.08	0.79	9.73	-17.56	0.018	8.00	25.56
2462.00	-28.29	0.79	9.73	-17.77	0.017	8.00	25.77

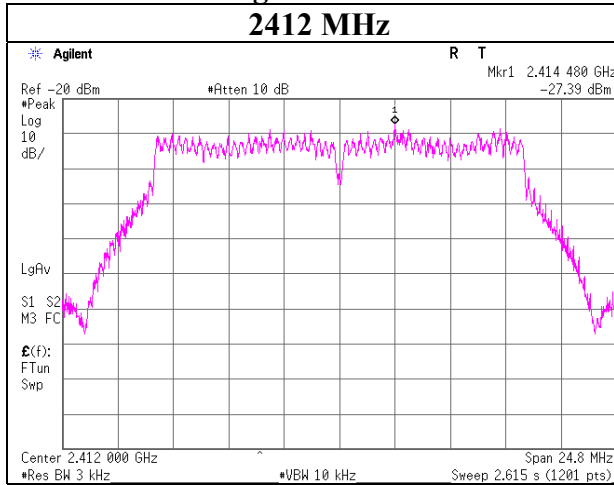
Sample Calculation:

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

Power Density

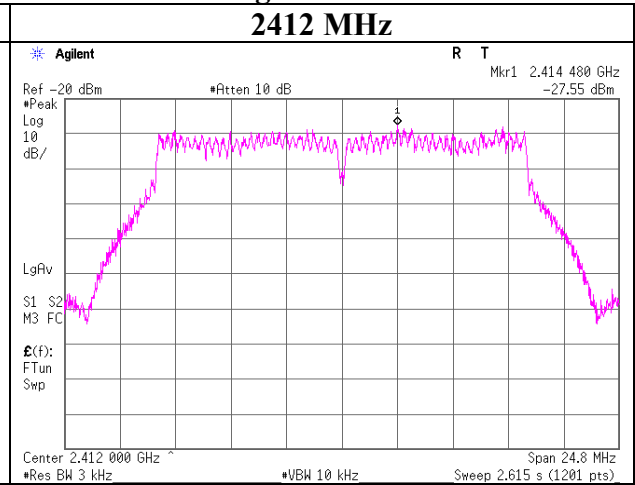
11g Antenna 1

2412 MHz

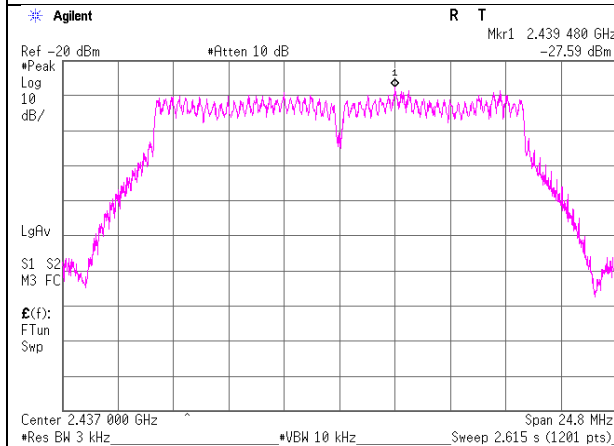


11g Antenna 2

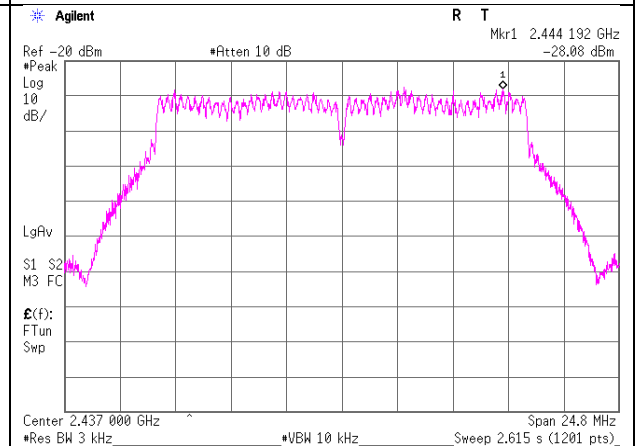
2412 MHz



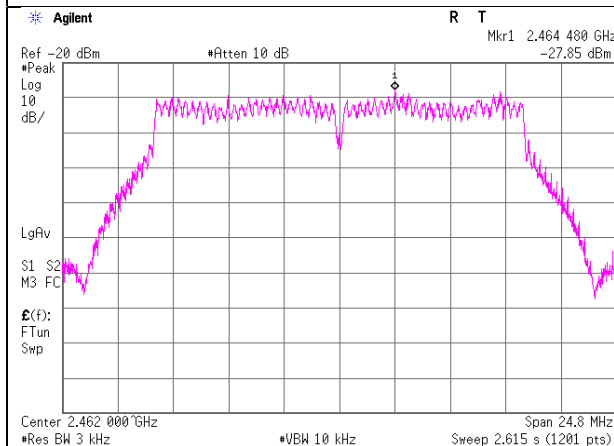
2437 MHz



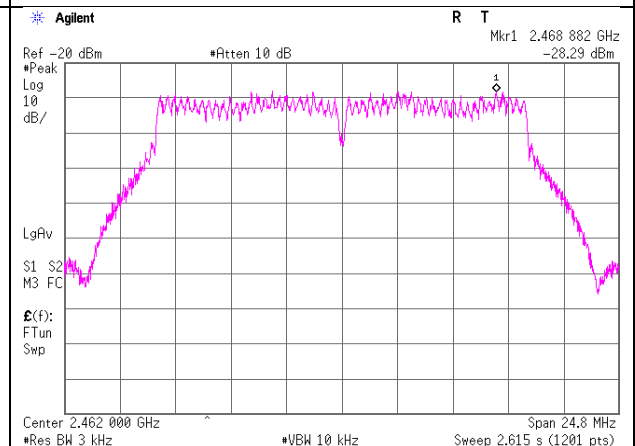
2437 MHz



2462 MHz



2462 MHz



Power Density

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 17, 2019
Temperature / Humidity	23 deg. C / 39 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11n-20

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result		Limit [dBm]	Margin [dB]
			[dBm]	[mW]		
2412.00	0.018	0.026	-13.61	0.044	8.00	21.61
2437.00	0.018	0.026	-13.48	0.045	8.00	21.48
2462.00	0.016	0.025	-13.79	0.042	8.00	21.79

Sample Calculation:

Result = Antenna 1 + Antenna 2

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit [dBm]	Margin [dB]
				[dBm]	[mW]		
2412.00	-27.97	0.78	9.73	-17.46	0.018	8.00	25.46
2437.00	-27.86	0.79	9.73	-17.34	0.018	8.00	25.34
2462.00	-28.36	0.79	9.73	-17.84	0.016	8.00	25.84

Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit [dBm]	Margin [dB]
				[dBm]	[mW]		
2412.00	-26.43	0.78	9.73	-15.92	0.026	8.00	23.92
2437.00	-26.30	0.79	9.73	-15.78	0.026	8.00	23.78
2462.00	-26.49	0.79	9.73	-15.97	0.025	8.00	23.97

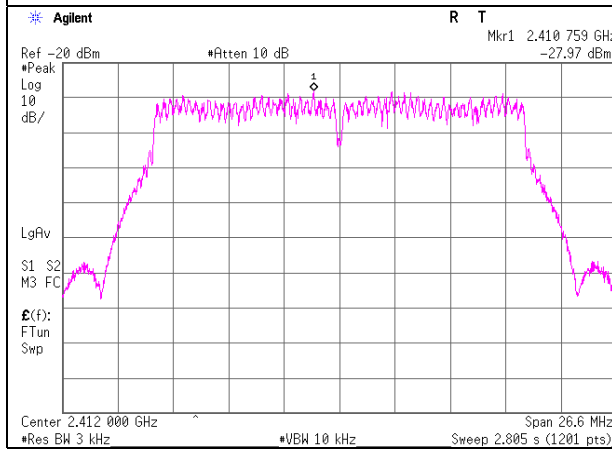
Sample Calculation:

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

Power Density

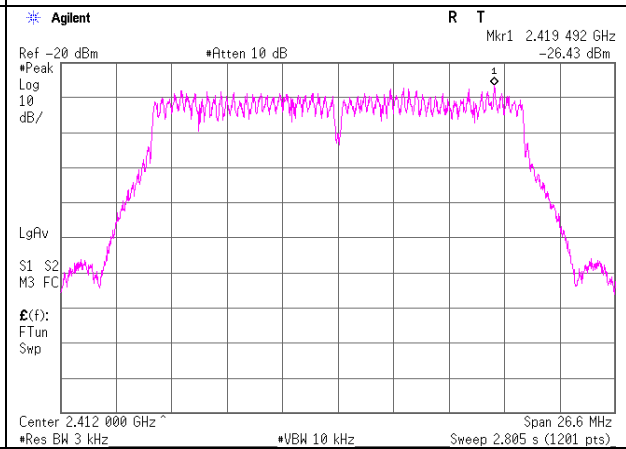
11n-20 Antenna 1

2412 MHz

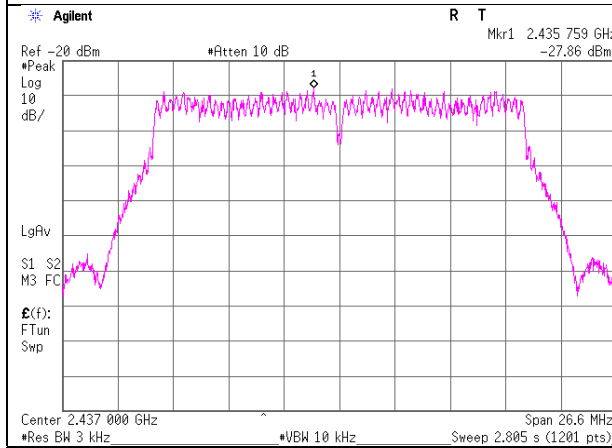


11n-20 Antenna 2

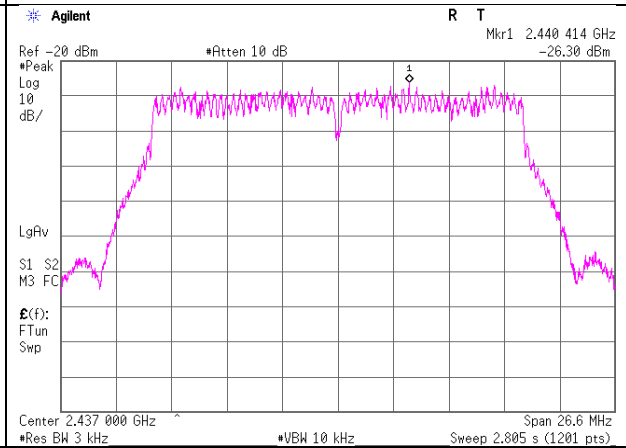
2412 MHz



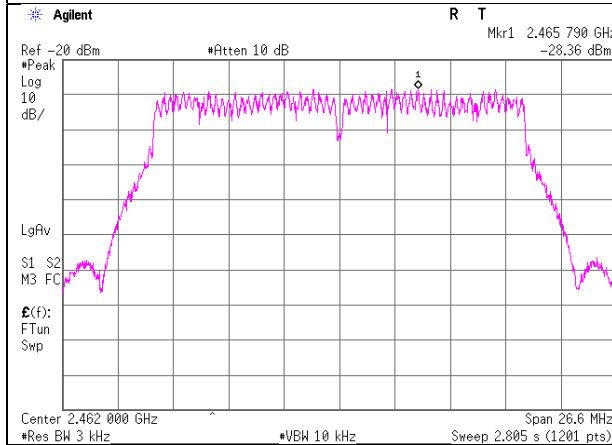
2437 MHz



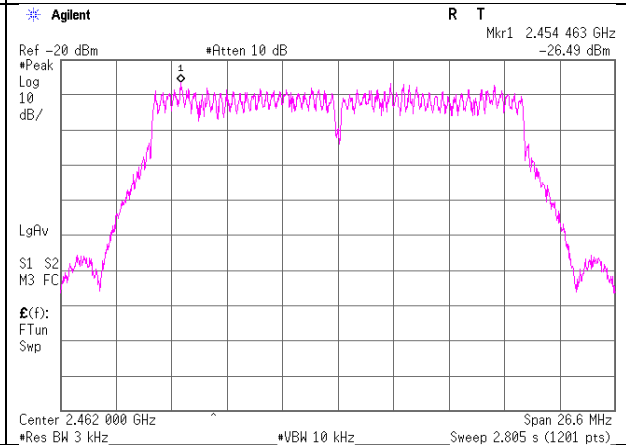
2437 MHz



2462 MHz



2462 MHz



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Power Density

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 17, 2019
Temperature / Humidity	23 deg. C / 39 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ax-20 (OFDM)

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1 Result	Antenna 2 Result	Result		Limit	Margin
	[mW]	[mW]	[dBm]	[mW]	[dBm]	[dB]
2412.00	0.018	0.020	-14.28	0.037	8.00	22.28
2437.00	0.017	0.021	-14.21	0.038	8.00	22.21
2462.00	0.018	0.022	-14.03	0.040	8.00	22.03

Sample Calculation:

Result = Antenna 1 + Antenna 2

Antenna 1

Freq. [MHz]	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2412.00	-28.04	0.78	9.73	-17.53	0.018	8.00	25.53
2437.00	-28.27	0.79	9.73	-17.75	0.017	8.00	25.75
2462.00	-28.01	0.79	9.73	-17.49	0.018	8.00	25.49

Antenna 2

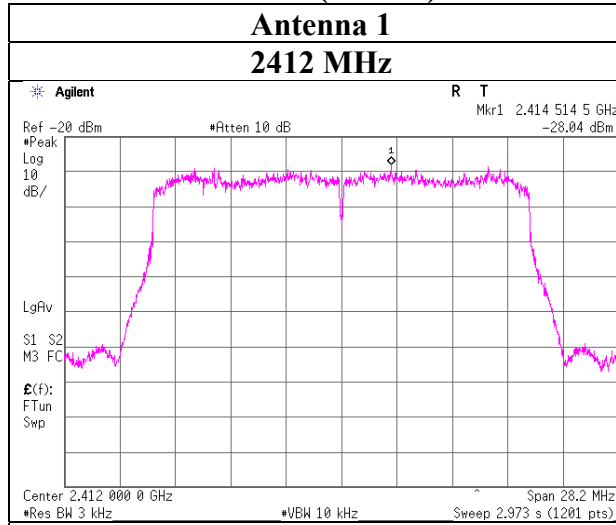
Freq. [MHz]	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2412.00	-27.57	0.78	9.73	-17.06	0.020	8.00	25.06
2437.00	-27.27	0.79	9.73	-16.75	0.021	8.00	24.75
2462.00	-27.15	0.79	9.73	-16.63	0.022	8.00	24.63

Sample Calculation:

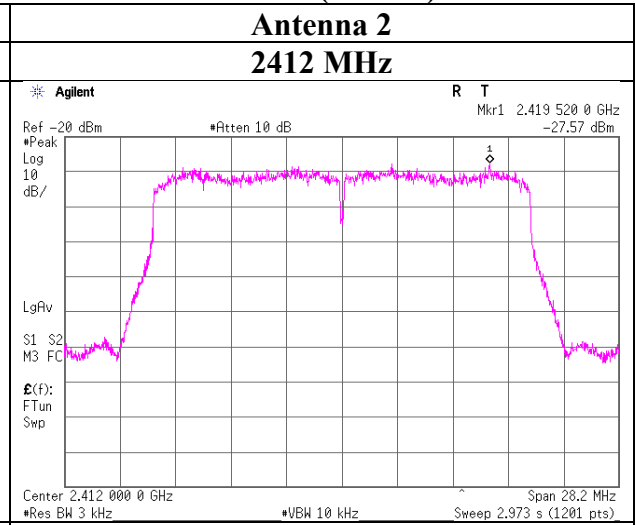
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

Power Density

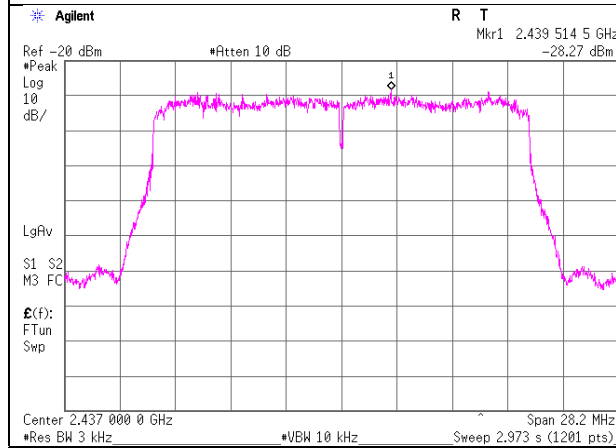
11ax-20 (OFDM)



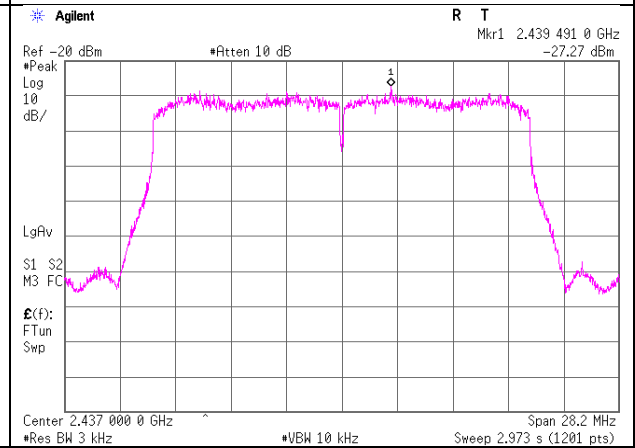
11ax-20 (OFDM)



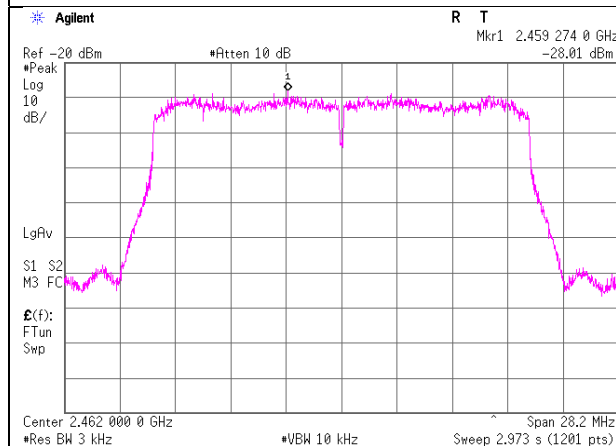
2437 MHz



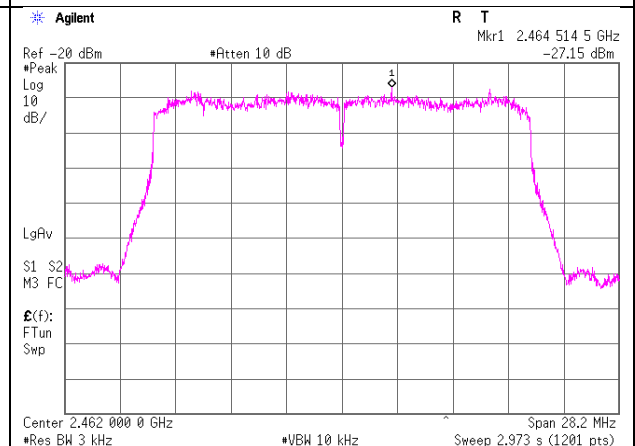
2437 MHz



2462 MHz



2462 MHz



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Facsimile : +81 596 24 8124

Power Density

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date February 18, 2020
Temperature / Humidity 22 deg. C / 35 % RH
Engineer Yuta Moriya
Mode Tx 11ax-20 (26-tone RU)

Antenna 1 + Antenna 2

RU Type	Freq. [MHz]	RU Index	Antenna 1	Antenna 2	Result		Limit	Margin
			Result [mW]	Result [mW]	[dBm]	[mW]	[dBm]	[dB]
26-tone RU	2412	0	0.014	0.016	-15.22	0.030	8.00	23.22
		4	0.014	0.014	-15.58	0.028	8.00	23.58
		8	0.015	0.012	-15.63	0.027	8.00	23.63
	2437	0	0.011	0.011	-16.54	0.022	8.00	24.54
		4	0.008	0.012	-16.97	0.020	8.00	24.97
		8	0.010	0.013	-16.27	0.024	8.00	24.27
	2462	0	0.012	0.015	-15.59	0.028	8.00	23.59
		4	0.013	0.011	-16.26	0.024	8.00	24.26
		8	0.012	0.010	-16.62	0.022	8.00	24.62

Sample Calculation:

Result = Antenna 1 + Antenna 2

Antenna 1

RU Type	Freq. [MHz]	RU Index	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
			[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
26-tone RU	2412	0	-33.00	4.82	9.73	-18.45	0.014	8.00	26.45
		4	-33.21	4.82	9.73	-18.66	0.014	8.00	26.66
		8	-32.67	4.82	9.73	-18.12	0.015	8.00	26.12
	2437	0	-34.15	4.82	9.73	-19.60	0.011	8.00	27.60
		4	-35.66	4.82	9.73	-21.11	0.008	8.00	29.11
		8	-34.48	4.82	9.73	-19.93	0.010	8.00	27.93
	2462	0	-33.60	4.81	9.73	-19.06	0.012	8.00	27.06
		4	-33.35	4.81	9.73	-18.81	0.013	8.00	26.81
		8	-33.77	4.81	9.73	-19.23	0.012	8.00	27.23

Antenna 2

RU Type	Freq. [MHz]	RU Index	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
			[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
26-tone RU	2412	0	-32.58	4.82	9.73	-18.03	0.016	8.00	26.03
		4	-33.08	4.82	9.73	-18.53	0.014	8.00	26.53
		8	-33.78	4.82	9.73	-19.23	0.012	8.00	27.23
	2437	0	-34.06	4.82	9.73	-19.51	0.011	8.00	27.51
		4	-33.63	4.82	9.73	-19.08	0.012	8.00	27.08
		8	-33.27	4.82	9.73	-18.72	0.013	8.00	26.72
	2462	0	-32.72	4.81	9.73	-18.18	0.015	8.00	26.18
		4	-34.32	4.81	9.73	-19.78	0.011	8.00	27.78
		8	-34.62	4.81	9.73	-20.08	0.010	8.00	28.08

Sample Calculation:

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

*The equipment and cables were not used for factor 0 dB of the data sheets.

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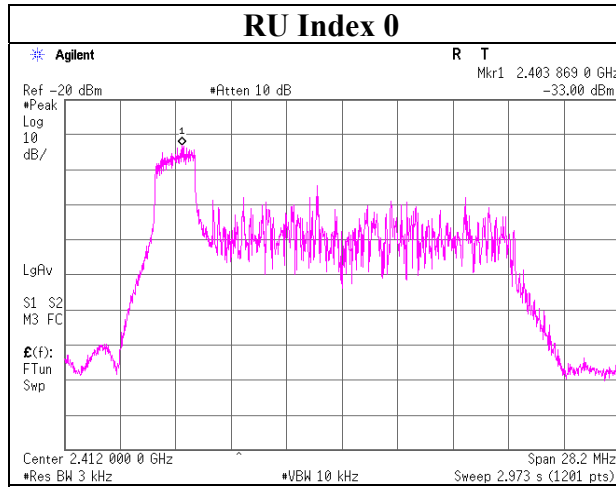
Facsimile : +81 596 24 8124

Power Density

11ax-20 26-tone RU 2412 MHz

Antenna 1

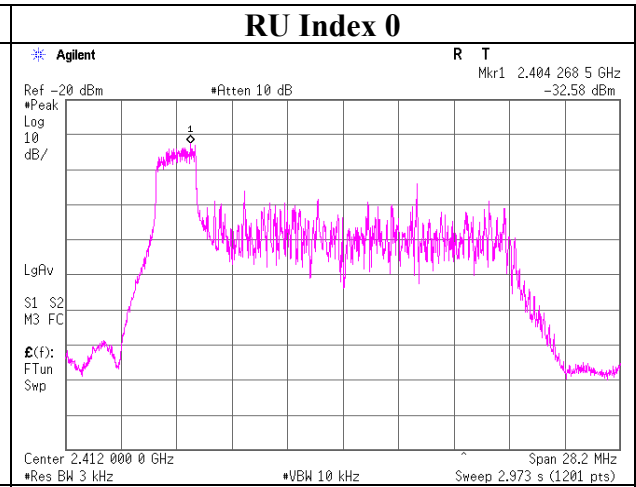
RU Index 0



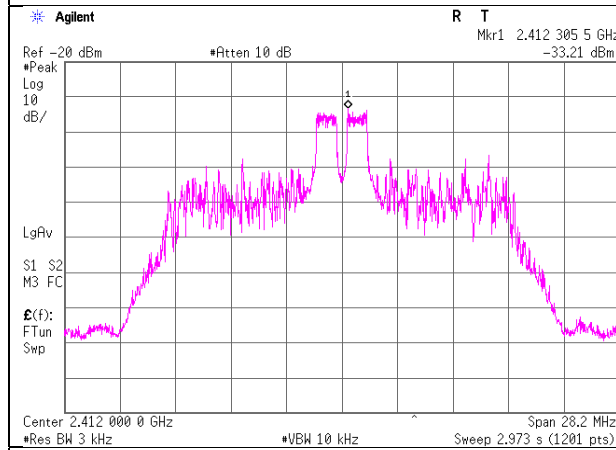
11ax-20 26-tone RU 2412 MHz

Antenna 2

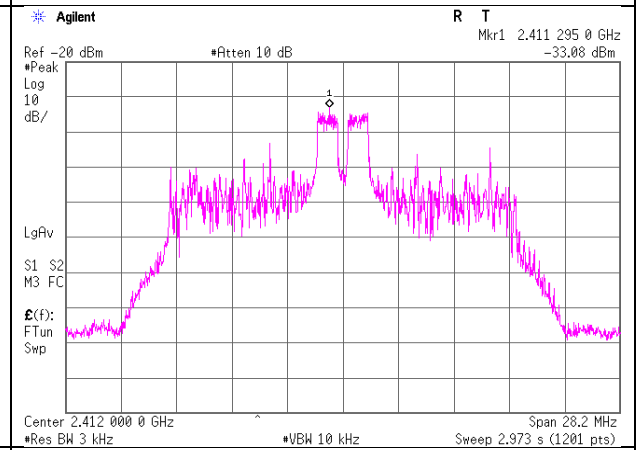
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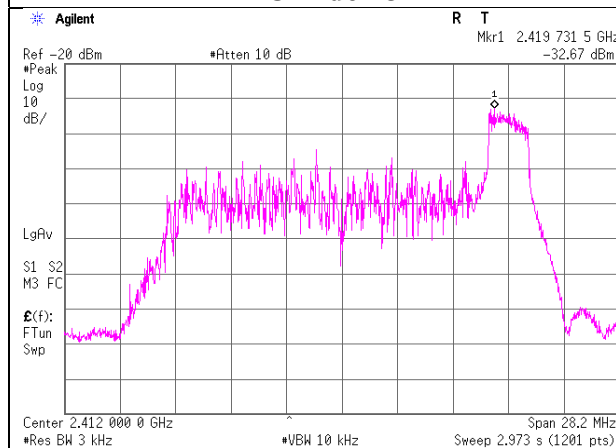
RU Index 4



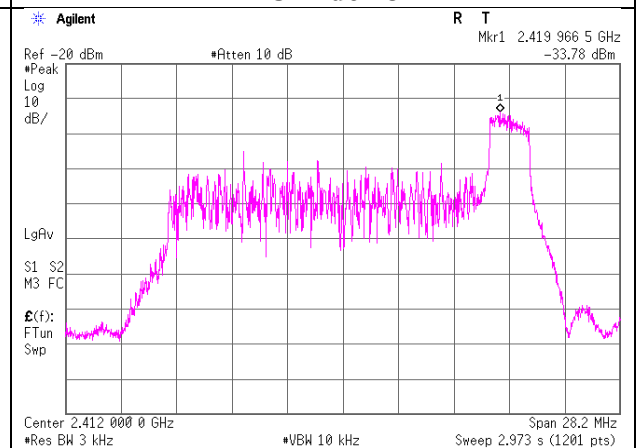
RU Index 4



RU Index 8



RU Index 8



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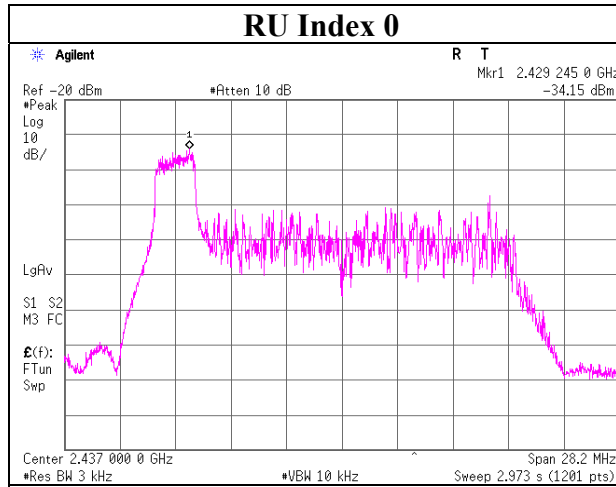
Facsimile : +81 596 24 8124

Power Density

11ax-20 26-tone RU 2437 MHz

Antenna 1

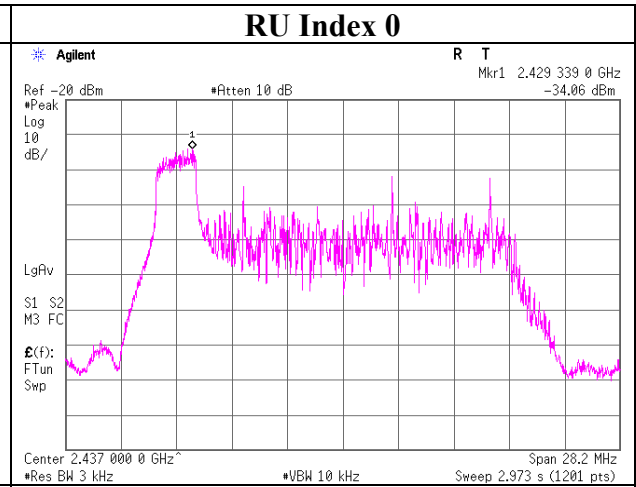
RU Index 0



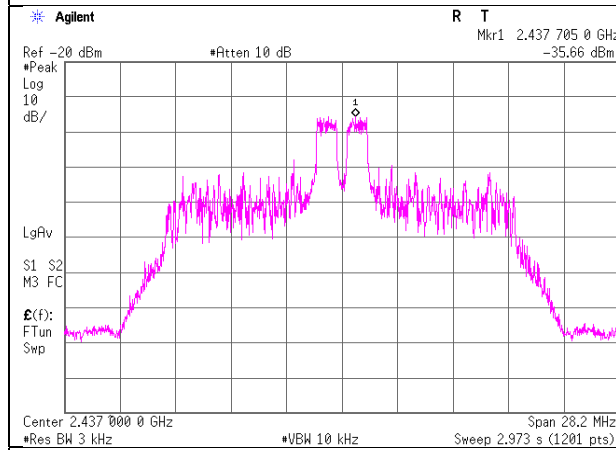
11ax-20 26-tone RU 2437 MHz

Antenna 2

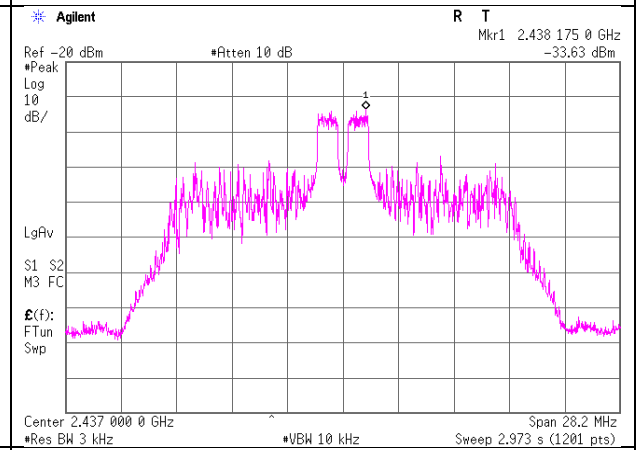
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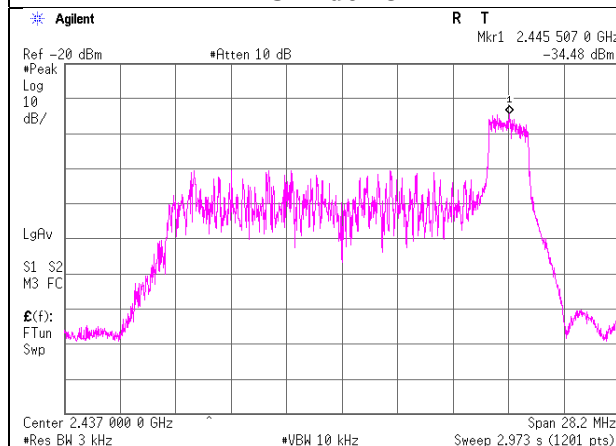
RU Index 4



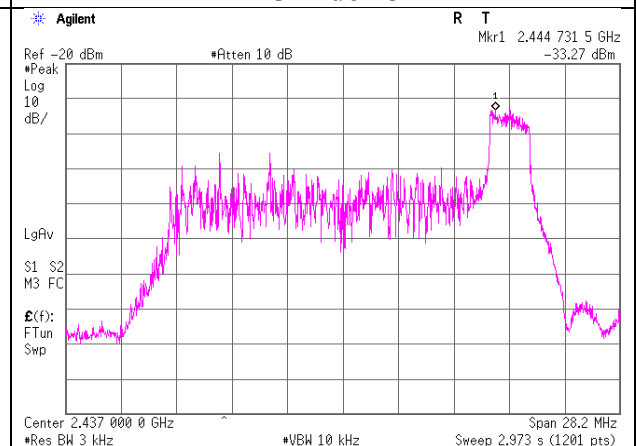
RU Index 4



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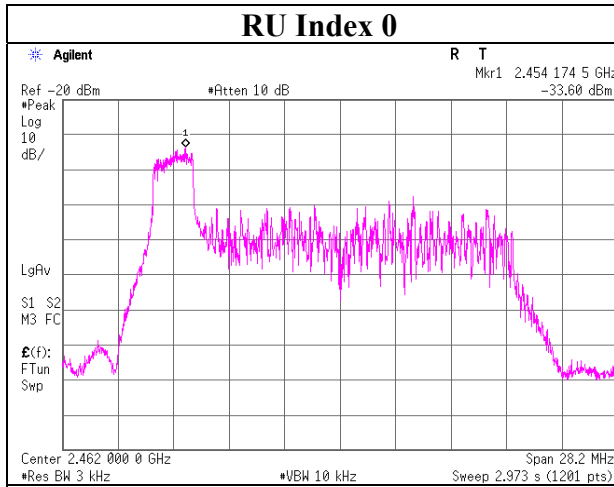
Facsimile : +81 596 24 8124

Power Density

11ax-20 26-tone RU 2462 MHz

Antenna 1

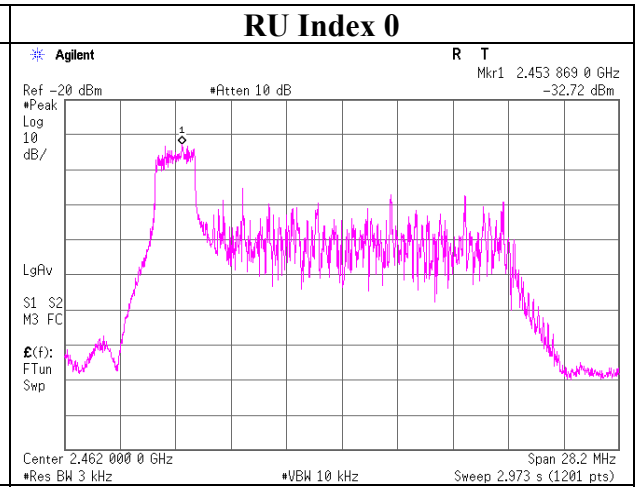
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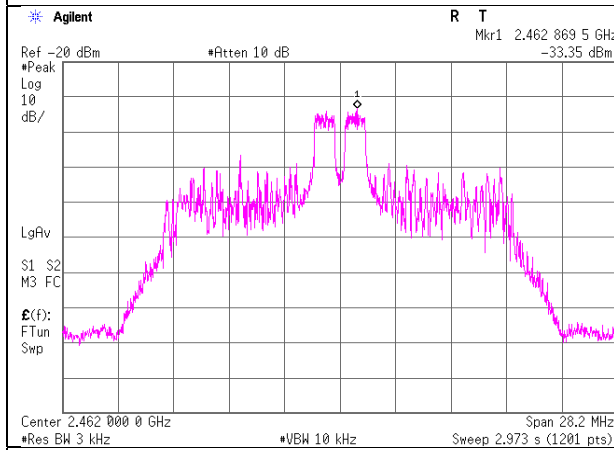
11ax-20 26-tone RU 2462 MHz

Antenna 2

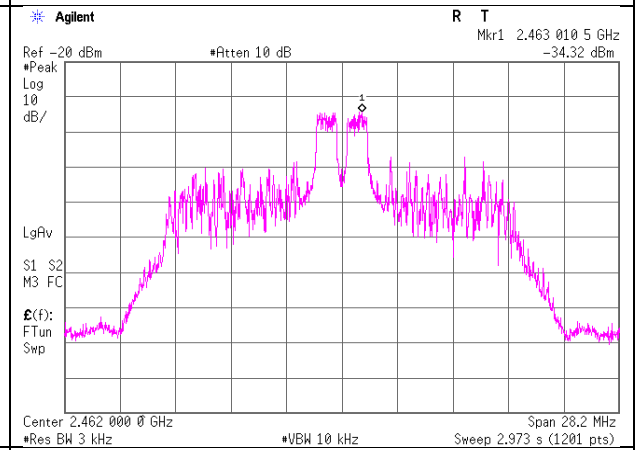
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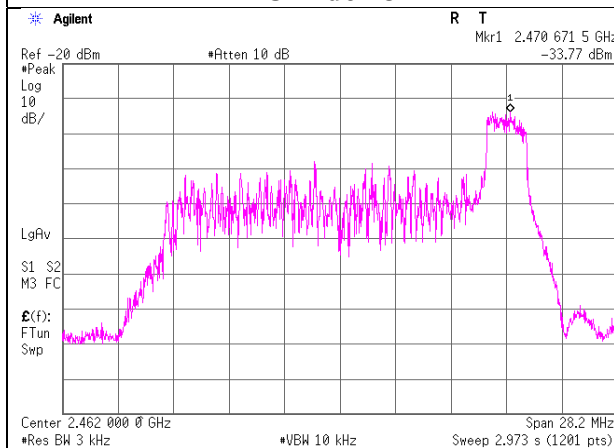
RU Index 4



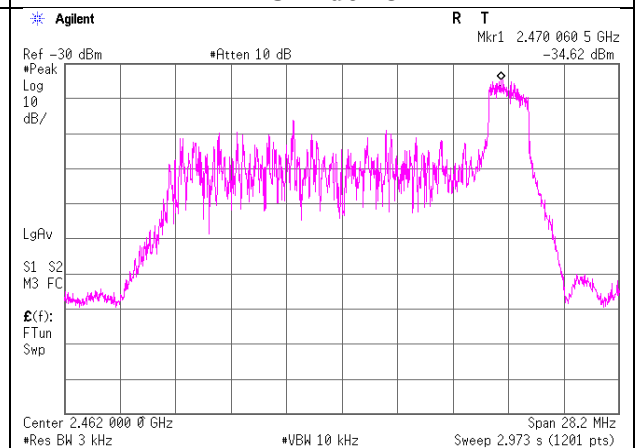
RU Index 4



RU Index 8



RU Index 8



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Power Density

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date February 18, 2020
Temperature / Humidity 22 deg. C / 35 % RH
Engineer Yuta Moriya
Mode Tx 11ax-20 (52-tone RU)

Antenna 1 + Antenna 2

RU Type	Freq. [MHz]	RU Index	Antenna 1	Antenna 2	Result		Limit	Margin
			Result [mW]	Result [mW]	[dBm]	[mW]	[dBm]	[dB]
52-tone RU	2412	37	0.017	0.016	-14.78	0.033	8.00	22.78
		38	0.016	0.016	-14.92	0.032	8.00	22.92
		40	0.019	0.014	-14.79	0.033	8.00	22.79
	2437	37	0.013	0.014	-15.74	0.027	8.00	23.74
		38	0.013	0.014	-15.76	0.027	8.00	23.76
		40	0.009	0.019	-15.59	0.028	8.00	23.59
	2462	37	0.013	0.016	-15.35	0.029	8.00	23.35
		38	0.016	0.017	-14.85	0.033	8.00	22.85
		40	0.015	0.012	-15.78	0.026	8.00	23.78

Sample Calculation:

Result = Antenna 1 + Antenna 2

Antenna 1

RU Type	Freq. [MHz]	RU Index	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
			[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
52-tone RU	2412	37	-32.27	4.82	9.73	-17.72	0.017	8.00	25.72
		38	-32.54	4.82	9.73	-17.99	0.016	8.00	25.99
		40	-31.78	4.82	9.73	-17.23	0.019	8.00	25.23
	2437	37	-33.55	4.82	9.73	-19.00	0.013	8.00	27.00
		38	-33.56	4.82	9.73	-19.01	0.013	8.00	27.01
		40	-35.02	4.82	9.73	-20.47	0.009	8.00	28.47
	2462	37	-33.37	4.81	9.73	-18.83	0.013	8.00	26.83
		38	-32.55	4.81	9.73	-18.01	0.016	8.00	26.01
		40	-32.82	4.81	9.73	-18.28	0.015	8.00	26.28

Antenna 2

RU Type	Freq. [MHz]	RU Index	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
			[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
52-tone RU	2412	37	-32.41	4.82	9.73	-17.86	0.016	8.00	25.86
		38	-32.43	4.82	9.73	-17.88	0.016	8.00	25.88
		40	-33.00	4.82	9.73	-18.45	0.014	8.00	26.45
	2437	37	-33.06	4.82	9.73	-18.51	0.014	8.00	26.51
		38	-33.09	4.82	9.73	-18.54	0.014	8.00	26.54
		40	-31.85	4.82	9.73	-17.30	0.019	8.00	25.30
	2462	37	-32.47	4.81	9.73	-17.93	0.016	8.00	25.93
		38	-32.26	4.81	9.73	-17.72	0.017	8.00	25.72
		40	-33.92	4.81	9.73	-19.38	0.012	8.00	27.38

Sample Calculation:

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

*The equipment and cables were not used for factor 0 dB of the data sheets.

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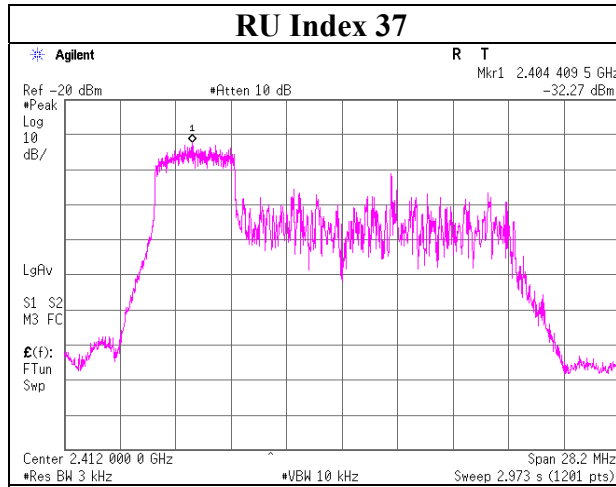
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Power Density

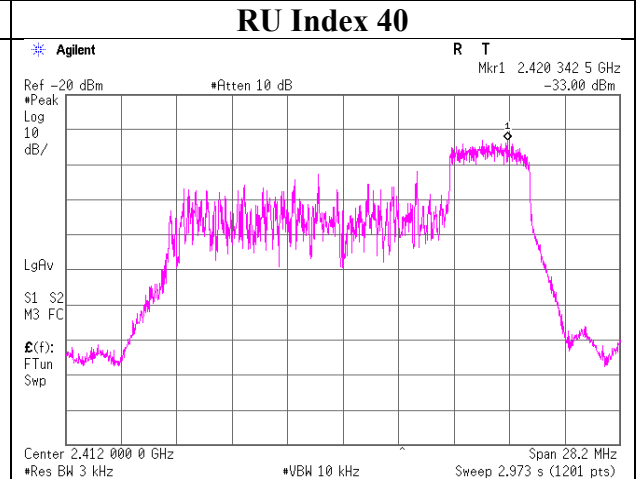
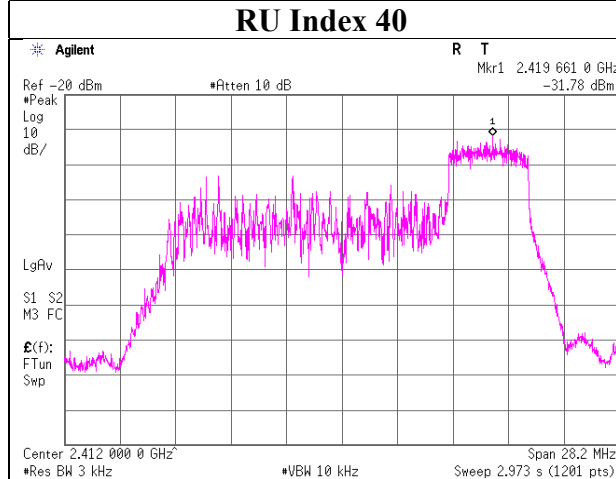
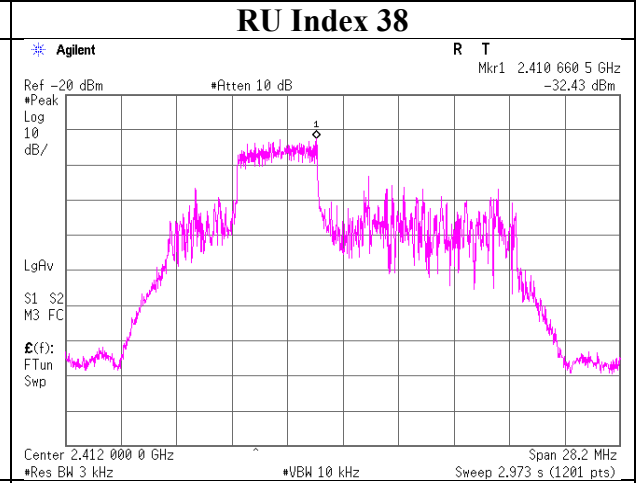
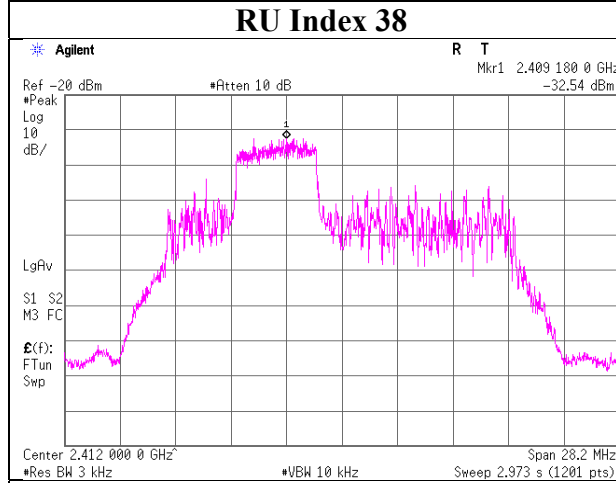
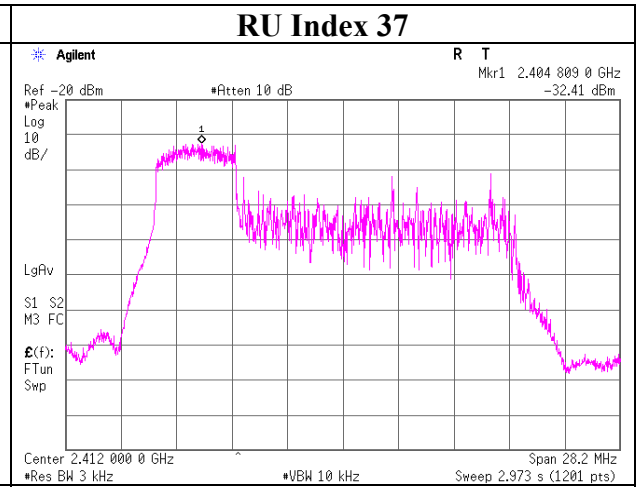
11ax-20 52-tone RU 2412 MHz

Antenna 1



11ax-20 52-tone RU 2412 MHz

Antenna 2



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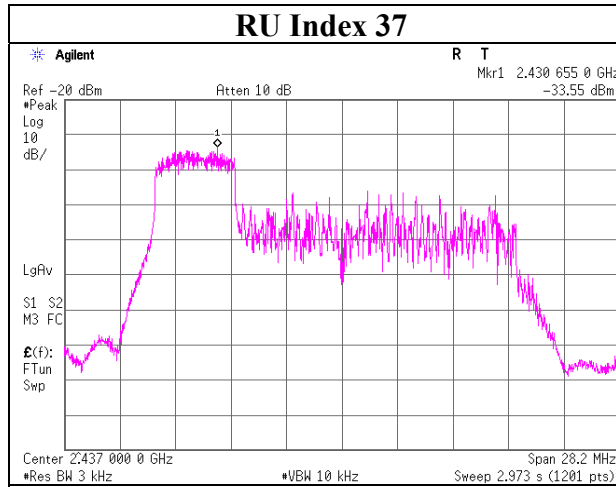
Telephone : +81 596 24 8999

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Power Density

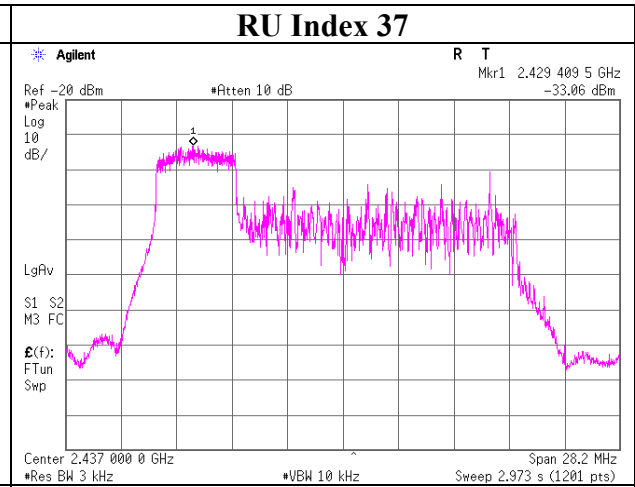
11ax-20 52-tone RU 2437 MHz

Antenna 1

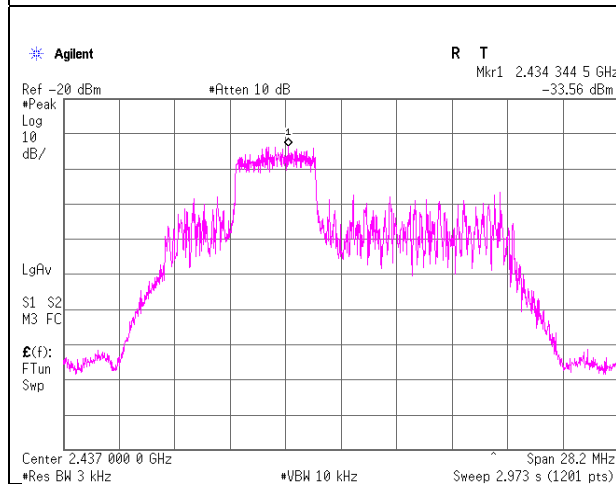


11ax-20 52-tone RU 2437 MHz

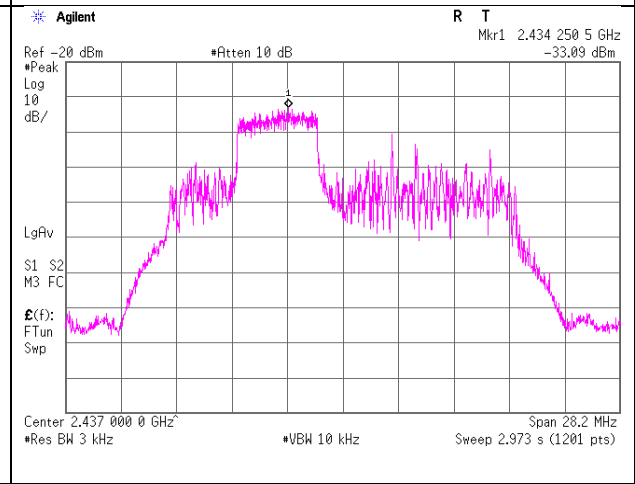
Antenna 2



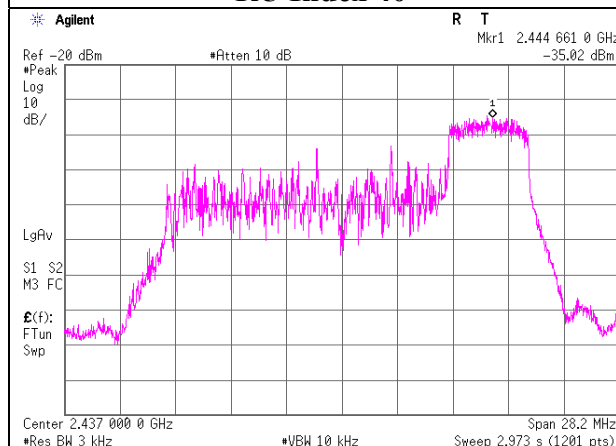
RU Index 38



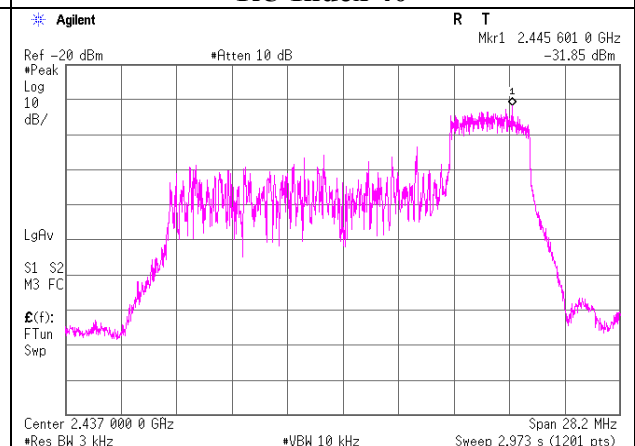
RU Index 38



RU Index 40



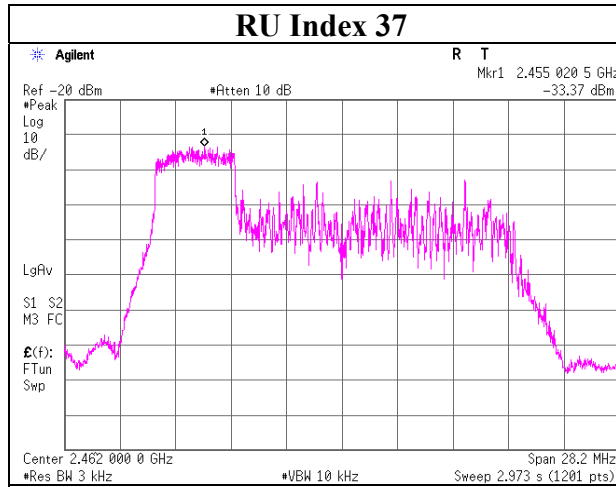
RU Index 40



Power Density

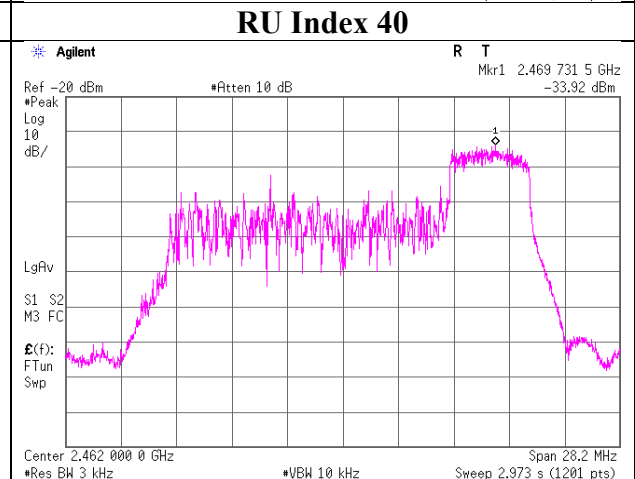
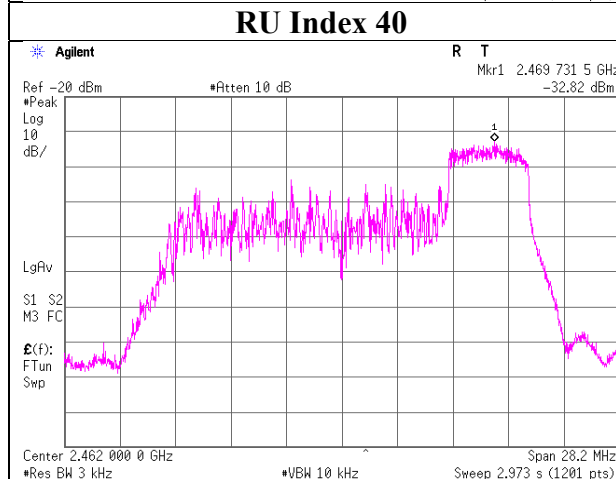
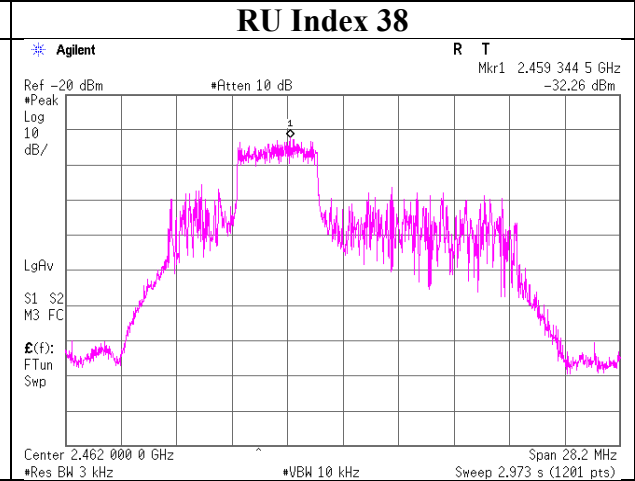
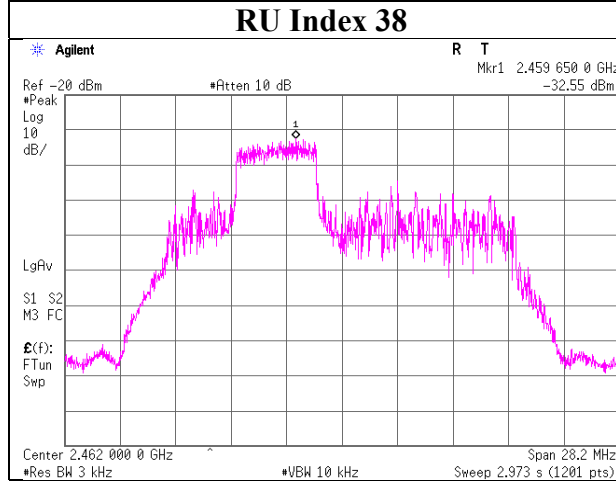
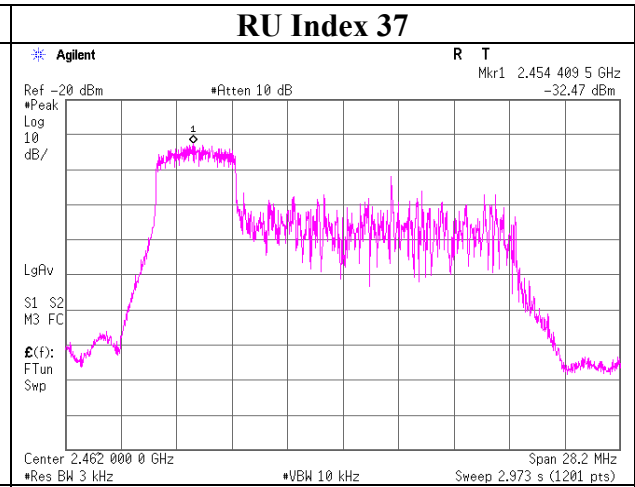
11ax-20 52-tone RU 2462 MHz

Antenna 1



11ax-20 52-tone RU 2462 MHz

Antenna 2



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Power Density

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	February 18, 2020
Temperature / Humidity	22 deg. C / 35 % RH
Engineer	Yuta Moriya
Mode	Tx 11ax-20 (106-tone RU)

Antenna 1 + Antenna 2

RU Type	Freq. [MHz]	RU Index	Antenna 1	Antenna 2	Result		Limit	Margin
			Result [mW]	Result [mW]	[dBm]	[mW]	[dBm]	[dB]
106-tone RU	2412	53	0.015	0.018	-14.79	0.033	8.00	22.79
		54	0.018	0.013	-15.08	0.031	8.00	23.08
	2437	53	0.010	0.016	-15.92	0.026	8.00	23.92
		54	0.011	0.017	-15.46	0.028	8.00	23.46
	2462	53	0.016	0.016	-14.88	0.032	8.00	22.88
		54	0.021	0.013	-14.75	0.033	8.00	22.75

Sample Calculation:

Result = Antenna 1 + Antenna 2

Antenna 1

RU Type	Freq. [MHz]	RU Index	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
			[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
106-tone RU	2412	53	-32.83	4.82	9.73	-18.28	0.015	8.00	26.28
		54	-31.92	4.82	9.73	-17.37	0.018	8.00	25.37
	2437	53	-34.55	4.82	9.73	-20.00	0.010	8.00	28.00
		54	-34.03	4.82	9.73	-19.48	0.011	8.00	27.48
	2462	53	-32.47	4.81	9.73	-17.93	0.016	8.00	25.93
		54	-31.38	4.81	9.73	-16.84	0.021	8.00	24.84

Antenna 2

RU Type	Freq. [MHz]	RU Index	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
			[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
106-tone RU	2412	53	-31.92	4.82	9.73	-17.37	0.018	8.00	25.37
		54	-33.50	4.82	9.73	-18.95	0.013	8.00	26.95
	2437	53	-32.63	4.82	9.73	-18.08	0.016	8.00	26.08
		54	-32.20	4.82	9.73	-17.65	0.017	8.00	25.65
	2462	53	-32.40	4.81	9.73	-17.86	0.016	8.00	25.86
		54	-33.48	4.81	9.73	-18.94	0.013	8.00	26.94

Sample Calculation:

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

*The equipment and cables were not used for factor 0 dB of the data sheets.

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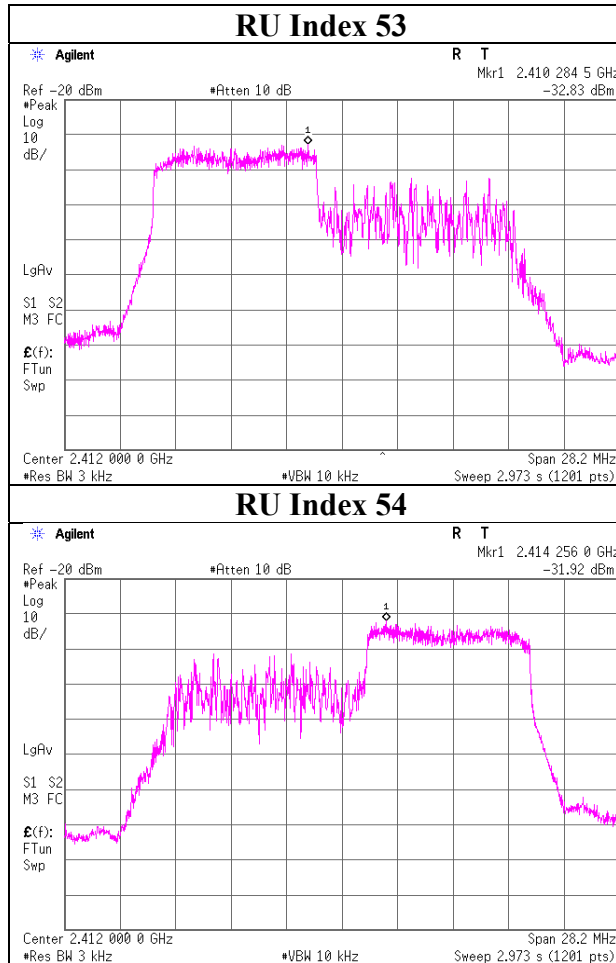
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Power Density

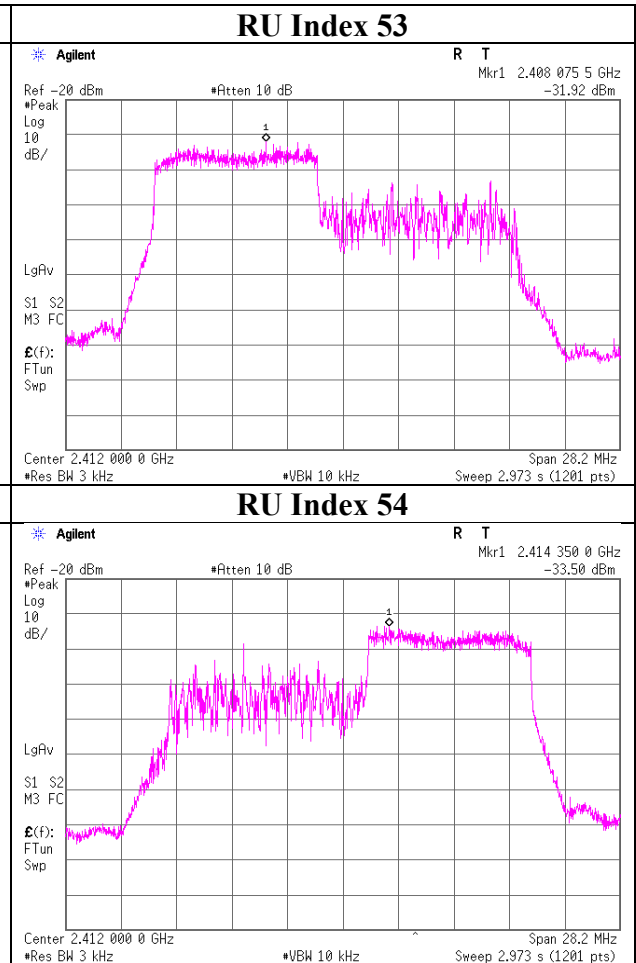
11ax-20 106-tone RU 2412 MHz

Antenna 1

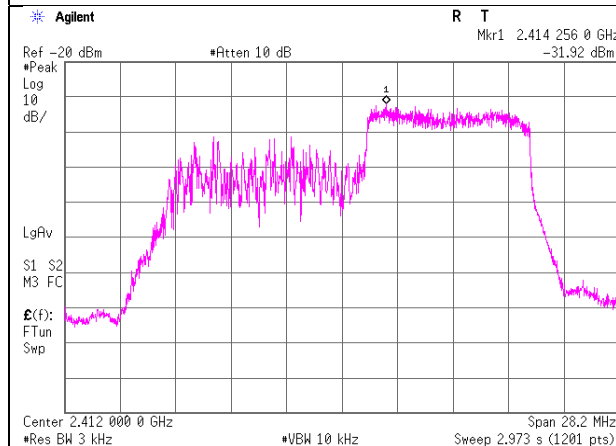


11ax-20 106-tone RU 2412 MHz

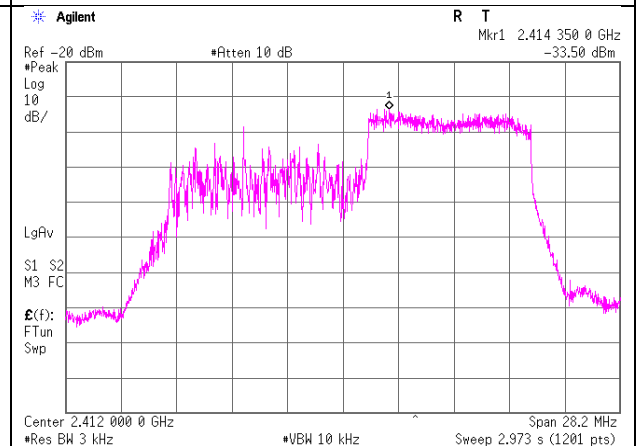
Antenna 2



RU Index 54



RU Index 54



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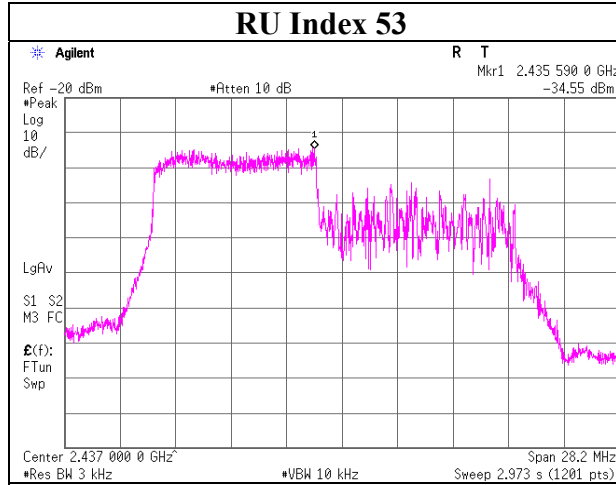
Facsimile : +81 596 24 8124

Power Density

11ax-20 106-tone RU 2437 MHz

Antenna 1

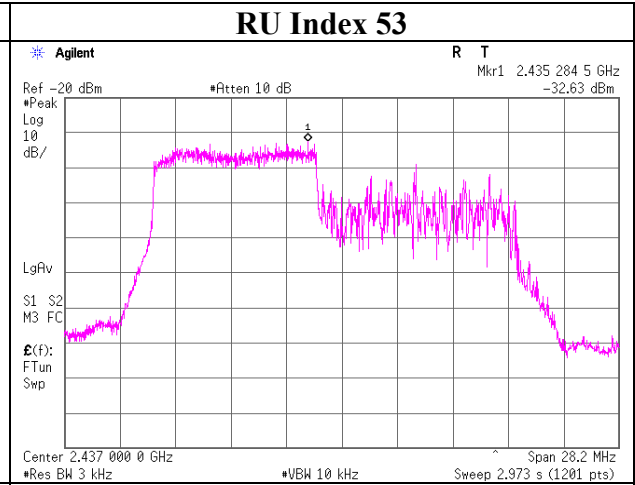
RU Index 53



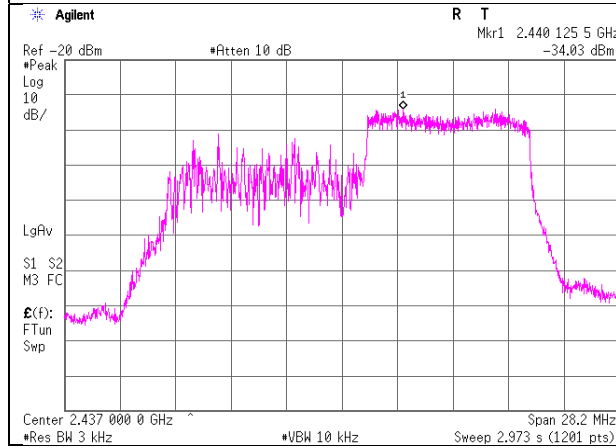
11ax-20 106-tone RU 2437 MHz

Antenna 2

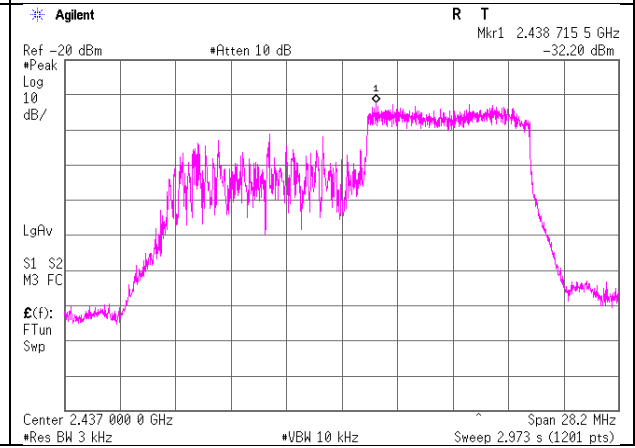
RU Index 53



RU Index 54



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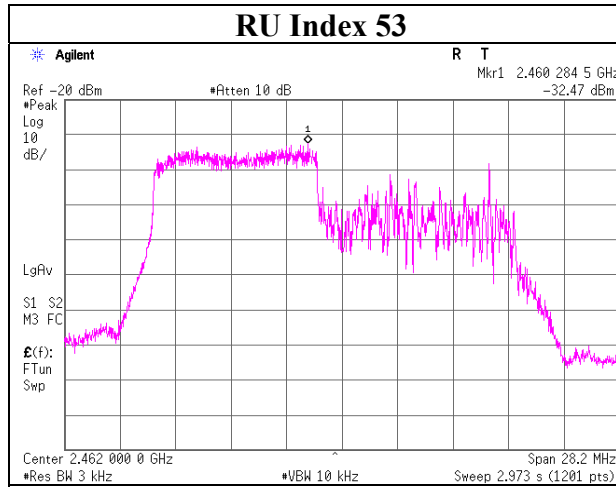
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Facsimile : +81 596 24 8124

Power Density

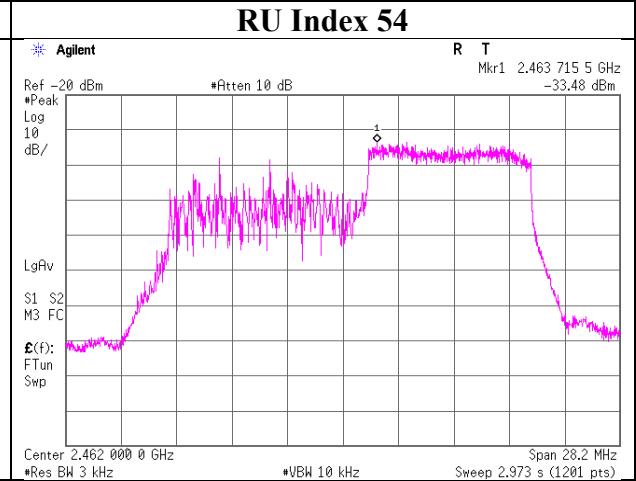
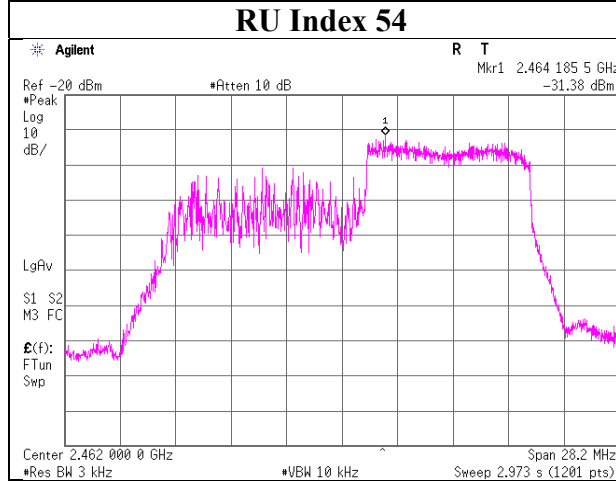
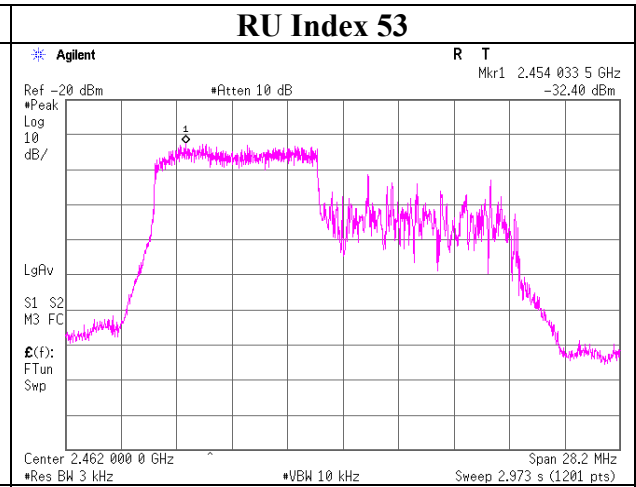
11ax-20 106-tone RU 2462 MHz

Antenna 1



11ax-20 106-tone RU 2462 MHz

Antenna 2



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Power Density

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	March 28, 2020
Temperature / Humidity	24 deg. C / 51 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ax-20 (242-tone RU)

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result		Limit	Margin
			[dBm]	[mW]	[dBm]	[dB]
2412.00	0.016	0.016	-14.97	0.032	8.00	22.97
2437.00	0.012	0.016	-15.46	0.028	8.00	23.46
2462.00	0.016	0.016	-14.89	0.032	8.00	22.89

Sample Calculation:

Result = Antenna 1 + Antenna 2

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit	Margin
				[dBm]	[mW]	[dBm]	[dB]
2412.00	-32.54	4.82	9.73	-17.99	0.016	8.00	25.99
2437.00	-33.72	4.82	9.73	-19.17	0.012	8.00	27.17
2462.00	-32.50	4.81	9.73	-17.96	0.016	8.00	25.96

Antenna 2

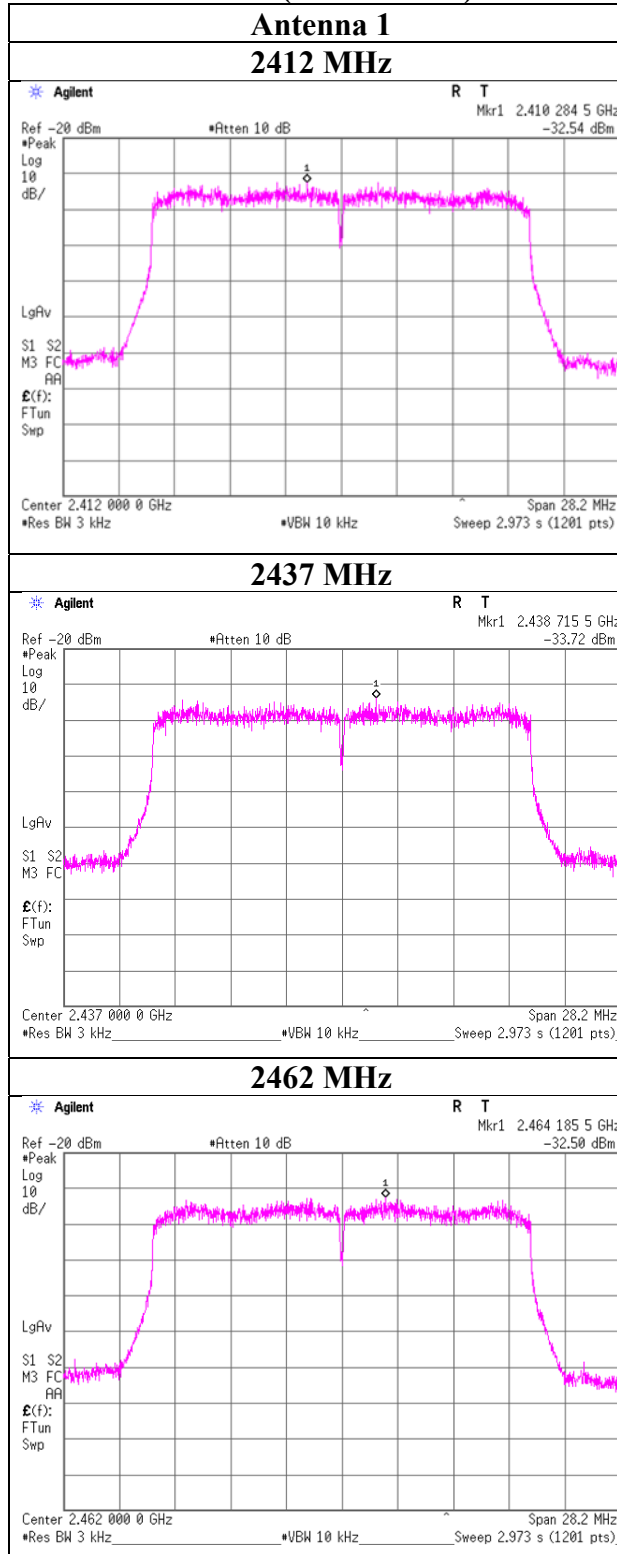
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit	Margin
				[dBm]	[mW]	[dBm]	[dB]
2412.00	-32.52	4.82	9.73	-17.97	0.016	8.00	25.97
2437.00	-32.42	4.82	9.73	-17.87	0.016	8.00	25.87
2462.00	-32.38	4.81	9.73	-17.84	0.016	8.00	25.84

Sample Calculation:

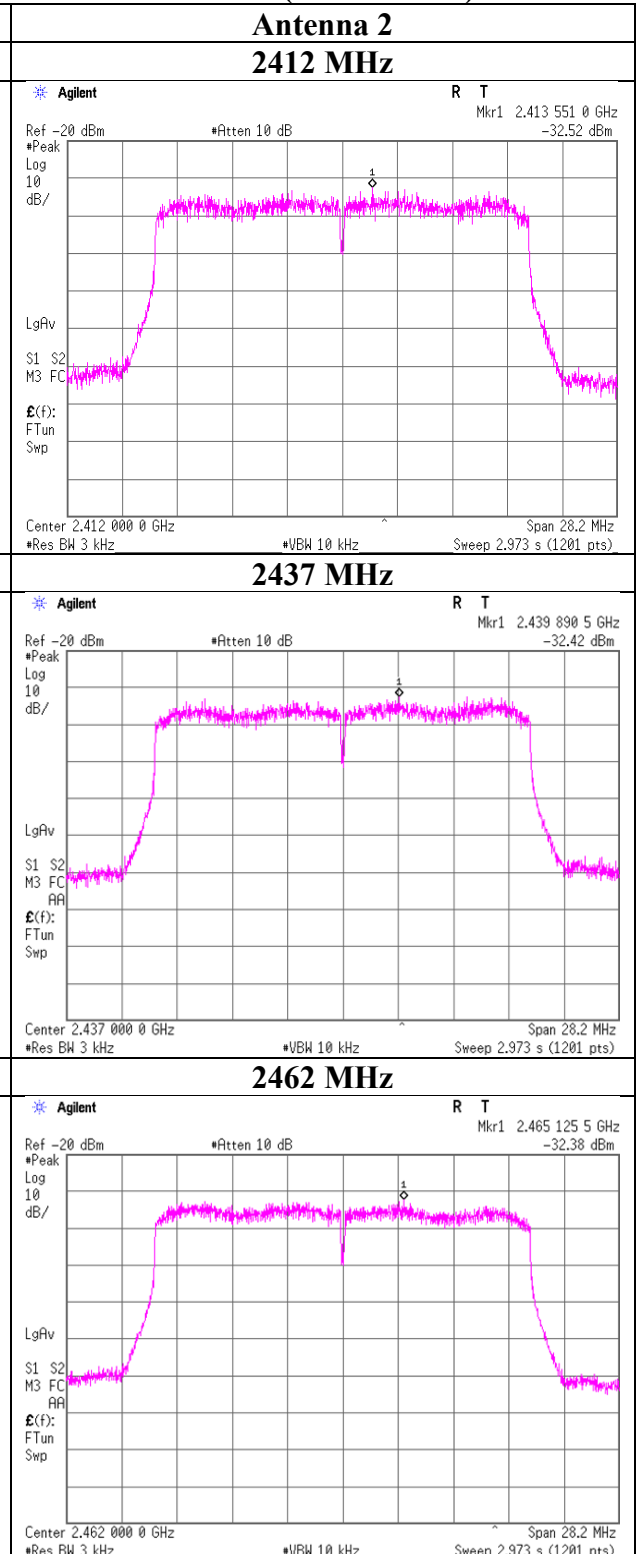
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

Power Density

11ax-20 (242-tone RU)



11ax-20 (242-tone RU)



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Power Density

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 19, 2019
Temperature / Humidity	24 deg. C / 32 % RH
Engineer	Takafumi Noguchi
Mode	Tx BT LE

BT1

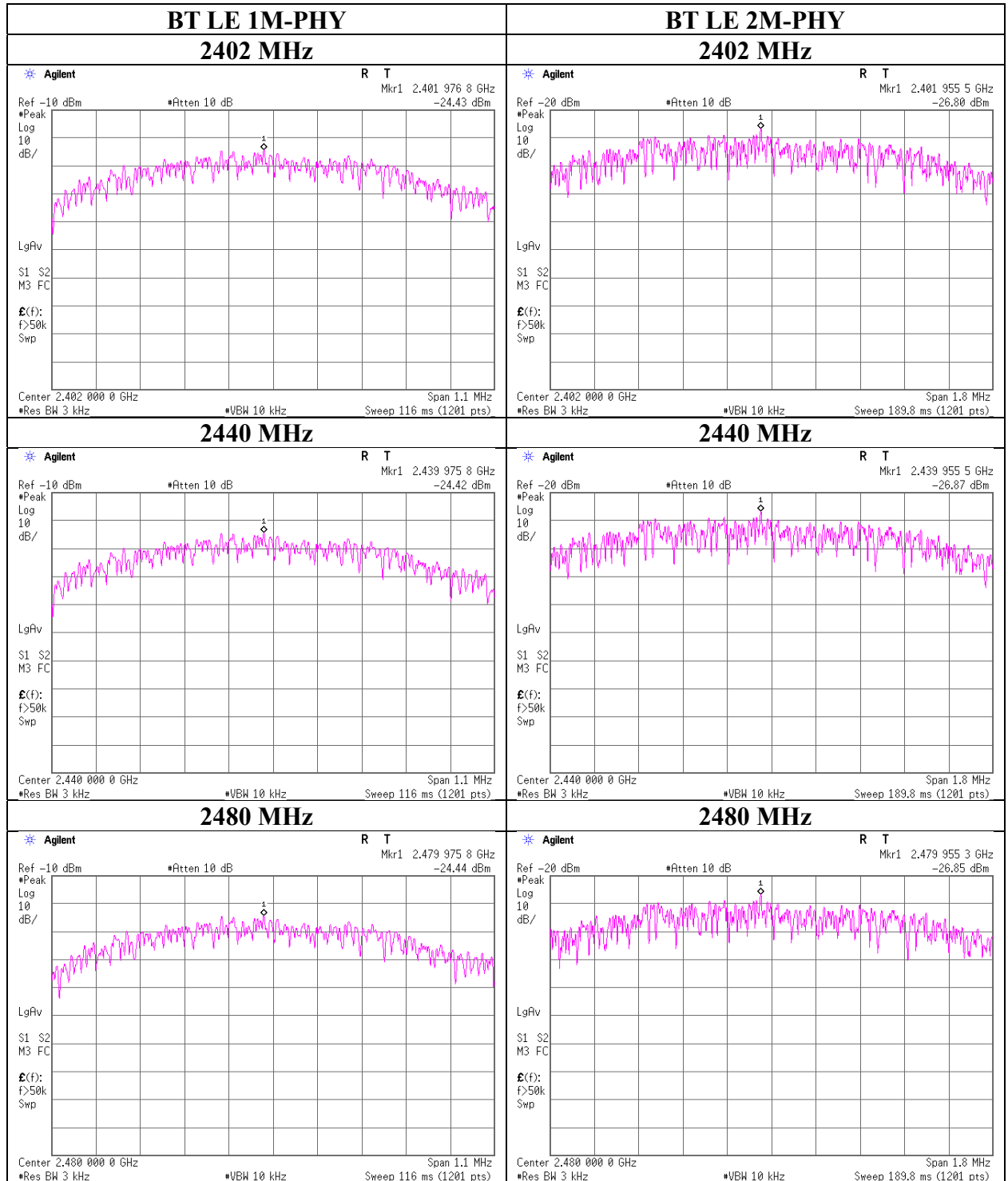
Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
1M-PHY	2402	-24.43	0.78	9.73	-13.92	8.00	21.92
	2440	-24.42	0.79	9.73	-13.90	8.00	21.90
	2480	-24.44	0.79	9.73	-13.92	8.00	21.92
2M-PHY	2402	-26.80	0.78	9.73	-16.29	8.00	24.29
	2440	-26.87	0.79	9.73	-16.35	8.00	24.35
	2480	-26.85	0.79	9.73	-16.33	8.00	24.33

BT2

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
1M-PHY	2402	-22.51	0.78	9.73	-12.00	8.00	20.00
	2440	-22.56	0.79	9.73	-12.04	8.00	20.04
	2480	-22.81	0.79	9.73	-12.29	8.00	20.29
2M-PHY	2402	-24.68	0.78	9.73	-14.17	8.00	22.17
	2440	-24.76	0.79	9.73	-14.24	8.00	22.24
	2480	-24.93	0.79	9.73	-14.41	8.00	22.41

Power Density

BT1



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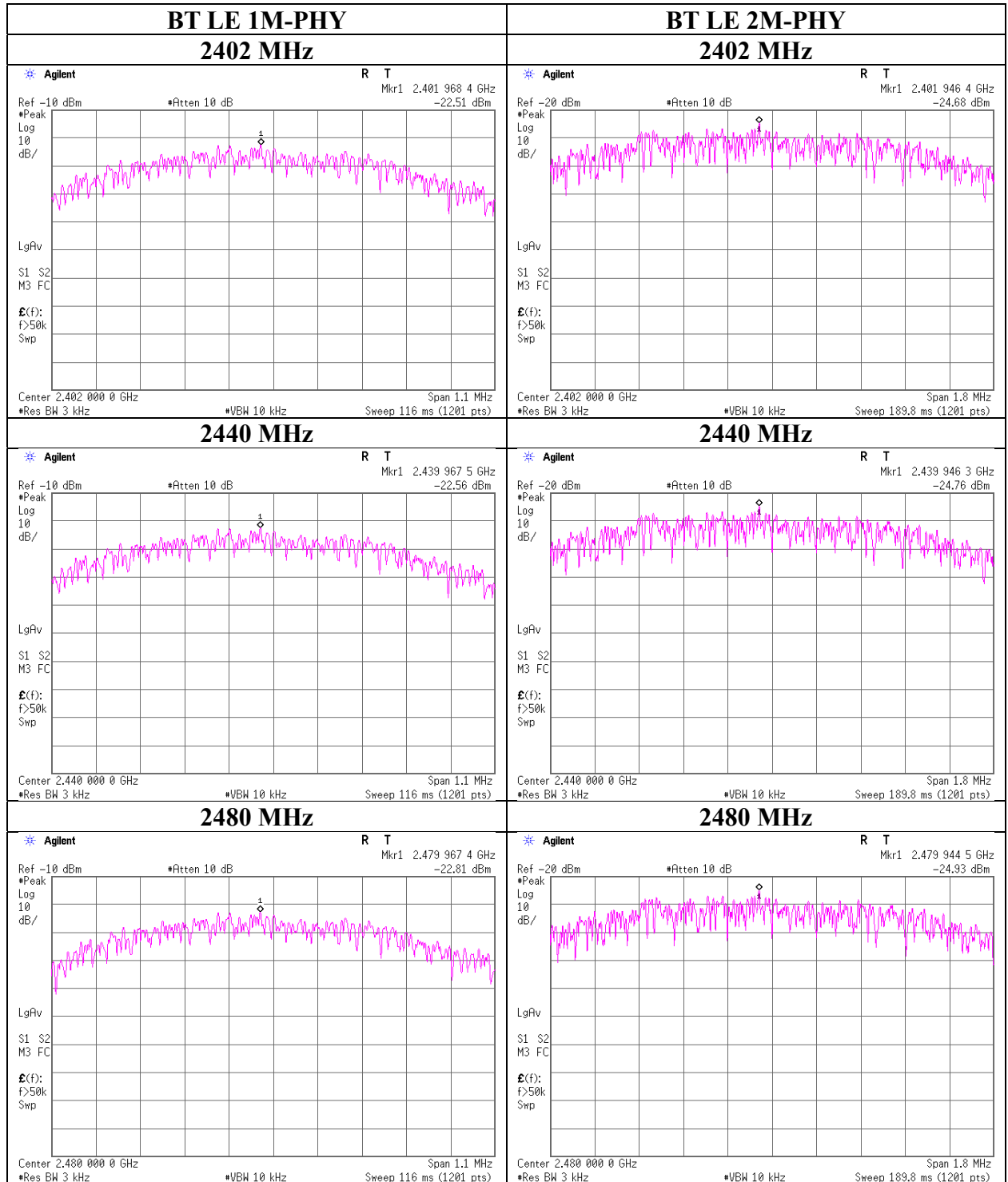
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Power Density

BT2



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APPENDIX 2: Test instruments

Test Instruments (1/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Cal Int
RE/CE	141532	DIGITAL HiTESTER	HIOKI	3805	51201197	01/06/2020	01/31/2021	12
RE/CE	141152	EMI measurement program	TSJ	TEPTO-DV	-	-	-	-
RE	141232	High Pass Filter 3.5-18.0GHz	UL Japan	HPF SELECTOR	001	09/11/2019	09/30/2020	12
RE/CE	141899	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY46180655	08/07/2019	08/31/2020	12
RE	141507	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	09/26/2019	09/30/2020	12
RE	142013	AC3_Semi Anechoic Chamber(SVSWR)	TDK	Semi Anechoic Chamber 3m	DA-10005	04/08/2019	04/30/2021	24
RE	141580	MicroWave System Amplifier	Keysight Technologies Inc	83017A	MY39500779	03/05/2019	03/31/2020 *1)	12
RE/CE	142008	AC3_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	06/26/2018	06/30/2020	24
RE/AT	141554	Thermo-Hygrometer	CUSTOM	CTH-201	1301	01/07/2020	01/31/2021	12
RE	177964	Microwave Cable	Junkosha INC.	MMX221	1901S329(1m)/1902S579(5m)	03/05/2019	03/31/2020 *1)	12
RE/CE	142183	Measure	KOMELON	KMC-36	-	-	-	-
AT	141226	Microwave Cable	Junkosha	MMX221-00500DMSDMS	1502S304	03/05/2019	03/31/2020 *1)	12
AT	141327	Coaxial Cable	UL Japan	-	-	02/04/2020	02/28/2021	12
AT	141855	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY46187750	11/19/2019	11/30/2020	12
AT	141812	Power Meter	Keysight Technologies Inc	8990B	MY51000271	08/02/2019	08/31/2020	12
AT	141842	Power sensor	Keysight Technologies Inc	N1923A	MY54070003	08/02/2019	08/31/2020	12
AT	141835	Power sensor	Keysight Technologies Inc	N1923A	MY54070004	08/02/2019	08/31/2020	12
AT	141156	Attenuator(10dB)	Weinschel Corp	2	BL1173	11/07/2019	11/30/2020	12
AT	141420	Attenuator	Weinschel Associates	WA56-10	56100307	05/17/2019	05/31/2020	12
AT	141419	Attenuator	Weinschel Associates	WA56-10	56100305	05/17/2019	05/31/2020	12
AT	141900	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY46185823	11/20/2019	11/30/2020	12
AT	141414	Microwave Cable	Junkosha	MWX221	1207S407	08/06/2019	08/31/2020	12
RE	141513	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	10/08/2019	10/31/2020	12
RE	141949	Test Receiver	Rohde & Schwarz	ESCI	100767	08/02/2019	08/31/2020	12
RE	141582	Pre Amplifier	SONOMA INSTRUMENT	310	260834	02/10/2020	02/28/2021	12
RE	141266	Logperiodic Antenna(200-1000MHz)	Schwarzbeck	VUSLP9111B	9111B-191	08/24/2019	08/31/2020	12
RE	141323	Coaxial cable	UL Japan	-	-	07/02/2019	07/31/2020	12
RE	141424	Biconical Antenna	Schwarzbeck	VHA9103+BBA9106	1915	08/24/2019	08/31/2020	12
RE	142314	Attenuator	Pasternack	PE7390-6	D/C 1504	06/11/2019	06/30/2020	12
CE	141357	LISN(AMN)	Schwarzbeck	NSLK8127	8127-729	07/05/2019	07/31/2020	12
CE	146754	Test Receiver	Rohde & Schwarz	ESCI	100299	10/08/2019	10/31/2020	12
CE	141216	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W/SFM14/sucoform141-PE/421-010	-/00640	07/02/2019	07/31/2020	12
CE	141247	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	12/02/2019	12/31/2020	12

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Test Instruments (2/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Cal Int
RE	141503	Horn Antenna 18-26.5GHz	EMCO	3160-09	1265	10/08/2019	10/31/2020	12
RE	141885	Spectrum Analyzer	Keysight Technologies Inc	E4448A	US44300523	11/21/2019	11/30/2020	12
RE	141902	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY46187105	10/09/2019	10/31/2020	12
RE	141279	Microwave Cable	Junkosha	MMX221-00500DMSDMS	1502S303	03/05/2019	03/31/2020 *1)	12
RE	141578	Pre Amplifier	Keysight Technologies Inc	8447D	2944A10845	09/06/2019	09/30/2020	12
RE	141317	Coaxial Cable	Fujikura/Agilent	-	-	09/03/2019	09/30/2020	12
RE	141203	Attenuator(6dB)	Weinschel Corp	2	BK7970	11/07/2019	11/30/2020	12
RE	141265	Logperiodic Antenna(200-1000MHz)	Schwarzbeck	VUSLP9111B	9111B-190	08/23/2019	08/31/2020	12
RE	141392	Microwave Cable	Junkosha	MWX221	1604S253(1 m) / 1608S087(5 m)	08/06/2019	08/31/2020	12
RE	141512	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	09/03/2019	09/30/2020	12
RE	141296	High Pass Filter 3.5-18.0GHz	UL Japan	HPF SELECTOR	002	09/11/2019	09/30/2020	12
RE	141542	Digital Tester	Fluke Corporation	FLUKE 26-3	78030611	08/20/2019	08/31/2020	12
RE	142006	AC2_Semi Anechoic Chamber(SVSWR)	TDK	Semi Anechoic Chamber 3m	DA-06902	04/01/2019	04/30/2021	24
RE	142004	AC2_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	06/29/2018	06/30/2020	24
RE	192300	Thermo-Hygrometer	CUSTOM	CTH-201	0013	12/19/2019	12/31/2020	12
RE	141427	Biconical Antenna	Schwarzbeck	VHA9103B+BBA9106	8031	08/23/2019	08/31/2020	12
RE	141579	Pre Amplifier	Keysight Technologies Inc	8449B	3008A02142	01/07/2020	01/31/2021	12
AT	141572	Thermo-Hygrometer	CUSTOM	CTH-201	3401	01/07/2020	01/31/2021	12
AT	141821	Power Splitters/Combiners	Mini-Circuit	ZFSC-2-10G	326	09/12/2019	09/30/2020	12
RE	141545	DIGITAL HiTESTER	HIOKI	3805	51201148	01/6/2020	01/31/2021	12
RE	142017	AC4_Semi Anechoic Chamber(SVSWR)	TDK	Semi Anechoic Chamber 3m	DA-10005	04/4/2019	04/30/2021	24
RE	141562	Thermo-Hygrometer	CUSTOM	CTH-201	0010	01/7/2020	01/31/2021	12
RE	141412	Microwave Cable	Junkosha	MWX221	1305S002R(1m) / 1405S146(5m)	06/17/2019	06/30/2020	12
RE	141581	MicroWave System Amplifier	Keysight Technologies Inc	83017A	650	10/16/2019	10/31/2020	12
RE	141508	Horn Antenna 1-18GHz	Schwarzbeck Mess - Elektronik	BBHA9120D	9120D-557	09/26/2019	09/30/2020	12
RE	142227	Measure	KOMELON	KMC-36	-	-	-	-

*1) This test equipment was used for the tests before the expiration date of the calibration.

*Hyphens for Last Calibration Date, Calibration Due Date and Cal Int (month) are instruments that Calibration is not required (e.g. software), or instruments checked in advance before use.

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

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

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

Test item: CE: Conducted Emission test
RE: Radiated Emission test
AT: Antenna Terminal Conducted test

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