

Radiated Spurious Emission

Report No. 13554183S-I-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date November 22, 2020
Temperature / Humidity 24 deg.C, 52 %RH
Engineer Hiromasa Sato
(1 GHz -6.4 GHz)
Mode Tx 11a 5320 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(above 1 GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5350.000	PK	49.50	31.99	17.62	39.74	2.28	61.65	73.9	12.2	397	358	-
Hori.	5350.000	AV	36.68	31.99	17.62	39.74	2.28	48.83	53.9	5.0	397	358	VBW:1.5 kHz
Vert.	5350.000	PK	45.85	31.99	17.62	39.74	2.28	58.00	73.9	15.9	345	281	-
Vert.	5350.000	AV	34.30	31.99	17.62	39.74	2.28	46.45	53.9	7.4	345	281	VBW:1.5 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

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

Distance factor : 1 GHz - 10 GHz: $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

10 GHz - 40 GHz: $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

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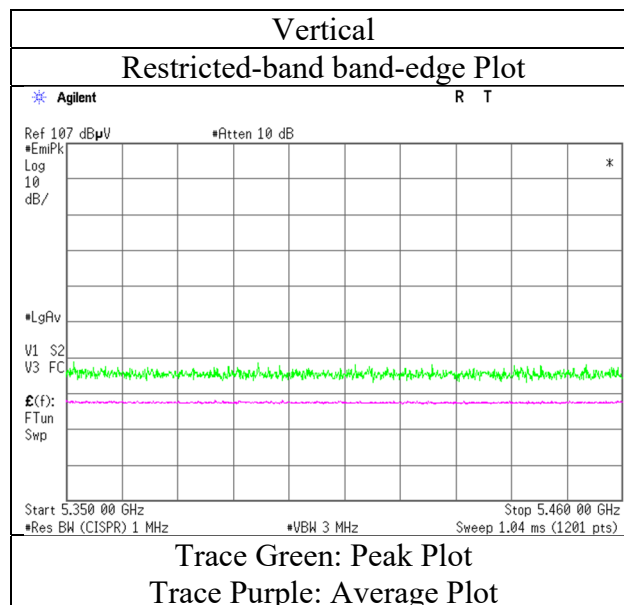
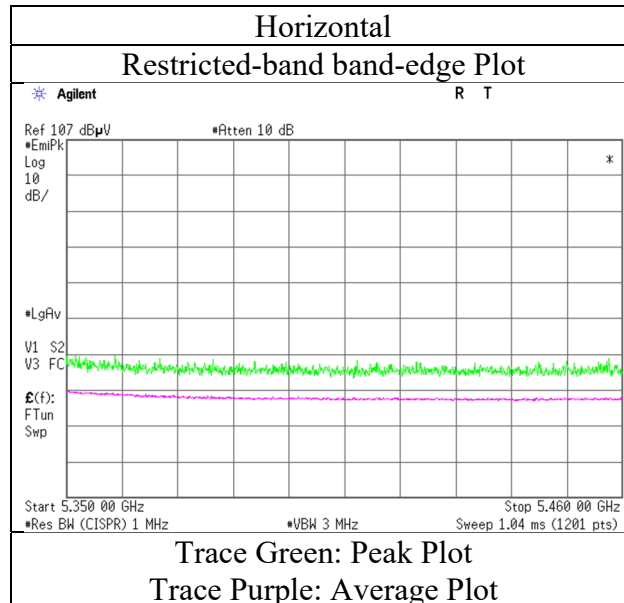
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Semi Anechoic Chamber	1
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Temperature / Humidity	24 deg.C, 52 %RH
Engineer	Hirosasa Sato
Mode	Tx 11a 5320 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 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.

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Date November 22, 2020
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Engineer Hiromasa Sato
(1 GHz -6.4 GHz)
Mode Tx 11a 5500 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(above 1 GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5460.000	PK	47.28	32.22	17.72	39.75	2.28	59.75	73.9	14.1	389	258	-
Hori.	5460.000	AV	36.36	32.22	17.72	39.75	2.28	48.83	53.9	5.0	389	258	VBW:1.5 kHz
Vert.	5460.000	PK	45.32	32.22	17.72	39.75	2.28	57.79	73.9	16.1	397	302	-
Vert.	5460.000	AV	35.47	32.22	17.72	39.75	2.28	47.94	53.9	5.9	397	302	VBW:1.5 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

(Calculation) (above 1 GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5470.000	PK	48.69	32.24	17.72	39.75	2.28	61.18	-34.05	-27.0	7.0	389	258	-
Vert.	5470.000	PK	46.55	32.24	17.72	39.75	2.28	59.04	-36.19	-27.0	9.1	397	302	-

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Result (EIRP [dBm]) = $10 * \text{LOG}((10^{\wedge}(\text{Electric Field Strength [dBuV/m]} / 20)) * 10^{\wedge}(-6) * \text{Distance : } 3\text{ [m]})^{\wedge}2 / 30 * 10^{\wedge}3)$

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

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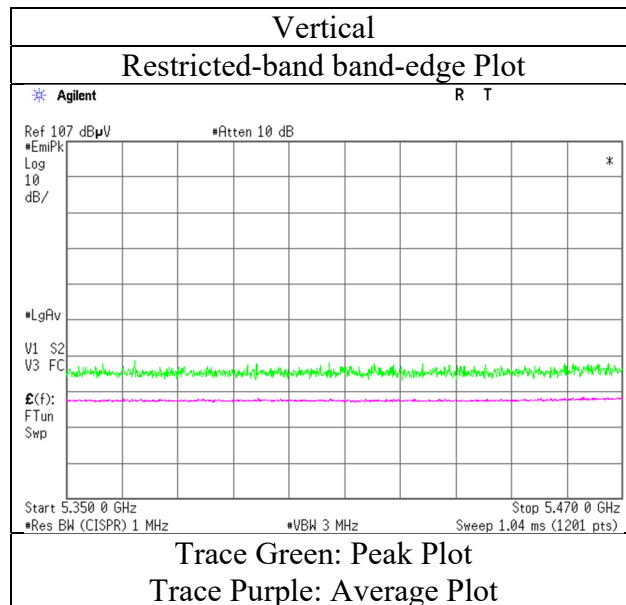
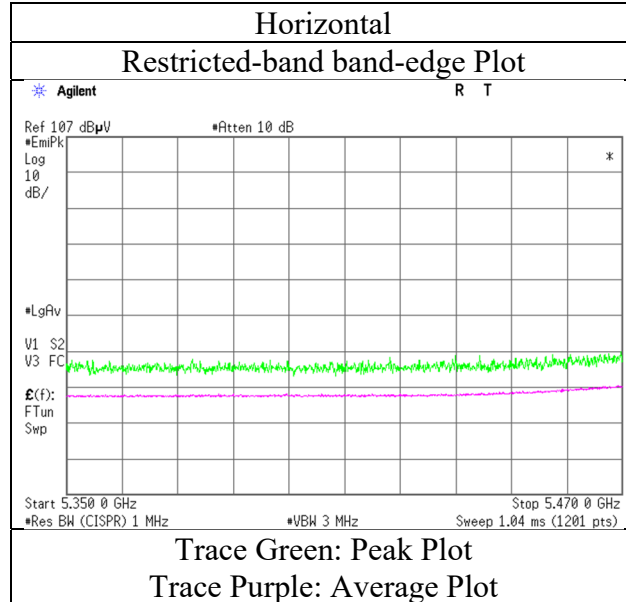
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Semi Anechoic Chamber 1
Date November 22, 2020
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Engineer Hiromasa Sato
Mode Tx 11a 5500 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz



* 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.

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Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date November 22, 2020
Temperature / Humidity 24 deg.C, 52 %RH
Engineer Hiromasa Sato
(1 GHz -6.4 GHz)
Mode Tx 11a 5700 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(Calculation) (above 1 GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5725.000	PK	48.19	32.64	17.89	39.92	2.28	61.08	-34.15	-27.0	7.1	354	348	-
Vert.	5725.000	PK	45.92	32.64	17.89	39.92	2.28	58.81	-36.42	-27.0	9.4	388	278	-

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Result (EIRP [dBm]) = 10 * LOG((10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance : 3 [m]) ^ 2 / 30 * 10 ^ 3)

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

Distance factor : 1 GHz - 10 GHz : 20log (3.90 m / 3.0 m) = 2.28 dB

10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

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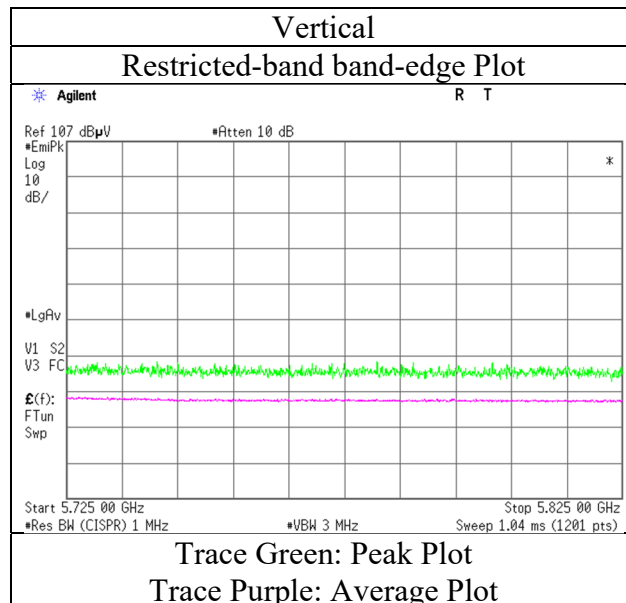
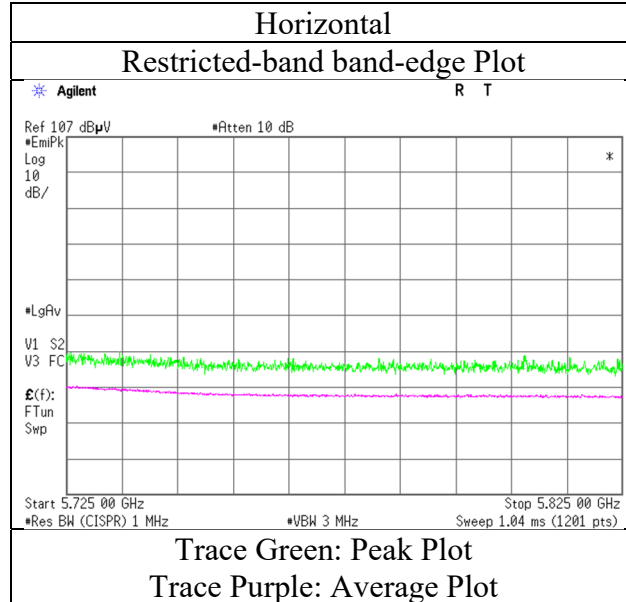
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Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	November 22, 2020
Temperature / Humidity	24 deg.C, 52 %RH
Engineer	Huromasa Sato
Mode	Tx 11a 5700 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz



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Semi Anechoic Chamber 1
Date November 22, 2020
Temperature / Humidity 24 deg.C, 52 %RH
Engineer Hiromasa Sato
(1 GHz -6.4 GHz)
Mode Tx 11a 5745 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(Calculation) (above 1 GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	44.96	32.44	17.84	39.86	2.28	57.66	-37.57	-27.0	10.5	397	358	-
Hori.	5700.000	PK	45.93	32.56	17.87	39.90	2.28	58.74	-36.49	10.0	46.4	397	358	-
Hori.	5720.000	PK	46.29	32.62	17.88	39.92	2.28	59.15	-36.08	15.6	51.6	397	358	-
Hori.	5725.000	PK	57.40	32.64	17.89	39.92	2.28	70.29	-24.94	27.0	51.9	397	358	-
Vert.	5650.000	PK	44.99	32.44	17.84	39.86	2.28	57.69	-37.54	-27.0	10.5	383	302	-
Vert.	5700.000	PK	45.12	32.56	17.87	39.90	2.28	57.93	-37.30	10.0	47.3	383	302	-
Vert.	5720.000	PK	45.25	32.62	17.88	39.92	2.28	58.11	-37.12	15.6	52.7	383	302	-
Vert.	5725.000	PK	46.22	32.64	17.89	39.92	2.28	59.11	-36.12	27.0	63.1	383	302	-

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Result (EIRP [dBm]) = 10 * LOG ((10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance : 3 [m]) ^ 2 / 30 * 10 ^ 3)

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

Distance factor : 1 GHz - 10 GHz : 20log (3.90 m / 3.0 m) = 2.28 dB

10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

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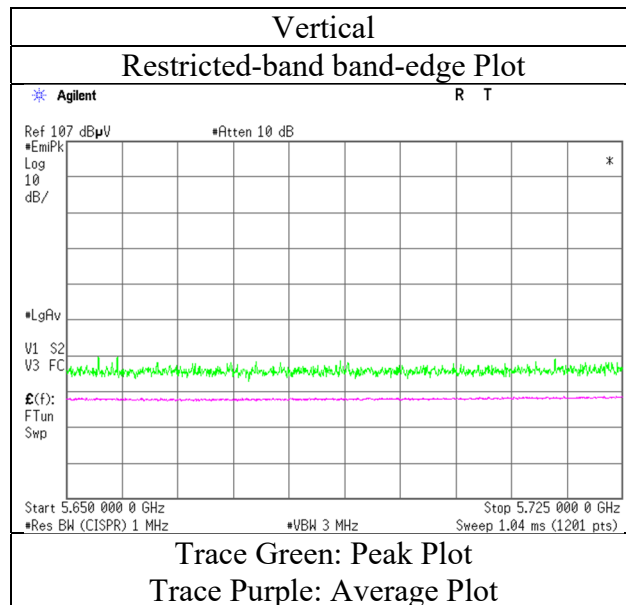
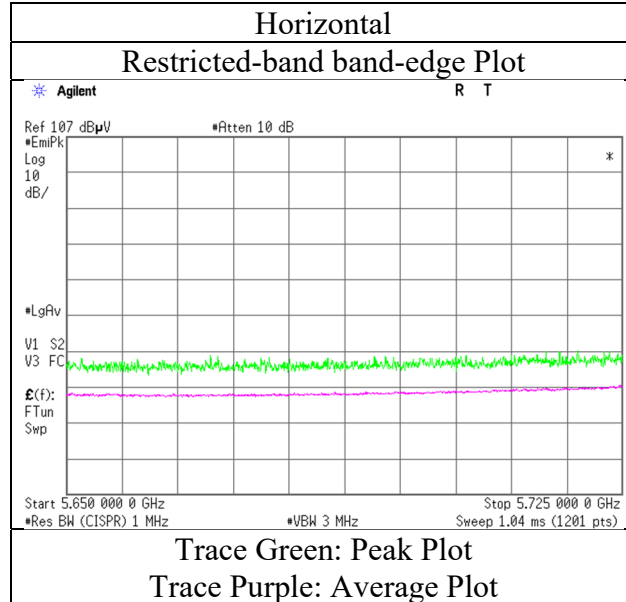
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Mode Tx 11a 5825 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(Calculation) (above 1 GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	47.00	32.91	17.96	40.02	2.28	60.13	-35.10	27.0	62.1	369	358	-
Hori.	5855.000	PK	47.56	32.92	17.96	40.02	2.28	60.70	-34.53	15.6	50.1	369	358	-
Hori.	5875.000	PK	45.39	32.95	17.99	40.04	2.28	58.57	-36.66	10.0	46.6	369	358	-
Hori.	5925.000	PK	44.77	32.99	18.01	40.07	2.28	57.98	-37.25	-27.0	10.2	369	358	-
Vert.	5850.000	PK	45.94	32.91	17.96	40.02	2.28	59.07	-36.16	27.0	63.1	342	266	-
Vert.	5855.000	PK	44.84	32.92	17.96	40.02	2.28	57.98	-37.25	15.6	52.8	342	266	-
Vert.	5875.000	PK	46.18	32.95	17.99	40.04	2.28	59.36	-35.87	10.0	45.8	342	266	-
Vert.	5925.000	PK	44.95	32.99	18.01	40.07	2.28	58.16	-37.07	-27.0	10.0	342	266	-

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Result (EIRP [dBm]) = 10 * LOG ((10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance : 3 [m]) ^ 2 / 30 * 10 ^ 3)

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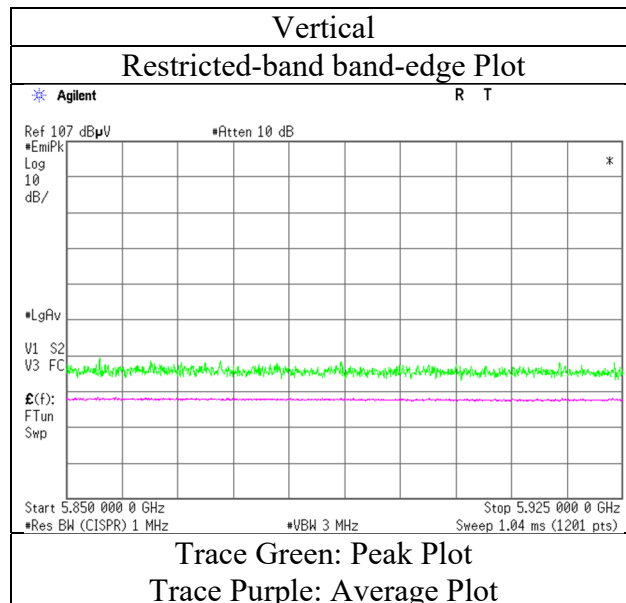
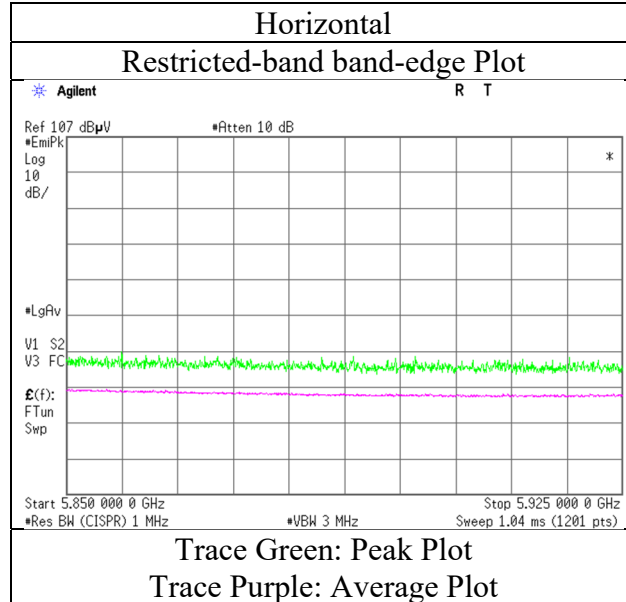
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Mode	Tx 11n-20 5180 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(above 1 GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5150.000	PK	51.00	32.25	17.45	39.72	2.28	63.26	73.9	10.6	396	359	-
Hori.	5150.000	AV	38.59	32.25	17.45	39.72	2.28	50.85	53.9	3.0	396	359	VBW:4.3 kHz
Vert.	5150.000	PK	44.00	32.25	17.45	39.72	2.28	56.26	73.9	17.6	400	319	-
Vert.	5150.000	AV	34.23	32.25	17.45	39.72	2.28	46.49	53.9	7.4	400	319	VBW:4.3 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

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Distance factor : 1 GHz - 10 GHz : $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

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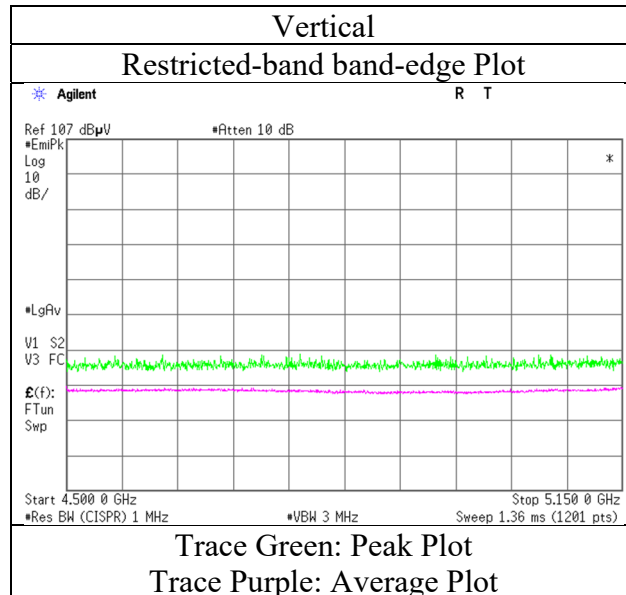
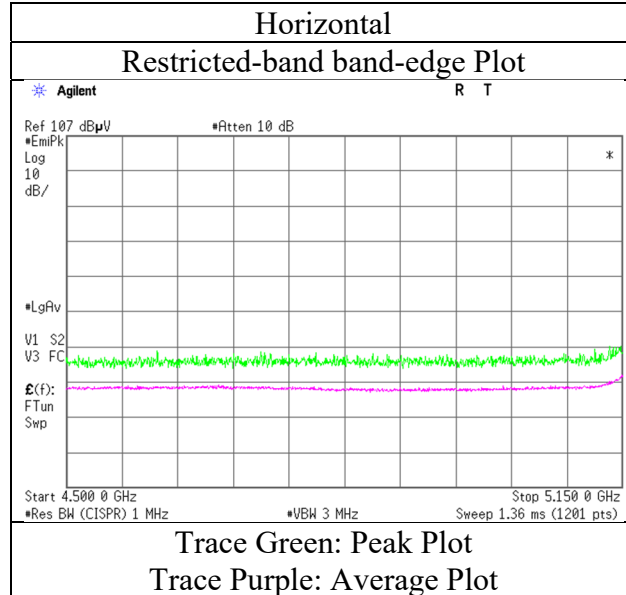
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Hori.	5350.000	AV	38.53	31.99	17.62	39.74	2.28	50.68	53.9	3.2	388	359	VBW:4.3 kHz
Vert.	5350.000	PK	46.08	31.99	17.62	39.74	2.28	58.23	73.9	15.6	400	305	-
Vert.	5350.000	AV	35.46	31.99	17.62	39.74	2.28	47.61	53.9	6.2	400	305	VBW:4.3 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

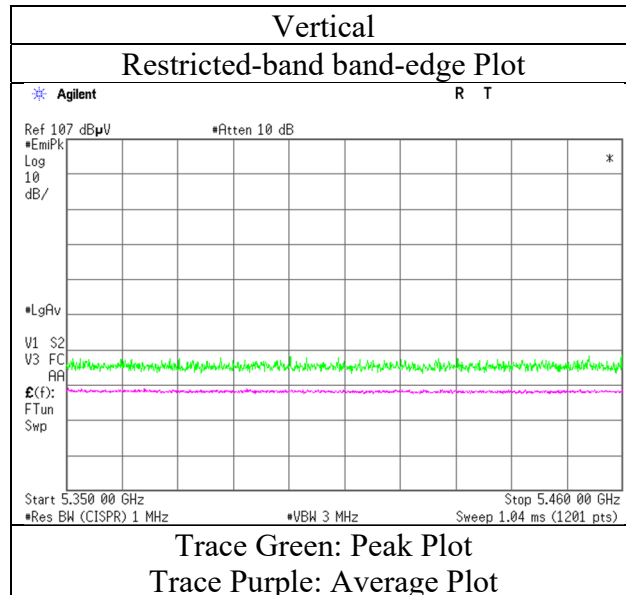
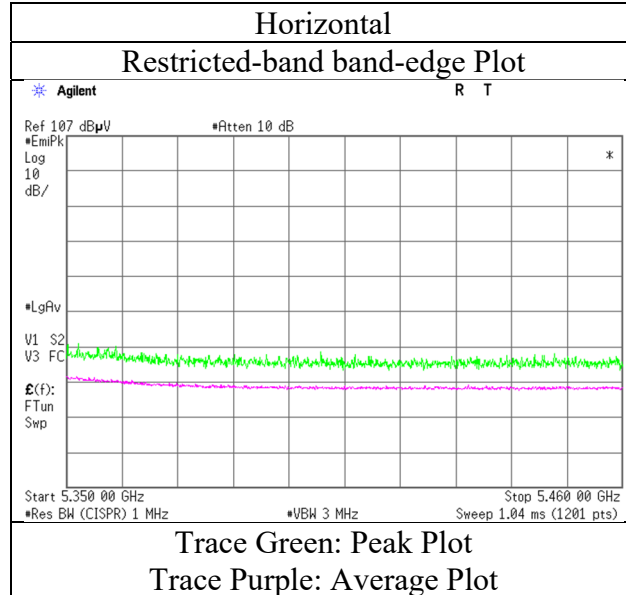
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Distance factor : 1 GHz - 10 GHz : $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

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(above 1 GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5460.000	PK	47.90	32.22	17.72	39.75	2.28	60.37	73.9	13.5	391	355	-
Hori.	5460.000	AV	37.33	32.22	17.72	39.75	2.28	49.80	53.9	4.1	391	355	VBW:4.3 kHz
Vert.	5460.000	PK	45.88	32.22	17.72	39.75	2.28	58.35	73.9	15.5	400	302	-
Vert.	5460.000	AV	35.43	32.22	17.72	39.75	2.28	47.90	53.9	6.0	400	302	VBW:4.3 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

(Calculation) (above 1 GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5470.000	PK	53.21	32.24	17.72	39.75	2.28	65.70	-29.53	-27.0	2.5	391	355	-
Vert.	5470.000	PK	46.11	32.24	17.72	39.75	2.28	58.60	-36.63	-27.0	9.6	400	302	-

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Result (EIRP [dBm]) = $10 * \text{LOG}((10^{\wedge}(\text{Electric Field Strength [dBuV/m]} / 20)) * 10^{\wedge}(-6) * \text{Distance : } 3\text{ [m]})^{\wedge}2 / 30 * 10^{\wedge}3)$

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

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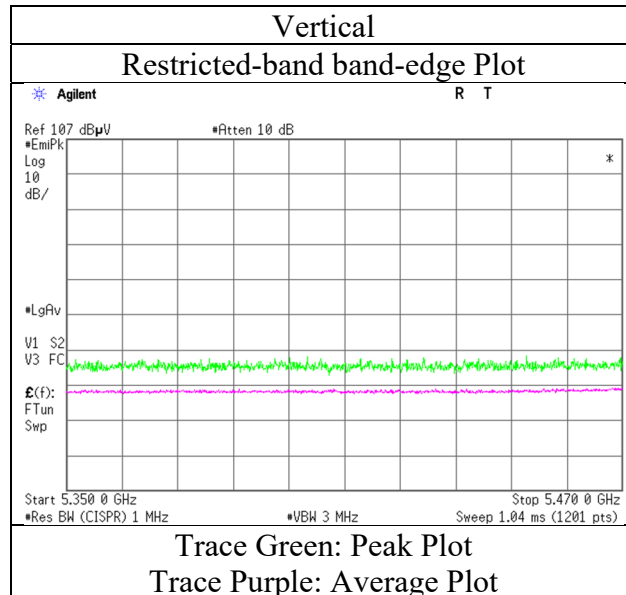
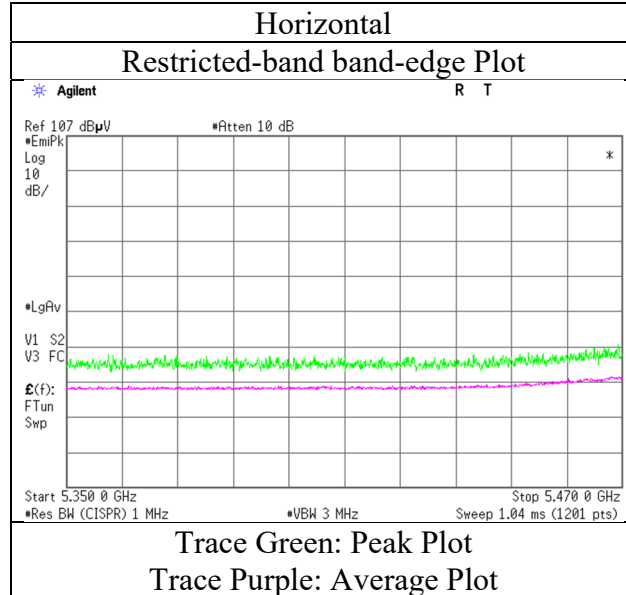
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	13554183S-I-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	November 22, 2020
Temperature / Humidity	24 deg.C, 52 %RH
Engineer	Hiromasa Sato
Mode	Tx 11n-20 5500 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 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.

Radiated Spurious Emission

Report No. 13554183S-I-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1 1 1
Date November 27, 2020 November 25, 2020 November 26, 2020
Temperature / Humidity 20 deg.C, 46 %RH 20 deg.C, 46 %RH 21 deg.C, 48 %RH
Engineer Yosuke Murakami Yosuke Murakami Yosuke Murakami
(30 MHz -1 GHz) (1 GHz -10 GHz) (10 GHz -40 GHz)
Mode Tx 11n-20 5580 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(below 1 GHz and above 1 GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	11160.000	PK	46.33	37.52	10.39	39.61	-9.54	45.09	73.9	28.8	150	0	-
Hori.	11160.000	AV	36.32	37.52	10.39	39.61	-9.54	35.08	53.9	18.8	150	0	VBW :4.3 kHz
Vert.	38.873	QP	35.83	15.27	7.24	31.83	0.00	26.51	40.0	13.4	100	3	-
Vert.	48.293	QP	45.47	11.79	7.44	31.83	0.00	32.87	40.0	7.1	100	200	-
Vert.	66.333	QP	41.57	7.01	7.30	31.83	0.00	24.05	40.0	15.9	100	258	-
Vert.	66.333	QP	41.57	7.01	7.30	31.83	0.00	24.05	40.0	15.9	100	258	-
Vert.	137.589	QP	34.91	14.36	8.55	31.79	0.00	26.03	43.5	17.4	100	240	-
Vert.	137.589	QP	34.91	14.36	8.55	31.79	0.00	26.03	43.5	17.4	100	240	-
Vert.	170.763	QP	35.54	15.67	8.96	31.78	0.00	28.39	43.5	15.1	100	178	-
Vert.	170.763	QP	35.54	15.67	8.96	31.78	0.00	28.39	43.5	15.1	100	178	-
Vert.	860.153	QP	32.49	21.71	9.47	31.68	0.00	31.99	46.0	14.0	183	331	-
Vert.	860.153	QP	32.49	21.71	9.47	31.68	0.00	31.99	46.0	14.0	183	331	-
Vert.	958.461	QP	31.74	22.16	9.85	31.03	0.00	32.72	46.0	13.2	108	174	-
Vert.	958.461	QP	31.74	22.16	9.85	31.03	0.00	32.72	46.0	13.2	108	174	-
Vert.	11160.000	PK	46.44	37.52	10.39	39.61	-9.54	45.20	73.9	28.7	150	0	-
Vert.	11160.000	AV	36.39	37.52	10.39	39.61	-9.54	35.15	53.9	18.7	150	0	VBW :4.3 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

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

Distance factor : 1 GHz - 10 GHz : 20log (3.90 m / 3.0 m) = 2.28 dB

10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1 GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	16740.000	PK	44.87	39.75	13.40	40.11	-9.54	48.37	-46.86	-27.0	19.8	150	0	-
Vert.	16740.000	PK	46.21	39.75	13.40	40.11	-9.54	49.71	-45.52	-27.0	18.5	150	0	-

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Result (EIRP [dBm]) = 10 * LOG((10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance : 3 [m]) ^ 2 / 30 * 10 ^ 3)

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

Distance factor : 1 GHz - 10 GHz : 20log (3.90 m / 3.0 m) = 2.28 dB

10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

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Radiated Spurious Emission

Report No. 13554183S-I-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date November 22, 2020
Temperature / Humidity 24 deg.C, 52 %RH
Engineer Hiromasa Sato
(1 GHz -6.4 GHz)
Mode Tx 11n-20 5700 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(Calculation) (above 1 GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5725.000	PK	49.68	32.64	17.89	39.92	2.28	62.57	-32.66	-27.0	5.6	354	359	-
Vert.	5725.000	PK	45.43	32.64	17.89	39.92	2.28	58.32	-36.91	-27.0	9.9	390	316	-

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Result (EIRP [dBm]) = 10 * LOG((10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance : 3 [m]) ^ 2 / 30 * 10 ^ 3)

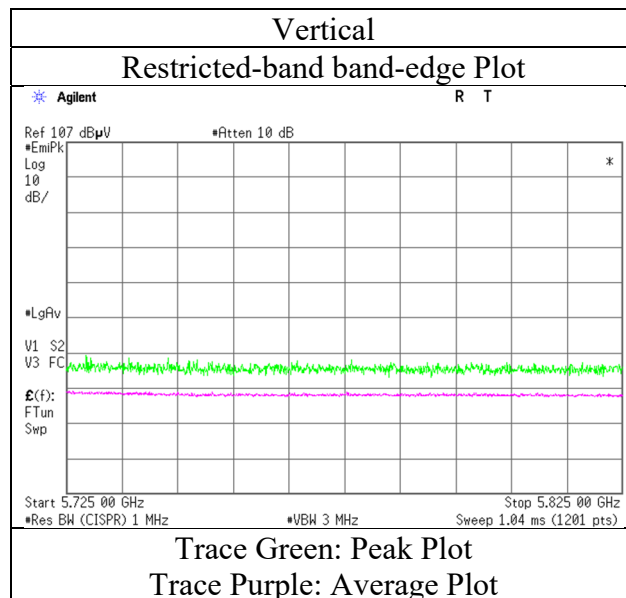
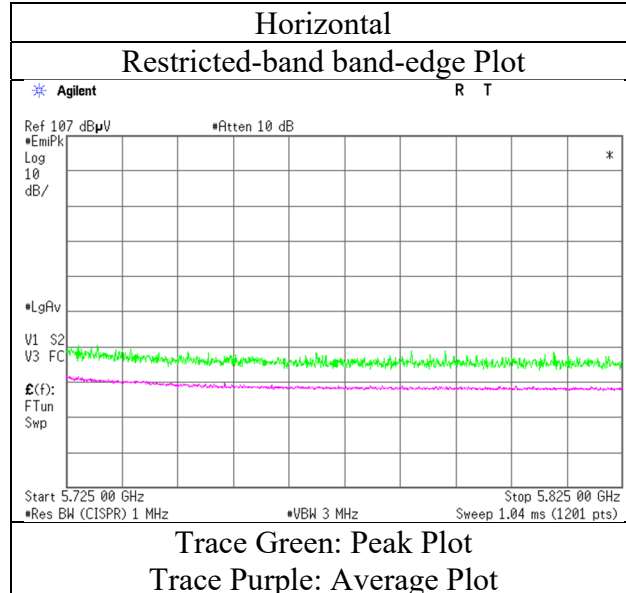
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).

Distance factor : 1 GHz - 10 GHz : 20log (3.90 m / 3.0 m) = 2.28 dB

10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	13554183S-I-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	November 22, 2020
Temperature / Humidity	24 deg.C, 52 %RH
Engineer	Hiromasa Sato
Mode	Tx 11n-20 5700 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 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.

Radiated Spurious Emission

Report No. 13554183S-I-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date November 22, 2020
Temperature / Humidity 24 deg.C, 52 %RH
Engineer Hiromasa Sato
(1 GHz -6.4 GHz)
Mode Tx 11n-20 5745 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(Calculation) (above 1 GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	45.97	32.44	17.84	39.86	2.28	58.67	-36.56	-27.0	9.5	377	357	-
Hori.	5700.000	PK	47.35	32.56	17.87	39.90	2.28	60.16	-35.07	10.0	45.0	377	357	-
Hori.	5720.000	PK	52.14	32.62	17.88	39.92	2.28	65.00	-30.23	15.6	45.8	377	357	-
Hori.	5720.000	PK	50.42	32.62	17.88	39.92	2.28	63.28	-31.95	15.6	47.5	377	357	-
Vert.	5650.000	PK	45.34	32.44	17.84	39.86	2.28	58.04	-37.19	-27.0	10.1	400	310	-
Vert.	5700.000	PK	45.58	32.56	17.87	39.90	2.28	58.39	-36.84	10.0	46.8	400	310	-
Vert.	5720.000	PK	46.05	32.62	17.88	39.92	2.28	58.91	-36.32	15.6	51.9	400	310	-
Vert.	5720.000	PK	46.51	32.62	17.88	39.92	2.28	59.37	-35.86	15.6	51.4	400	310	-

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Result (EIRP [dBm]) = 10 * LOG ((10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance : 3 [m]) ^ 2 / 30 * 10 ^ 3)

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

Distance factor : 1 GHz - 10 GHz : 20log (3.90 m / 3.0 m) = 2.28 dB

10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

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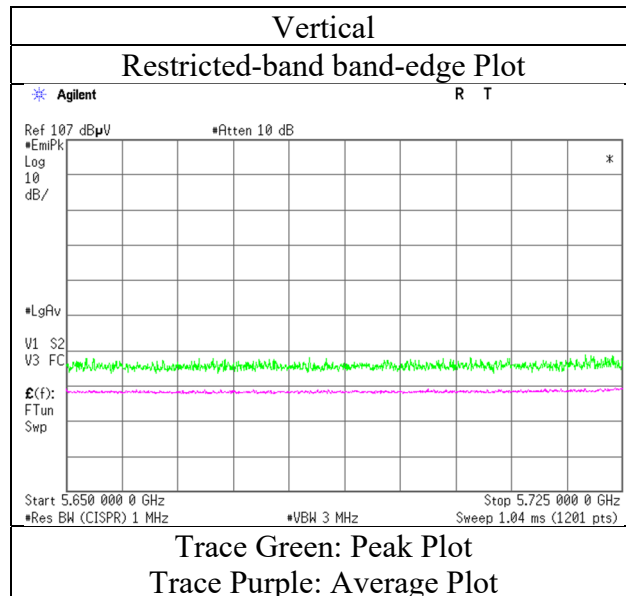
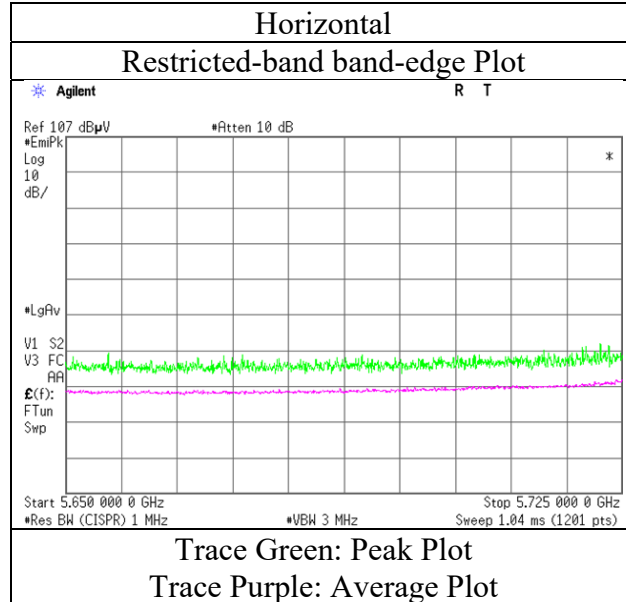
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	13554183S-I-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	November 22, 2020
Temperature / Humidity	24 deg.C, 52 %RH
Engineer	Hiromasa Sato
Mode	Tx 11n-20 5745 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 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.

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Radiated Spurious Emission

Report No. 13554183S-I-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date November 22, 2020
Temperature / Humidity 24 deg.C, 52 %RH
Engineer Hiromasa Sato
(1 GHz -6.4 GHz)
Mode Tx 11n-20 5825 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(Calculation) (above 1 GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	50.58	32.91	17.96	40.02	2.28	63.71	-31.52	27.0	58.5	386	359	-
Hori.	5855.000	PK	48.97	32.92	17.96	40.02	2.28	62.11	-33.12	15.6	48.7	386	359	-
Hori.	5875.000	PK	46.48	32.95	17.99	40.04	2.28	59.66	-35.57	10.0	45.5	386	359	-
Hori.	5925.000	PK	45.02	32.99	18.01	40.07	2.28	58.23	-37.00	-27.0	9.9	386	359	-
Vert.	5850.000	PK	45.73	32.91	17.96	40.02	2.28	58.86	-36.37	27.0	63.3	392	323	-
Vert.	5855.000	PK	45.11	32.92	17.96	40.02	2.28	58.25	-36.98	15.6	52.5	392	323	-
Vert.	5875.000	PK	45.41	32.95	17.99	40.04	2.28	58.59	-36.64	10.0	46.6	392	323	-
Vert.	5925.000	PK	45.01	32.99	18.01	40.07	2.28	58.22	-37.01	-27.0	10.0	392	323	-

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Result (EIRP [dBm]) = 10 * LOG ((10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance : 3 [m]) ^ 2 / 30 * 10 ^ 3)

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

Distance factor : 1 GHz - 10 GHz : 20log (3.90 m / 3.0 m) = 2.28 dB

10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

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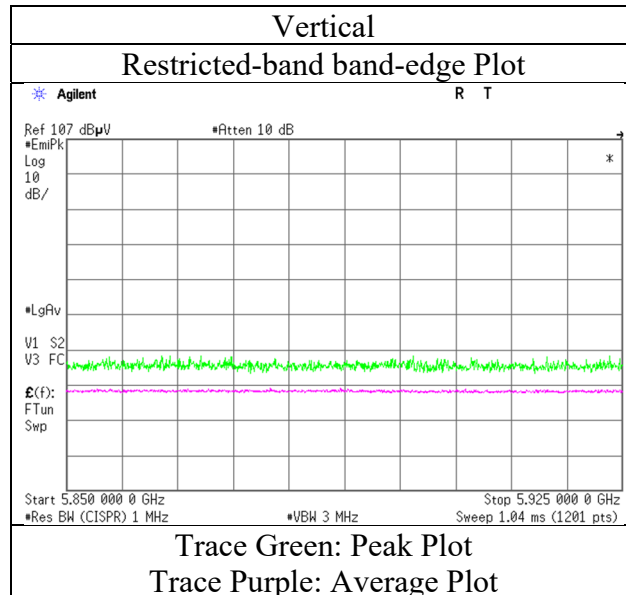
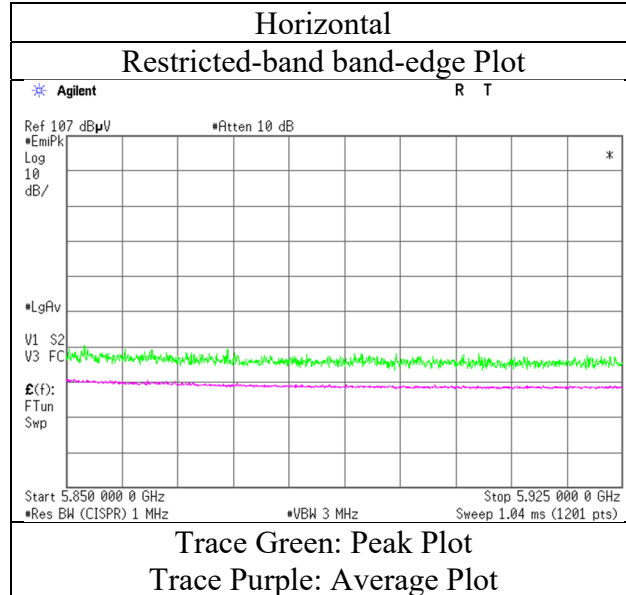
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Radiated Spurious Emission

Report No.	13554183S-I-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	November 22, 2020
Temperature / Humidity	24 deg.C, 52 %RH
Engineer	Hiromasa Sato
Mode	Tx 11n-20 5825 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 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.

Radiated Spurious Emission

Report No.	13554183S-I-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	November 22, 2020
Temperature / Humidity	24 deg.C, 52 %RH
Engineer	Hiromasa Sato
	(1 GHz -6.4 GHz)
Mode	Tx 11n-40 5190 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(above 1 GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5150.000	PK	49.94	32.25	17.45	39.72	2.28	62.20	73.9	11.7	398	358	-
Hori.	5150.000	AV	38.75	32.25	17.45	39.72	2.28	51.01	53.9	2.8	398	358	VBW:3 kHz
Vert.	5150.000	PK	46.11	32.25	17.45	39.72	2.28	58.37	73.9	15.5	400	308	-
Vert.	5150.000	AV	34.45	32.25	17.45	39.72	2.28	46.71	53.9	7.1	400	308	VBW:3 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

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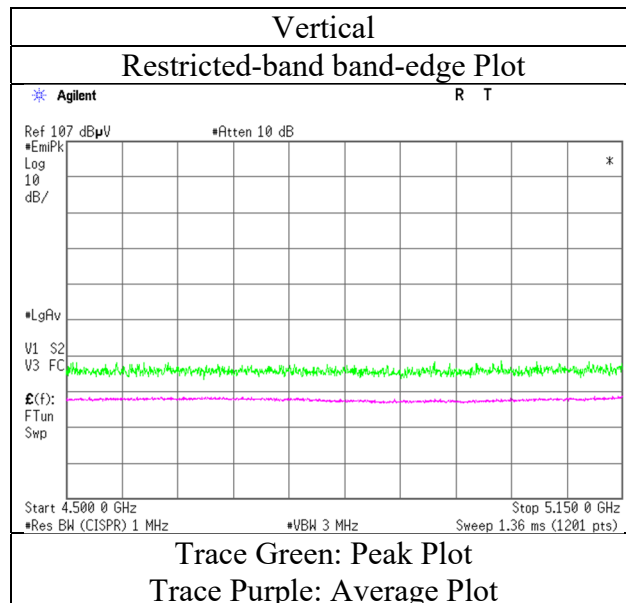
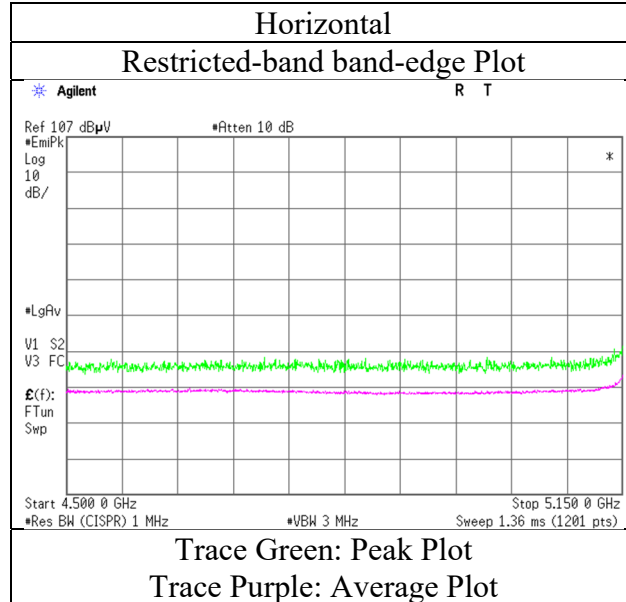
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Radiated Spurious Emission

Report No. 13554183S-I-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date November 22, 2020
Temperature / Humidity 24 deg.C, 52 %RH
Engineer Hiromasa Sato
Mode Tx 11n-40 5190 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 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.

Shonan EMC Lab.

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

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Radiated Spurious Emission

Report No. 13554183S-I-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date November 22, 2020
Temperature / Humidity 24 deg.C, 52 %RH
Engineer Hiromasa Sato
(1 GHz -6.4 GHz)
Mode Tx 11n-40 5310 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(above 1 GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5350.000	PK	55.27	31.99	17.62	39.74	2.28	67.42	73.9	6.4	390	357	-
Hori.	5350.000	AV	41.34	31.99	17.62	39.74	2.28	53.49	53.9	0.4	390	357	VBW:3 kHz
Vert.	5350.000	PK	45.71	31.99	17.62	39.74	2.28	57.86	73.9	16.0	386	287	-
Vert.	5350.000	AV	35.26	31.99	17.62	39.74	2.28	47.41	53.9	6.4	386	287	VBW:3 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

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Shonan EMC Lab.

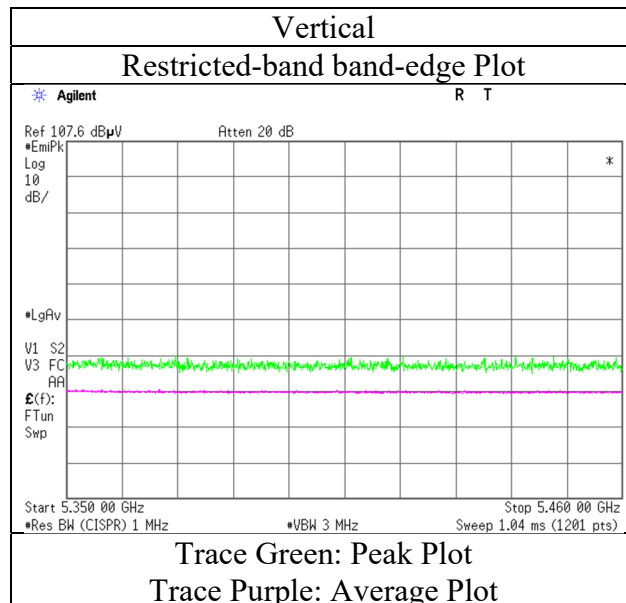
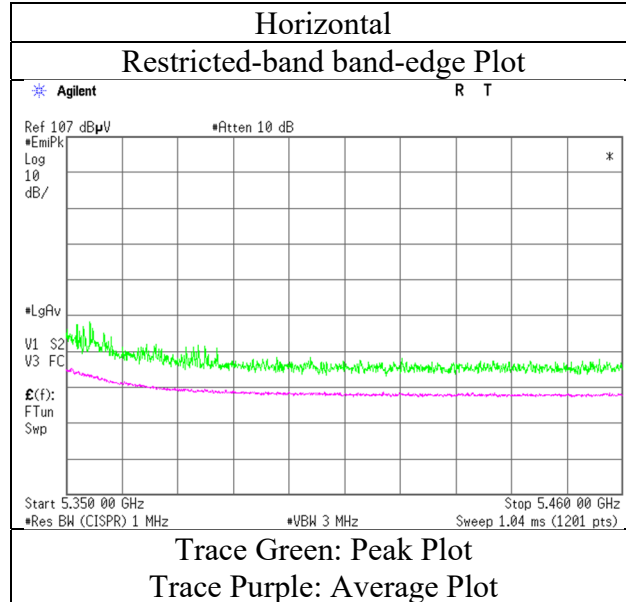
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

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Radiated Spurious Emission

Report No.	13554183S-I-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	November 22, 2020
Temperature / Humidity	24 deg.C, 52 %RH
Engineer	Hiromasa Sato
Mode	Tx 11n-40 5310 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 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.

Radiated Spurious Emission

Report No. 13554183S-I-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date November 22, 2020
Temperature / Humidity 24 deg.C, 52 %RH
Engineer Hiromasa Sato
(1 GHz -6.4 GHz)
Mode Tx 11n-40 5510 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(above 1 GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5460.000	PK	47.57	32.22	17.72	39.75	2.28	60.04	73.9	13.8	390	359	-
Hori.	5460.000	AV	35.99	32.22	17.72	39.75	2.28	48.46	53.9	5.4	390	359	VBW:3 kHz
Vert.	5460.000	PK	45.60	32.22	17.72	39.75	2.28	58.07	73.9	15.8	391	308	-
Vert.	5460.000	AV	34.67	32.22	17.72	39.75	2.28	47.14	53.9	6.7	391	308	VBW:3 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

(Calculation) (above 1 GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5470.000	PK	49.92	32.24	17.72	39.75	2.28	62.41	-32.82	-27.0	5.8	390	359	-
Vert.	5470.000	PK	45.50	32.24	17.72	39.75	2.28	57.99	-37.24	-27.0	10.2	391	308	-

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Result (EIRP [dBm]) = $10 * \text{LOG}((10^{\wedge}(\text{Electric Field Strength [dBuV/m]} / 20)) * 10^{\wedge}(-6) * \text{Distance : } 3\text{ [m]})^{\wedge} 2 / 30 * 10^{\wedge} 3)$

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

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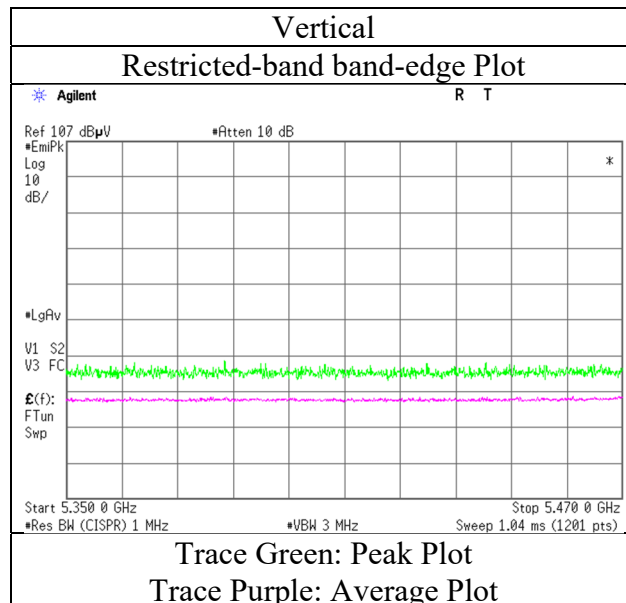
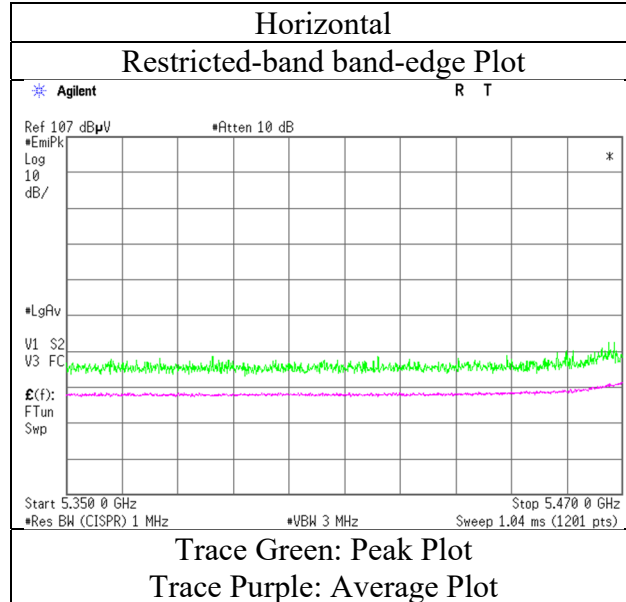
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

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Radiated Spurious Emission

Report No.	13554183S-I-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	November 22, 2020
Temperature / Humidity	24 deg.C, 52 %RH
Engineer	Hiromasa Sato
Mode	Tx 11n-40 5510 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 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.

Radiated Spurious Emission

Report No. 13554183S-I-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date November 22, 2020
Temperature / Humidity 24 deg.C, 52 %RH
Engineer Hiromasa Sato
(1 GHz -6.4 GHz)
Mode Tx 11n-40 5670 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(Calculation) (above 1 GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5725.000	PK	47.47	32.64	17.89	39.92	2.28	60.36	-34.87	-27.0	7.8	374	359	-
Vert.	5725.000	PK	46.39	32.64	17.89	39.92	2.28	59.28	-35.95	-27.0	8.9	355	292	-

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Result (EIRP [dBm]) = 10 * LOG((10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance : 3 [m]) ^ 2 / 30 * 10 ^ 3)

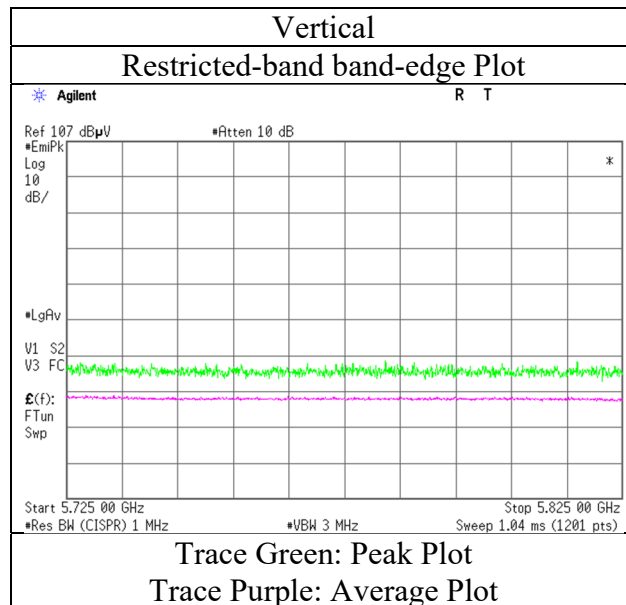
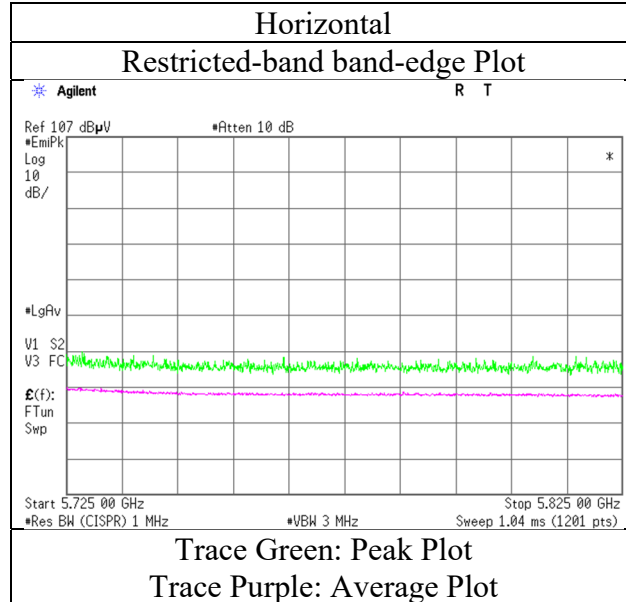
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).

Distance factor : 1 GHz - 10 GHz : 20log (3.90 m / 3.0 m) = 2.28 dB

10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	13554183S-I-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	November 22, 2020
Temperature / Humidity	24 deg.C, 52 %RH
Engineer	Hiromasa Sato
Mode	Tx 11n-40 5670 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 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.

Shonan EMC Lab.

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Radiated Spurious Emission

Report No. 13554183S-I-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date November 22, 2020
Temperature / Humidity 24 deg.C, 52 %RH
Engineer Hiromasa Sato
(1 GHz -6.4 GHz)
Mode Tx 11n-40 5755 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(Calculation) (above 1 GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	45.74	32.44	17.84	39.86	2.28	58.44	-36.79	-27.0	9.7	400	357	-
Hori.	5700.000	PK	47.15	32.56	17.87	39.90	2.28	59.96	-35.27	10.0	45.2	400	357	-
Hori.	5720.000	PK	55.73	32.62	17.88	39.92	2.28	68.59	-26.64	15.6	42.2	400	357	-
Hori.	5725.000	PK	53.50	32.64	17.89	39.92	2.28	66.39	-28.84	27.0	55.8	400	357	-
Vert.	5650.000	PK	46.84	32.44	17.84	39.86	2.28	59.54	-35.69	-27.0	8.6	357	302	-
Vert.	5700.000	PK	45.04	32.56	17.87	39.90	2.28	57.85	-37.38	10.0	47.3	357	302	-
Vert.	5720.000	PK	45.16	32.62	17.88	39.92	2.28	58.02	-37.21	15.6	52.8	357	302	-
Vert.	5725.000	PK	45.30	32.64	17.89	39.92	2.28	58.19	-37.04	27.0	64.0	357	302	-

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Result (EIRP [dBm]) = 10 * LOG ((10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance : 3 [m]) ^ 2 / 30 * 10 ^ 3)

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

Distance factor : 1 GHz - 10 GHz : 20log (3.90 m / 3.0 m) = 2.28 dB

10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

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Shonan EMC Lab.

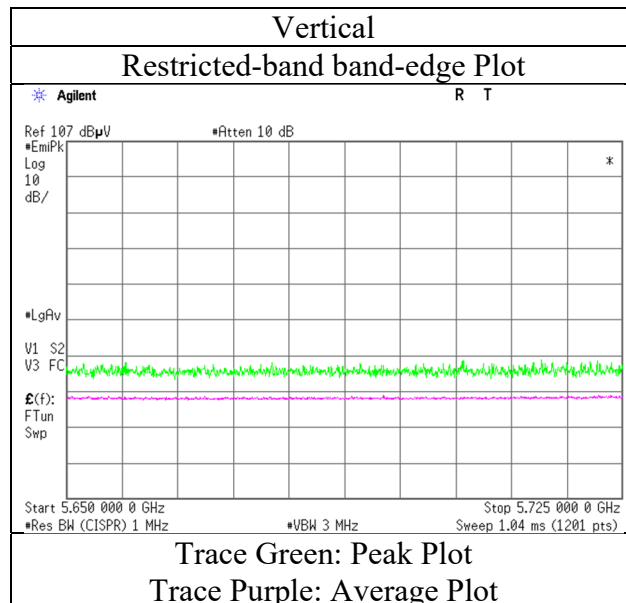
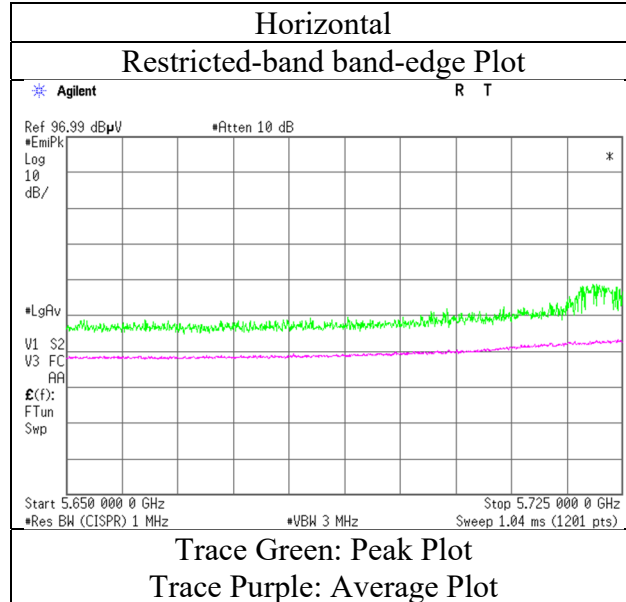
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	13554183S-I-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	November 22, 2020
Temperature / Humidity	24 deg.C, 52 %RH
Engineer	Hiromasa Sato
Mode	Tx 11n-40 5755 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 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.

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Radiated Spurious Emission

Report No. 13554183S-I-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date November 22, 2020
Temperature / Humidity 24 deg.C, 52 %RH
Engineer Hiromasa Sato
(1 GHz -6.4 GHz)
Mode Tx 11n-40 5795 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz

(Calculation) (above 1 GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	47.83	32.91	17.96	40.02	2.28	60.96	-34.27	27.0	61.2	359	301	-
Hori.	5855.000	PK	45.71	32.92	17.96	40.02	2.28	58.85	-36.38	15.6	51.9	359	301	-
Hori.	5875.000	PK	45.04	32.95	17.99	40.04	2.28	58.22	-37.01	10.0	47.0	359	301	-
Hori.	5925.000	PK	45.54	32.99	18.01	40.07	2.28	58.75	-36.48	-27.0	9.4	359	301	-
Vert.	5850.000	PK	45.81	32.91	17.96	40.02	2.28	58.94	-36.29	27.0	63.2	382	354	-
Vert.	5855.000	PK	44.83	32.92	17.96	40.02	2.28	57.97	-37.26	15.6	52.8	382	354	-
Vert.	5875.000	PK	45.16	32.95	17.99	40.04	2.28	58.34	-36.89	10.0	46.8	382	354	-
Vert.	5925.000	PK	45.37	32.99	18.01	40.07	2.28	58.58	-36.65	-27.0	9.6	382	354	-

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Result (EIRP [dBm]) = 10 * LOG((10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance : 3 [m]) ^ 2 / 30 * 10 ^ 3)

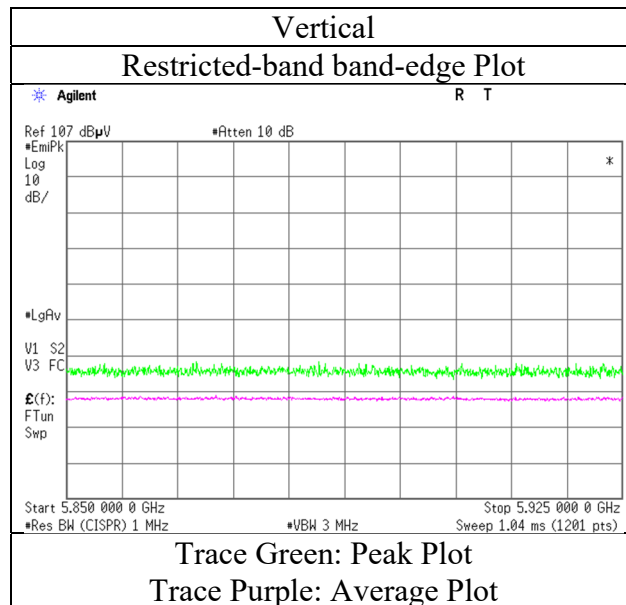
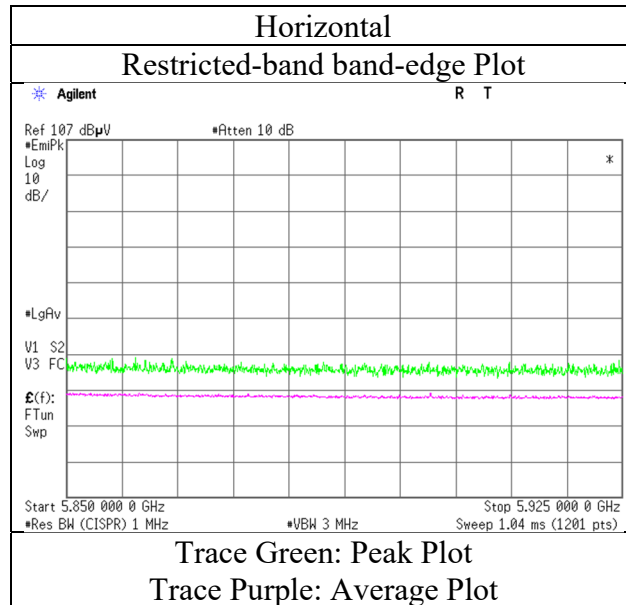
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).

Distance factor : 1 GHz - 10 GHz : 20log (3.90 m / 3.0 m) = 2.28 dB

10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No. 13554183S-I-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date November 22, 2020
Temperature / Humidity 24 deg.C, 52 %RH
Engineer Hiromasa Sato
Mode Tx 11n-40 5795 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 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.

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Shonan EMC Lab.

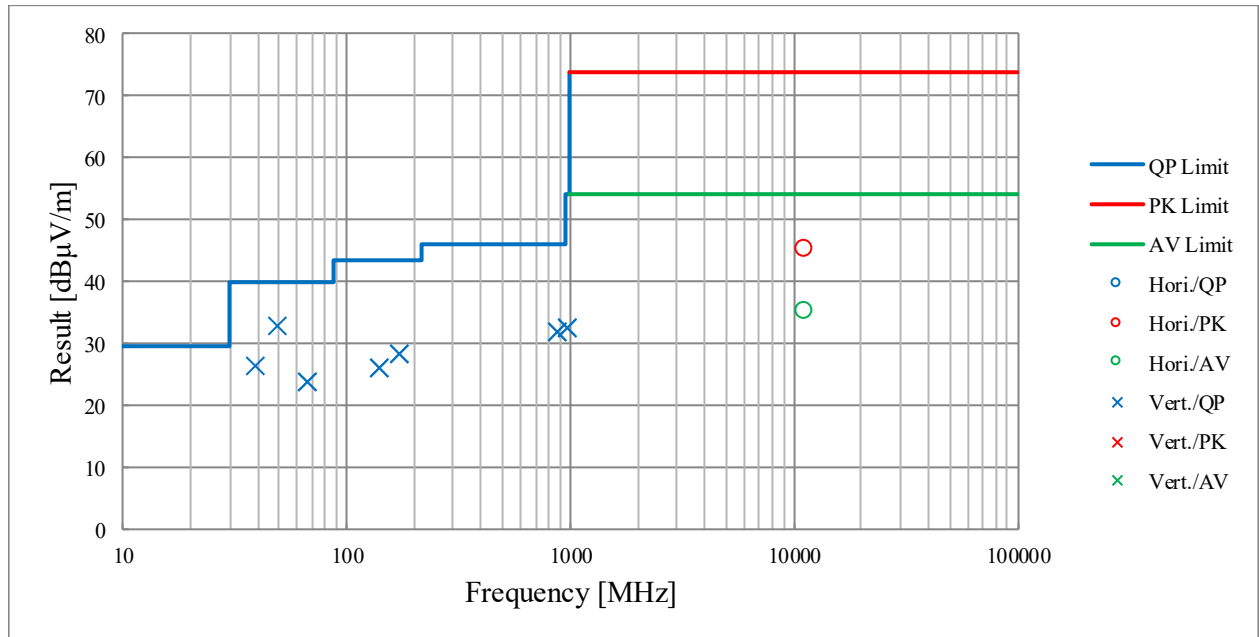
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission
(Plot data, Worst case)

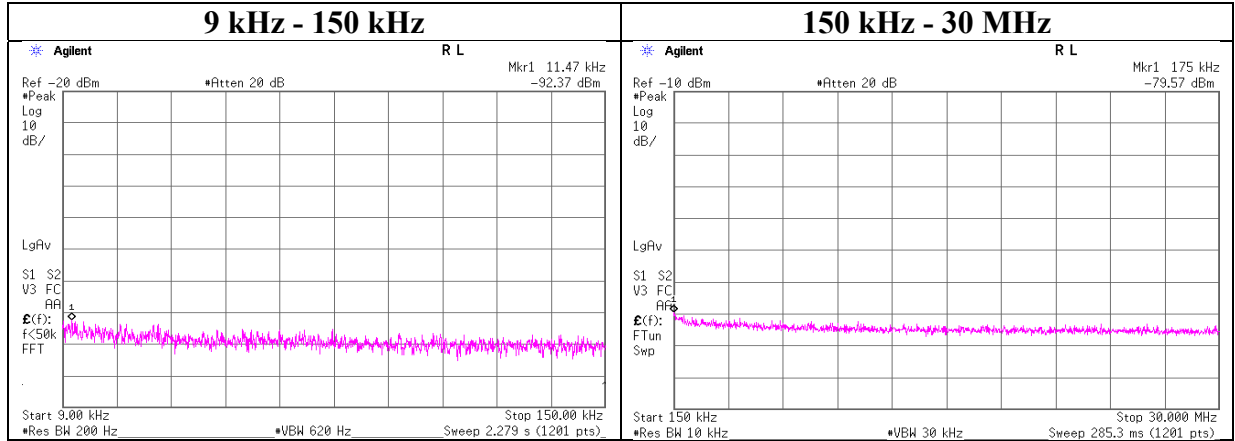
Report No.	13554183S-I-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	1	1	1
Date	November 27, 2020	November 25, 2020	November 26, 2020
Temperature / Humidity	20 deg.C, 46 %RH	20 deg.C, 46 %RH	21 deg.C, 48 %RH
Engineer	Yosuke Murakami	Yosuke Murakami	Yosuke Murakami
	(30 MHz -1 GHz)	(1 GHz -10 GHz)	(10 GHz -40 GHz)
Mode	Tx 11n-20 5580 MHz with Module A 11n-20 2437 MHz and Module A BT LE 2M 2402 MHz		



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

Conducted Spurious Emission

Report No.	13554183S-I-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	November 24, 2020
Temperature / Humidity	23 deg. C / 50 % RH
Engineer	Toshinori Yamada
Mode	Tx 11n-20 5580 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator [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
11.47	-92.37	0.02	9.53	4.76	1	-78.1	300	6.0	-16.8	46.4	63.2	-
175.00	-79.57	0.02	9.54	4.76	1	-65.3	300	6.0	-4.0	22.7	26.7	-

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

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

N: Number of output

APPENDIX 2: Test instruments

Test equipment (1/3)

Test Name	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Interval (Month)
AT	KTS-07	145111	Digital Tester	SANWA	PC500	7019232	2020/10/21	12
AT	SAT10-09	145132	Attenuator	Weinschel Corp.	54A-10	W5692	2020/10/05	12
AT	SAT10-16	160494	Attenuator	Weinschel Corp.	54A-10	83420	2019/12/12	12
AT	SCC-G52	179106	Coaxial Cable	Junkosha	MWX241-01000KMSKMS/B	1901Q061-R	2020/04/01	12
AT	SCC-G64	196945	Coaxial Cable	HUBER+SUNER	SUCOFLEX 102	803414/2	2020/03/10	12
AT	SCC-H21	197395	Microwave cable	RS Pro	R-132G7210 100CO-		2020/04/07	12
AT	SCC-H22	197396	Microwave cable	RS Pro	R-132G7210 100CO-		2020/04/07	12
AT	SCC-H23	199603	Microwave cable	RS Pro	R-132G7210 100CO-		2020/06/12	12
AT	SOS-27	191845	Humidity Indicator	CUSTOM. Inc	CTH-201	-	2020/09/29	12
AT	SPM-13	169910	Power Meter	Keysight Technologies Inc	8990B	MY51000448	2020/01/28	12
AT	SPSS-06	169911	Power sensor	Keysight Technologies Inc	N1923A	MY57270004	2020/01/28	12
AT	STR-08	150463	Test Receiver	Rohde & Schwarz	ESW44	101581	2019/11/22	12 *1)
AT	SRENT-09	150461	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY46186392	2020/02/10	12
AT	STM-G7	171614	Terminator	Weinschel - API Technologies Corp	M1459A	88995	2020/06/03	12
AT	STM-G8	171615	Terminator	Weinschel - API Technologies Corp	M1459A	88997	2020/06/03	12
AT,RE	SSA-02	145800	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY48250106	2020/04/16	12
RE, CE	COTS-SEMI-5	170932	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3(RE,CE,ME,PE)	-	-	-
RE	KAT6-04	144899	Attenuator	Inmet	18N-6dB	-	2019/12/05	12
RE	KJM-02	146432	Measure	TAJIMA	GL19-55	-	-	-
RE, CE	KJM-09	145929	Measure	KOMELON	KMC-36	-	-	-
RE	SAEC-01(NSA)	145597	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	2020/04/08	12
RE	SAEC-01(SVSWR)	145561	Semi-Anechoic Chamber	TDK	SAEC-01(SVSWR)	1	2020/05/04	12
RE	SAEC-03(SVSWR)	145566	Semi-Anechoic Chamber	TDK	SAEC-03(SVSWR)	3	2020/05/11	12
RE	SAF-01	145003	Pre Amplifier	SONOMA	310N	290211	2020/02/19	12
RE	SAF-04	145127	Pre Amplifier	Toyo Corporation	TPA0118-36	2072554	2020/06/02	12
RE	SAF-06	145005	Pre Amplifier	Toyo Corporation	TPA0118-36	1440491	2020/02/20	12
RE	SAF-08	145007	Pre Amplifier	Toyo Corporation	HAP18-26W	19	2020/03/03	12
RE	SAF-10	145129	Pre Amplifier	Toyo Corporation	HAP26-40W	10	2020/03/03	12
RE	SAT10-05	145136	Attenuator	Keysight Technologies Inc	8493C-010	74864	2020/10/05	12
RE	SAT10-06	145137	Attenuator	Keysight Technologies Inc	8493C-010	74865	2020/10/05	12
RE	SAT3-09	144959	Attenuator	JFW	50HF-003N	-	2020/08/18	12
RE	SBA-01	145161	Biconical Antenna	Schwarzbeck Mess Elektronik	BBA9106	91032664	2020/04/04	12

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Shonan EMC Lab.

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Test equipment (2/3)

Test Name	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Interval (Month)
RE	SCC-A1/A3/A5/A7/A8/A13/SRSE-01	144967	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	2020/04/12	12
RE	SCC-A2/A4/A6/A7/A8/A13/SRSE-01	144968	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	2020/04/12	12
RE	SCC-G05	145039	Coaxial Cable	Junkosha	J12J102207-00	APR-30-15-037	2020/01/31	12
RE	SCC-G15	145176	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	2020/03/04	12
RE	SCC-G40	166491	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S005	2020/01/08	12
RE	SCC-G41	151617	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S006	2020/01/08	12
RE	SCC-G43	156380	Coaxial Cable	HUBER+SUNER	SUCOFLEX_104_E	SN MY 13406/4E	2020/06/04	12
RE	SCC-G57	179540	Coaxial Cable	HUBER+SUNER	SUCOFLEX 102	802815/2	2020/05/12	12
RE	SCC-G58	183047	Coaxial Cable	HUBER+SUNER	SUCOFLEX 104	800287/4A	2020/06/04	12
RE	SCC-G62	196985	Coaxial Cable	HUBER+SUNER	SUCOFLEX 102	803650/2	2020/03/10	12
RE	SCC-G68	200008	Coaxial Cable	HUBER+SUNER	SUCOFLEX 104	575616/4	2020/07/07	12
RE	SFL-02	145301	Highpass Filter	MICRO-TRONICS	HPM50111	51	2020/10/05	12
RE	SFL-03	145377	Highpass Filter	MICRO-TRONICS	HPM50112	28	2020/10/05	12
RE	SHA-01	145383	Horn Antenna	Schwarzbeck Mess - Elektronik	BBHA9120D	9120D-725	2020/05/27	12
RE	SHA-03	145501	Horn Antenna	Schwarzbeck Mess - Elektronik	BBHA9120D	9120D-739	2020/06/15	12
RE	SHA-04	145512	Horn Antenna	ETS LINDGREN	3160-09	00094868	2020/06/15	12
RE	SHA-06	145514	Horn Antenna	ETS LINDGREN	3160-10	00092383	2020/07/16	12
RE	SHA-08	194683	Horn Antenna	Schwarzbeck Mess - Elektronik	BBHA 9120 C	694	2020/02/17	12
RE	SLA-05	145527	Logperiodic Antenna	Schwarzbeck Mess - Elektronik	VUSLP9111B	193	2020/04/04	12
RE	SOS-20	191837	Humidity Indicator	CUSTOM. Inc	CTH-201	-	2020/09/28	12
RE	SOS-23	191840	Humidity Indicator	CUSTOM. Inc	CTH-201	-	2020/09/28	12
RE	SRENT-15	160899	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY46185516	2020/01/15	12
RE	SSA-03	145801	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY48250152	2020/08/12	12
RE	STR-01	145790	Test Receiver	Rohde & Schwarz	ESU40	100093	2020/04/24	12
RE, CE	STR-06	146208	Test Receiver	Rohde & Schwarz	ESCI	101259	2020/04/01	12
RE, CE	STS-01	145792	Digital Hitester	Hioki	3805-50	80997812	2020/10/19	12
RE	STS-03	146210	Digital Hitester	Hioki	3805-50	80997823	2020/10/19	12

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Test equipment (3/3)

Test Name	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Interval (Month)
CE	SAT3-13	150923	Attenuator	JFW	50HF-003N	-	2020/01/30	12
CE	SCC-A12/A13/SRSE-01	144966	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-269(RF Selector)	2020/04/12	12
CE	SLS-02	145539	LISN	Rohde & Schwarz	ENV216	100512	2020/02/18	12
CE	SOS-16	167990	Humidity Indicator	CUSTOM. Inc	CTH-202	708Q08R	2020/10/01	12

*Hyphens for Last Calibration 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.

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

The expiration*1) This test equipment was used for the tests before the expiration date of the calibration. All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

Test item:

AT: Antenna Terminal Conducted test

RE: Radiated Emission

CE: Conducted Emission