

## Radiated Spurious Emission

Report No.	13554183S-E-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	1
Date	Oct 24, 2020	Oct 26, 2020	Oct 28, 2020	Oct 29, 2020
Temperature / Humidity	21 deg.C, 63 %RH	22 deg.C, 52 %RH	22 deg.C, 49 %RH	22 deg.C, 50 %RH
Engineer	Kazuya Noda	Yosuke Murakami	Toshinori Yamada	Toshinori Yamada
	( 1 GHz -6.4 GHz )	( 6.4 GHz -10 GHz )	( 10 GHz -18 GHz )	( 18 GHz -40 GHz )
Mode	Tx 11n-40 5190 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.	4710.027	PK	47.42	31.31	16.42	39.75	2.28	57.68	73.9	16.2	340	108	-
Hori.	5150.000	PK	49.24	32.25	16.76	39.72	2.28	60.81	73.9	13.0	340	108	-
Hori.	15570.000	PK	46.12	39.68	12.66	39.17	-9.54	49.75	73.9	24.1	100	0	-
Hori.	4710.027	AV	40.67	31.31	16.42	39.75	2.28	50.93	53.9	2.9	340	108	VBW:7.5 kHz
Hori.	5150.000	AV	38.74	32.25	16.76	39.72	2.28	50.31	53.9	3.5	340	108	VBW:7.5 kHz
Hori.	15570.000	AV	37.02	39.68	12.66	39.17	-9.54	40.65	53.9	13.2	100	0	VBW:7.5 kHz
Vert.	5150.000	PK	46.00	32.25	16.76	39.72	2.28	57.57	73.9	16.3	121	300	-
Vert.	15570.000	PK	45.83	39.68	12.66	39.17	-9.54	49.46	73.9	24.4	100	0	-
Vert.	5150.000	AV	36.73	32.25	16.76	39.72	2.28	48.30	53.9	5.6	121	300	VBW:7.5 kHz
Vert.	15570.000	AV	37.20	39.68	12.66	39.17	-9.54	40.83	53.9	13.0	100	0	VBW:7.5 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 : 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.	10380.000	PK	50.12	36.57	10.01	39.92	-9.54	47.24	-47.99	-27.0	20.9	197	235	-
Vert.	10380.000	PK	52.21	36.57	10.01	39.92	-9.54	49.33	-45.90	-27.0	18.9	207	269	-

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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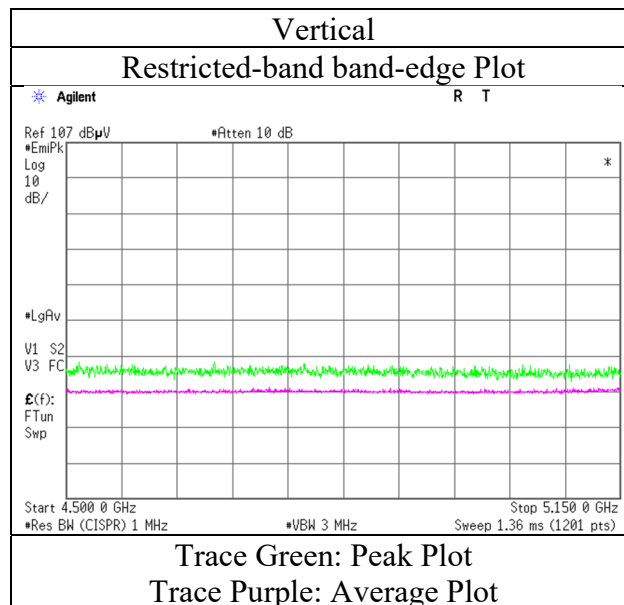
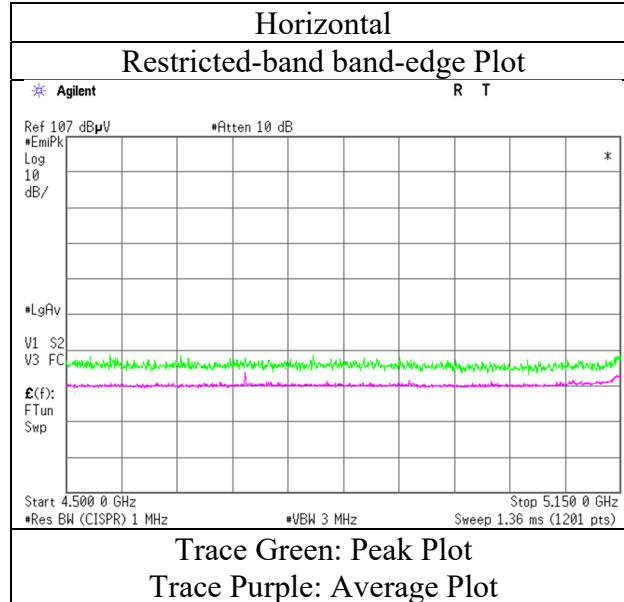
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## Radiated Spurious Emission

Report No. 13554183S-E-R1  
 Test place Shonan EMC Lab.  
 Semi Anechoic Chamber 1  
 Date Oct 24, 2020  
 Temperature / Humidity 21 deg.C, 63 %RH  
 Engineer Kazuya Noda  
 Mode Tx 11n-40 5190 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-E-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	1
Date	Oct 24, 2020	Oct 26, 2020	Oct 28, 2020	Oct 29, 2020
Temperature / Humidity	21 deg.C, 63 %RH	22 deg.C, 52 %RH	22 deg.C, 49 %RH	22 deg.C, 50 %RH
Engineer	Kazuya Noda	Yosuke Murakami	Toshinori Yamada	Toshinori Yamada
	( 1 GHz -6.4 GHz )	( 6.4 GHz -10 GHz )	( 10 GHz -18 GHz )	( 18 GHz -40 GHz )
Mode	Tx 11n-40 5230 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.	4750.070	PK	46.58	31.39	16.48	39.74	2.28	56.99	73.9	16.9	393	264	-
Hori.	15690.000	PK	44.11	39.82	12.65	39.33	-9.54	47.71	73.9	26.1	100	0	-
Hori.	4750.070	AV	38.95	31.39	16.48	39.74	2.28	49.36	53.9	4.5	393	264	VBW:7.5 kHz
Hori.	15690.000	AV	35.23	39.82	12.65	39.33	-9.54	38.83	53.9	15.0	100	0	VBW:7.5 kHz
Vert.	15690.000	PK	45.04	39.82	12.65	39.33	-9.54	48.64	73.9	25.2	100	0	-
Vert.	15690.000	AV	35.42	39.82	12.65	39.33	-9.54	39.02	53.9	14.8	100	0	VBW:7.5 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 : 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.	10460.000	PK	50.13	36.69	10.03	40.07	-9.54	47.24	-47.99	-27.0	20.9	202	235	-
Vert.	10460.000	PK	51.03	36.69	10.03	40.07	-9.54	48.14	-47.09	-27.0	20.0	211	270	-

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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Date	Oct 24, 2020	Oct 26, 2020	Oct 28, 2020	Oct 29, 2020
Temperature / Humidity	21 deg.C, 63 %RH	22 deg.C, 52 %RH	22 deg.C, 49 %RH	22 deg.C, 50 %RH
Engineer	Kazuya Noda	Yosuke Murakami	Toshinori Yamada	Toshinori Yamada
	( 1 GHz -6.4 GHz )	( 6.4 GHz -10 GHz )	( 10 GHz -18 GHz )	( 18 GHz -40 GHz )
Mode	Tx 11n-40 5310 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.	4830.001	PK	48.08	31.49	16.52	39.73	2.28	58.64	73.9	15.2	330	109	-
Hori.	5350.000	PK	47.31	31.99	16.91	39.74	2.28	58.75	73.9	15.1	330	109	-
Hori.	10620.000	PK	48.70	37.30	10.11	40.04	-9.54	46.53	73.9	27.3	214	236	-
Hori.	15930.000	PK	45.91	40.17	12.63	39.66	-9.54	49.51	73.9	24.3	100	0	-
Hori.	4830.001	AV	40.32	31.49	16.52	39.73	2.28	50.88	53.9	3.0	330	109	VBW:7.5 kHz
Hori.	5350.000	AV	37.09	31.99	16.91	39.74	2.28	48.53	53.9	5.3	330	109	VBW:7.5 kHz
Hori.	10620.000	AV	41.22	37.30	10.11	40.04	-9.54	39.05	53.9	14.8	214	236	VBW:7.5 kHz
Hori.	15930.000	AV	36.76	40.17	12.63	39.66	-9.54	40.36	53.9	13.5	100	0	VBW:7.5 kHz
Vert.	5350.000	PK	46.43	31.99	16.91	39.74	2.28	57.87	73.9	16.0	103	257	-
Vert.	10620.000	PK	50.87	37.30	10.11	40.04	-9.54	48.70	73.9	25.2	212	266	-
Vert.	15930.000	PK	45.66	40.17	12.63	39.66	-9.54	49.26	73.9	24.6	100	0	-
Vert.	5350.000	AV	36.68	31.99	16.91	39.74	2.28	48.12	53.9	5.7	103	257	VBW:7.5 kHz
Vert.	10620.000	AV	43.86	37.30	10.11	40.04	-9.54	41.69	53.9	12.2	212	266	VBW:7.5 kHz
Vert.	15930.000	AV	36.46	40.17	12.63	39.66	-9.54	40.06	53.9	13.8	100	0	VBW:7.5 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).

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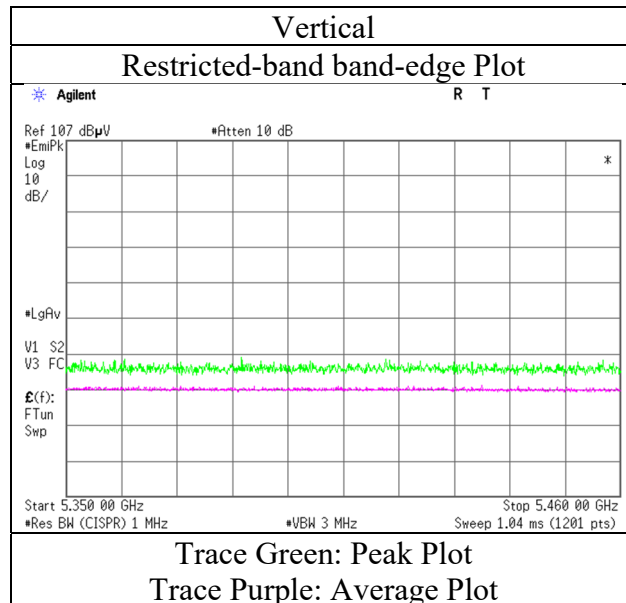
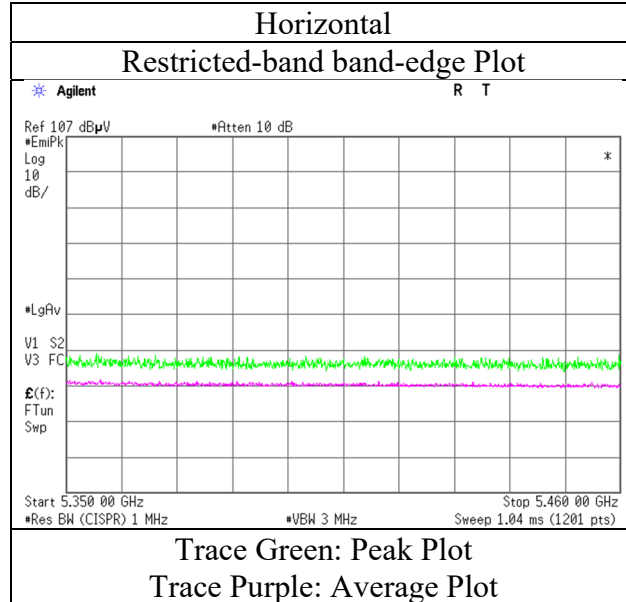
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Engineer Kazuya Noda  
Mode Tx 11n-40 5310 MHz



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Semi Anechoic Chamber	1	1	1	1
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Temperature / Humidity	21 deg.C, 63 %RH	22 deg.C, 52 %RH	22 deg.C, 49 %RH	22 deg.C, 50 %RH
Engineer	Kazuya Noda	Yosuke Murakami	Toshinori Yamada	Toshinori Yamada
	( 1 GHz -6.4 GHz )	( 6.4 GHz -10 GHz )	( 10 GHz -18 GHz )	( 18 GHz -40 GHz )
Mode	Tx 11n-40 5510 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.	5030.005	PK	46.38	32.02	16.67	39.70	2.28	57.65	73.9	16.2	335	136	-
Hori.	5460.000	PK	46.19	32.22	16.99	39.75	2.28	57.93	73.9	15.9	335	136	-
Hori.	11020.000	PK	47.59	37.58	10.33	39.67	-9.54	46.29	73.9	27.6	240	192	-
Hori.	5030.005	AV	39.61	32.02	16.67	39.70	2.28	50.88	53.9	<b>3.0</b>	335	136	VBW:7.5 kHz
Hori.	5460.000	AV	36.38	32.22	16.99	39.75	2.28	48.12	53.9	5.7	335	136	VBW:7.5 kHz
Hori.	11020.000	AV	39.93	37.58	10.33	39.67	-9.54	38.63	53.9	15.2	240	192	VBW:7.5 kHz
Vert.	5460.000	PK	46.42	32.22	16.99	39.75	2.28	58.16	73.9	15.7	124	230	-
Vert.	11020.000	PK	50.96	37.58	10.33	39.67	-9.54	49.66	73.9	24.2	207	256	-
Vert.	5460.000	AV	36.41	32.22	16.99	39.75	2.28	48.15	53.9	5.7	124	230	VBW:7.5 kHz
Vert.	11020.000	AV	42.93	37.58	10.33	39.67	-9.54	41.63	53.9	12.2	207	256	VBW:7.5 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 : 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.	5470.000	PK	47.41	32.24	16.99	39.75	2.28	59.17	-36.06	-27.0	9.0	335	136	-
Hori.	16530.000	PK	44.83	40.05	13.35	40.42	-9.54	48.27	-46.96	-27.0	19.9	100	0	-
Vert.	5470.000	PK	46.84	32.24	16.99	39.75	2.28	58.60	-36.63	-27.0	9.6	124	230	-
Vert.	16530.000	PK	44.54	40.05	13.35	40.42	-9.54	47.98	-47.25	-27.0	20.2	100	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 )

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

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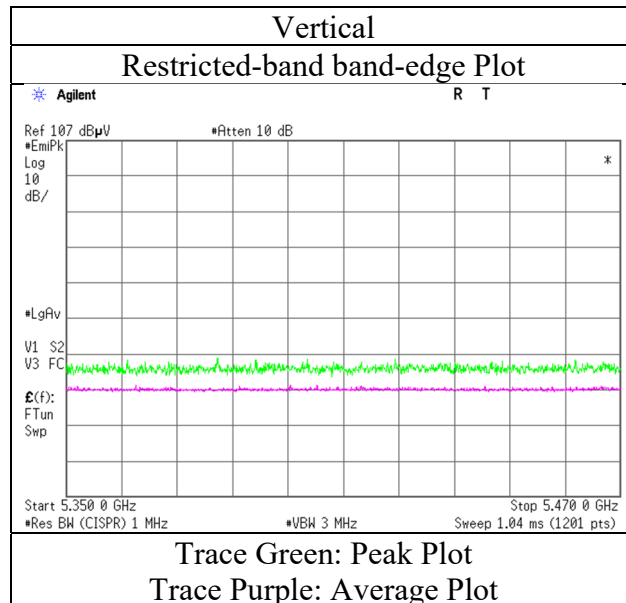
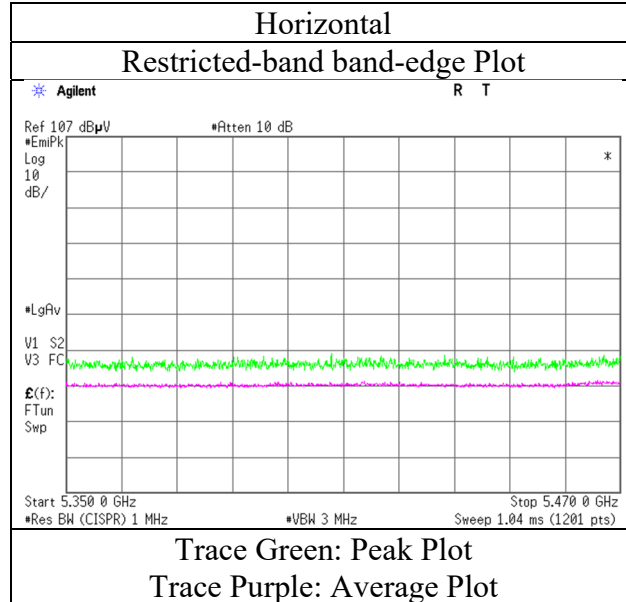
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Engineer Kazuya Noda  
Mode Tx 11n-40 5510 MHz



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Temperature / Humidity	21 deg.C, 63 %RH	22 deg.C, 52 %RH	22 deg.C, 49 %RH	22 deg.C, 50 %RH
Engineer	Kazuya Noda ( 1 GHz -6.4 GHz )	Yosuke Murakami ( 6.4 GHz -10 GHz )	Toshinori Yamada ( 10 GHz -18 GHz )	Toshinori Yamada ( 18 GHz -40 GHz )
Mode	Tx 11n-40 5550 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.	11100.000	PK	48.26	37.49	10.37	39.64	-9.54	46.94	73.9	26.9	241	194	-
Hori.	11100.000	AV	41.00	37.49	10.37	39.64	-9.54	39.68	53.9	14.2	241	194	VBW:7.5 kHz
Vert.	11100.000	PK	49.72	37.49	10.37	39.64	-9.54	48.40	73.9	25.5	210	260	-
Vert.	11100.000	AV	42.49	37.49	10.37	39.64	-9.54	41.17	53.9	12.7	210	260	VBW:7.5 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 : 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.	16650.000	PK	45.65	39.86	13.38	40.24	-9.54	49.11	-46.12	-27.0	19.1	100	0	-
Vert.	16650.000	PK	44.38	39.86	13.38	40.24	-9.54	47.84	-47.39	-27.0	20.3	100	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 )

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	( 1 GHz -6.4 GHz )	( 6.4 GHz -10 GHz )	( 10 GHz -18 GHz )	( 18 GHz -40 GHz )
Mode	Tx 11n-40 5670 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.	11340.000	PK	44.02	37.97	10.51	39.53	-9.54	43.43	73.9	30.4	258	302	-
Hori.	11340.000	AV	36.40	37.97	10.51	39.53	-9.54	35.81	53.9	18.0	258	302	VBW:7.5 kHz
Vert.	11340.000	PK	45.86	37.97	10.51	39.53	-9.54	45.27	73.9	28.6	241	340	-
Vert.	11340.000	AV	37.73	37.97	10.51	39.53	-9.54	37.14	53.9	16.7	241	340	VBW:7.5 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 : 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.	5725.000	PK	46.33	32.64	17.16	39.92	2.28	58.49	-36.74	-27.0	9.7	180	225	-
Hori.	17010.000	PK	44.57	39.75	13.48	39.68	-9.54	48.58	-46.65	-27.0	19.6	100	0	-
Vert.	5725.000	PK	46.22	32.64	17.16	39.92	2.28	58.38	-36.85	-27.0	9.8	133	228	-
Vert.	17010.000	PK	44.17	39.75	13.48	39.68	-9.54	48.18	-47.05	-27.0	20.0	100	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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**Shonan EMC Lab.**

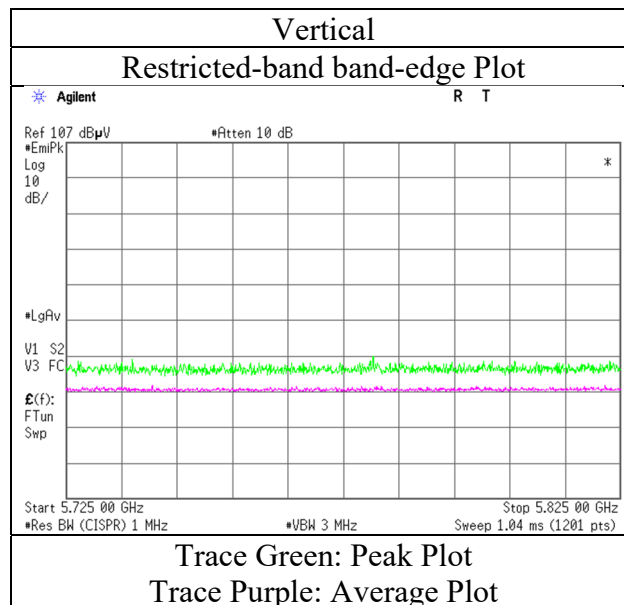
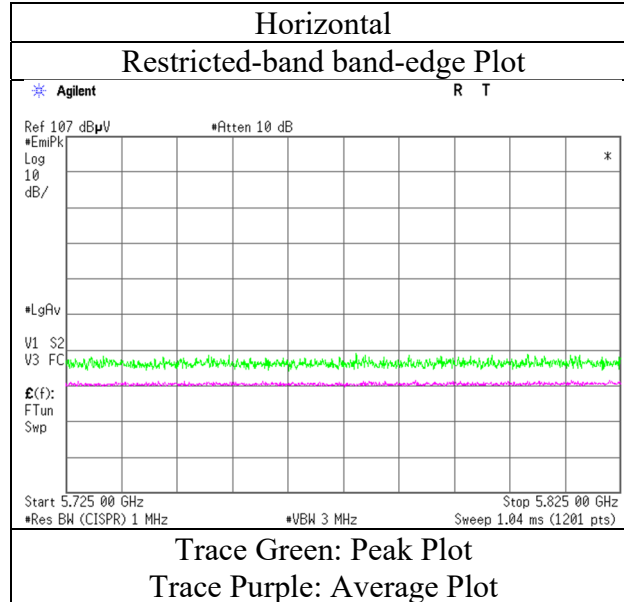
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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## Radiated Spurious Emission

Report No. 13554183S-E-R1  
Test place Shonan EMC Lab.  
Semi Anechoic Chamber 1  
Date Oct 24, 2020  
Temperature / Humidity 21 deg.C, 63 %RH  
Engineer Kazuya Noda  
Mode Tx 11n-40 5670 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.**

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## Radiated Spurious Emission

Report No.	13554183S-E-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	1
Date	Oct 24, 2020	Oct 26, 2020	Oct 28, 2020	Oct 29, 2020
Temperature / Humidity	21 deg.C, 63 %RH	22 deg.C, 52 %RH	22 deg.C, 49 %RH	22 deg.C, 50 %RH
Engineer	Kazuya Noda	Yosuke Murakami	Toshinori Yamada	Toshinori Yamada
	( 1 GHz -6.4 GHz )	( 6.4 GHz -10 GHz )	( 10 GHz -18 GHz )	( 18 GHz -40 GHz )
Mode	Tx 11n-40 5755 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.	11510.000	PK	44.15	38.27	10.58	39.45	-9.54	44.01	73.9	29.8	190	242	-
Hori.	11510.000	AV	35.61	38.27	10.58	39.45	-9.54	35.47	53.9	18.4	190	242	VBW:7.5 kHz
Vert.	11510.000	PK	45.03	38.27	10.58	39.45	-9.54	44.89	73.9	29.0	228	335	-
Vert.	11510.000	AV	36.46	38.27	10.58	39.45	-9.54	36.32	53.9	17.5	228	335	VBW:7.5 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 : 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.	5650.000	PK	45.84	32.44	17.11	39.86	2.28	57.81	-37.42	-27.0	10.4	198	135	-
Hori.	5700.000	PK	46.02	32.56	17.14	39.90	2.28	58.10	-37.13	10.0	47.1	198	135	-
Hori.	5720.000	PK	47.97	32.62	17.15	39.92	2.28	60.10	-35.13	15.6	50.7	198	135	-
Hori.	5725.000	PK	48.71	32.64	17.16	39.92	2.28	60.87	-34.36	27.0	61.3	198	135	-
Hori.	17265.000	PK	45.59	40.22	13.57	38.92	-9.54	50.92	-44.31	-27.0	17.3	100	0	-
Vert.	5650.000	PK	46.19	32.44	17.11	39.86	2.28	58.16	-37.07	-27.0	<b>10.0</b>	107	243	-
Vert.	5700.000	PK	46.56	32.56	17.14	39.90	2.28	58.64	-36.59	10.0	46.5	107	243	-
Vert.	5720.000	PK	49.16	32.62	17.15	39.92	2.28	61.29	-33.94	15.6	49.5	107	243	-
Vert.	5725.000	PK	50.25	32.64	17.16	39.92	2.28	62.41	-32.82	27.0	59.8	107	243	-
Vert.	17265.000	PK	45.91	40.22	13.57	38.92	-9.54	51.24	-43.99	-27.0	16.9	100	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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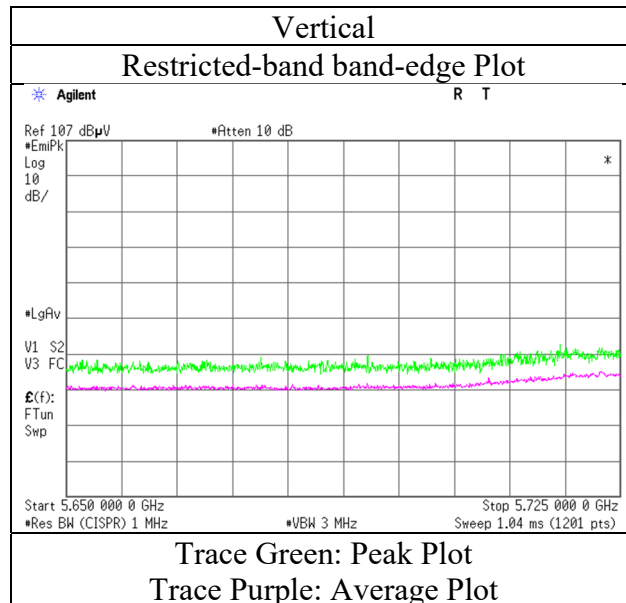
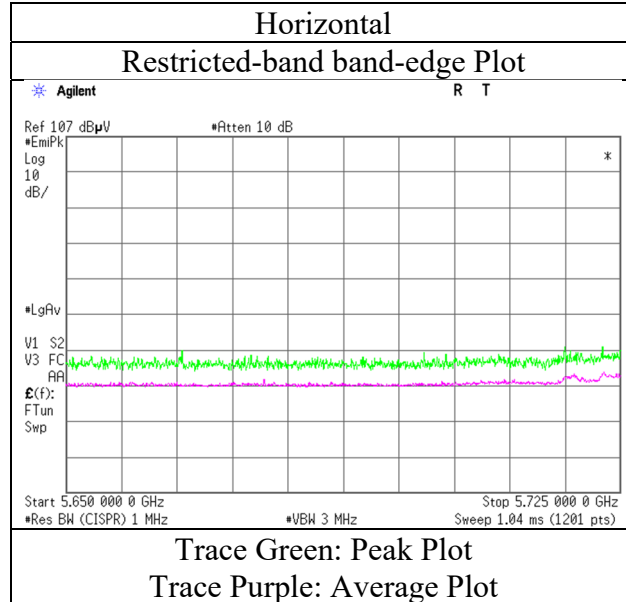
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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## Radiated Spurious Emission

Report No. 13554183S-E-R1  
Test place Shonan EMC Lab.  
Semi Anechoic Chamber 1  
Date Oct 24, 2020  
Temperature / Humidity 21 deg.C, 63 %RH  
Engineer Kazuya Noda  
Mode Tx 11n-40 5755 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-E-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	1
Date	Oct 24, 2020	Oct 26, 2020	Oct 28, 2020	Oct 29, 2020
Temperature / Humidity	21 deg.C, 63 %RH	22 deg.C, 52 %RH	22 deg.C, 49 %RH	22 deg.C, 50 %RH
Engineer	Kazuya Noda	Yosuke Murakami	Toshinori Yamada	Toshinori Yamada
	( 1 GHz -6.4 GHz )	( 6.4 GHz -10 GHz )	( 10 GHz -18 GHz )	( 18 GHz -40 GHz )
Mode	Tx 11n-40 5795 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.	11590.000	PK	41.95	38.33	10.64	39.39	-9.54	41.99	73.9	31.9	259	312	-
Hori.	11590.000	AV	33.07	38.33	10.64	39.39	-9.54	33.11	53.9	20.7	259	312	VBW:7.5 kHz
Vert.	11590.000	PK	42.53	38.33	10.64	39.39	-9.54	42.57	73.9	31.3	245	181	-
Vert.	11590.000	AV	34.88	38.33	10.64	39.39	-9.54	34.92	53.9	18.9	245	181	VBW:7.5 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 : 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.	5850.000	PK	45.91	32.91	17.24	40.02	2.28	58.32	-36.91	27.0	63.9	400	88	-
Hori.	5855.000	PK	46.25	32.92	17.24	40.02	2.28	58.67	-36.56	15.6	52.1	400	88	-
Hori.	5875.000	PK	46.47	32.95	17.27	40.04	2.28	58.93	-36.30	10.0	46.3	400	88	-
Hori.	5925.000	PK	46.18	32.99	17.29	40.07	2.28	58.67	-36.56	-27.0	9.5	400	88	-
Hori.	17385.000	PK	44.33	40.41	13.63	38.56	-9.54	50.27	-44.96	-27.0	17.9	100	0	-
Vert.	5850.000	PK	46.89	32.91	17.24	40.02	2.28	59.30	-35.93	27.0	62.9	117	242	-
Vert.	5855.000	PK	46.06	32.92	17.24	40.02	2.28	58.48	-36.75	15.6	52.3	117	242	-
Vert.	5875.000	PK	45.61	32.95	17.27	40.04	2.28	58.07	-37.16	10.0	47.1	117	242	-
Vert.	5925.000	PK	46.30	32.99	17.29	40.07	2.28	58.79	-36.44	-27.0	9.4	117	242	-
Vert.	17385.000	PK	44.00	40.41	13.63	38.56	-9.54	49.94	-45.29	-27.0	18.2	100	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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**Shonan EMC Lab.**

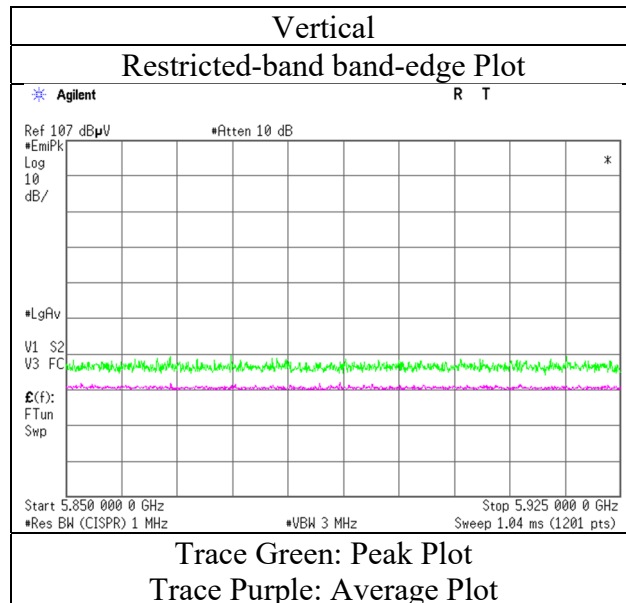
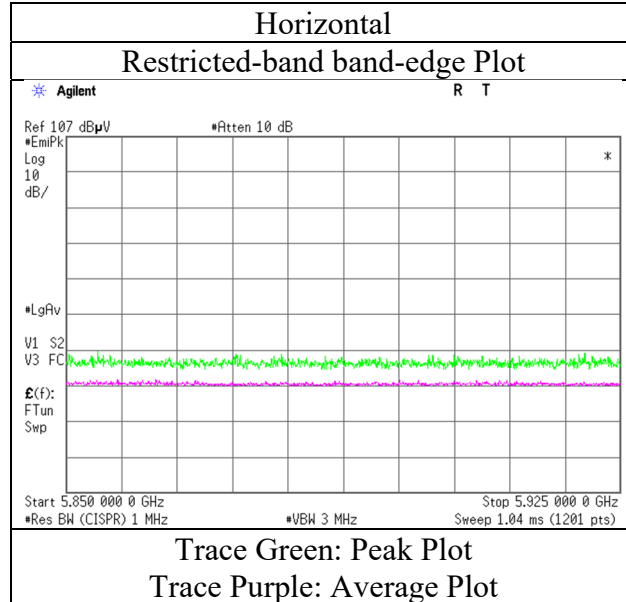
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## Radiated Spurious Emission

Report No. 13554183S-E-R1  
Test place Shonan EMC Lab.  
Semi Anechoic Chamber 1  
Date Oct 24, 2020  
Temperature / Humidity 21 deg.C, 63 %RH  
Engineer Kazuya Noda  
Mode Tx 11n-40 5795 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-E-R1  
Test place Shonan EMC Lab.  
Semi Anechoic Chamber 1  
Date Oct 24, 2020  
Temperature / Humidity 21 deg.C, 63 %RH  
Engineer Kazuya Noda  
( 1 GHz -6.4 GHz )  
Mode Tx 11ac-40 5190 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.	4710.057	PK	46.42	31.31	16.42	39.75	2.28	56.68	73.9	17.2	345	87	-
Hori.	5150.000	PK	51.44	32.25	16.76	39.72	2.28	63.01	73.9	10.8	345	87	-
Hori.	4710.057	AV	38.19	31.31	16.42	39.75	2.28	48.45	53.9	5.4	345	87	VBW:10 kHz
Hori.	5150.000	AV	41.15	32.25	16.76	39.72	2.28	52.72	53.9	1.1	345	87	VBW:10 kHz
Vert.	5150.000	PK	47.85	32.25	16.76	39.72	2.28	59.42	73.9	14.4	365	314	-
Vert.	5150.000	AV	39.20	32.25	16.76	39.72	2.28	50.77	53.9	3.1	365	314	VBW:10 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.**

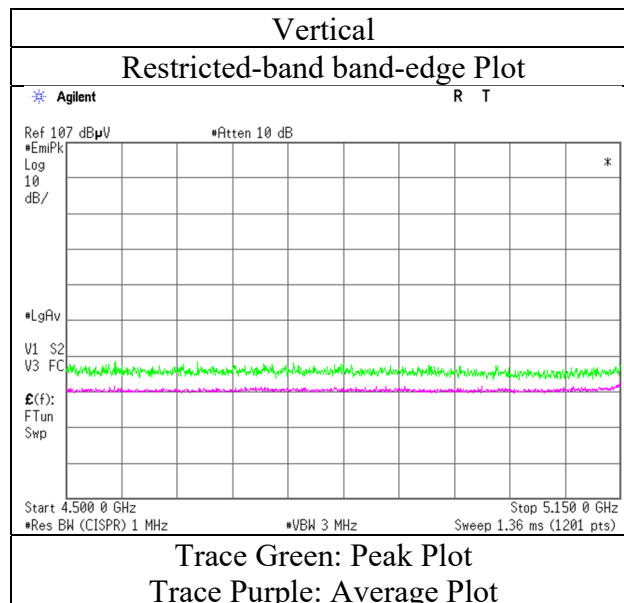
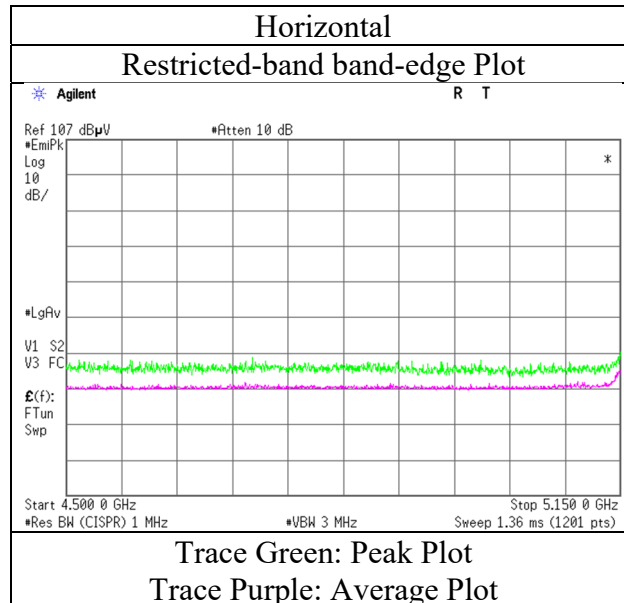
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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## Radiated Spurious Emission

Report No. 13554183S-E-R1  
 Test place Shonan EMC Lab.  
 Semi Anechoic Chamber 1  
 Date Oct 24, 2020  
 Temperature / Humidity 21 deg.C, 63 %RH  
 Engineer Kazuya Noda  
 Mode Tx 11ac-40 5190 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-E-R1  
Test place Shonan EMC Lab.  
Semi Anechoic Chamber 1  
Date Oct 25, 2020  
Temperature / Humidity 23 deg.C, 58 %RH  
Engineer Toshinori Yamada  
( 1 GHz -6.4 GHz )  
Mode Tx 11ac-40 5310 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.	4830.025	PK	46.55	31.49	16.52	39.73	2.28	57.11	73.9	16.7	325	107	-
Hori.	5350.000	PK	50.46	31.99	16.91	39.74	2.28	61.90	73.9	12.0	325	107	-
Hori.	4830.025	AV	38.61	31.49	16.52	39.73	2.28	49.17	53.9	4.7	325	107	VBW:10 kHz
Hori.	5350.000	AV	38.23	31.99	16.91	39.74	2.28	49.67	53.9	4.2	325	107	VBW:10 kHz
Vert.	4830.025	PK	47.46	31.49	16.52	39.73	2.28	58.02	73.9	15.8	107	257	-
Vert.	5350.000	PK	47.66	31.99	16.91	39.74	2.28	59.10	73.9	14.8	107	257	-
Vert.	4830.025	AV	37.29	31.49	16.52	39.73	2.28	47.85	53.9	6.0	107	257	VBW:10 kHz
Vert.	5350.000	AV	37.30	31.99	16.91	39.74	2.28	48.74	53.9	5.1	107	257	VBW:10 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 :  $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

**UL Japan, Inc.**

**Shonan EMC Lab.**

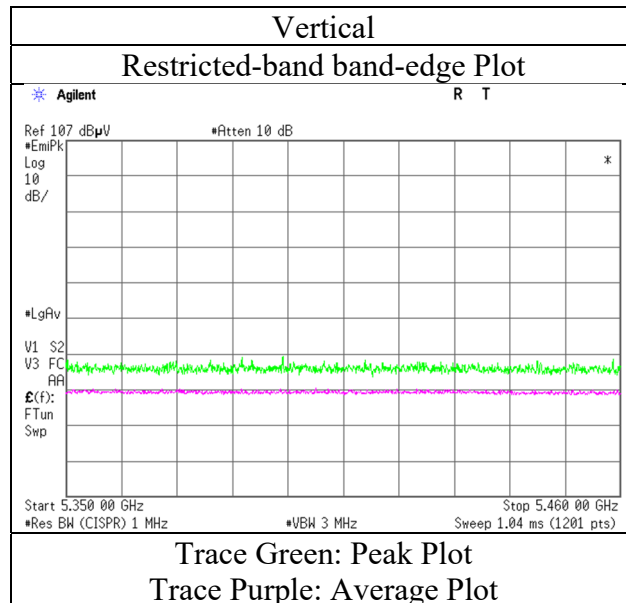
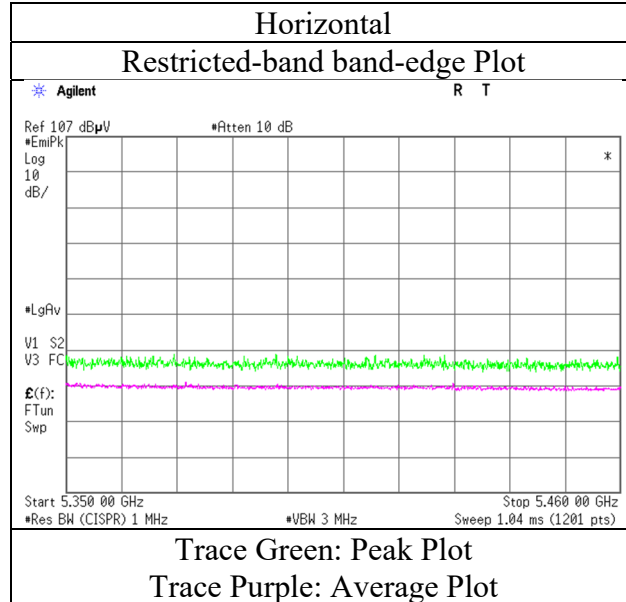
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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## Radiated Spurious Emission

Report No. 13554183S-E-R1  
Test place Shonan EMC Lab.  
Semi Anechoic Chamber 1  
Date Oct 25, 2020  
Temperature / Humidity 23 deg.C, 58 %RH  
Engineer Toshinori Yamada  
Mode Tx 11ac-40 5310 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-E-R1  
Test place Shonan EMC Lab.  
Semi Anechoic Chamber 1  
Date Oct 25, 2020  
Temperature / Humidity 23 deg.C, 58 %RH  
Engineer Toshinori Yamada  
( 1 GHz -6.4 GHz )  
Mode Tx 11ac-40 5510 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.	5030.033	PK	47.29	32.02	16.67	39.70	2.28	58.56	73.9	15.3	350	98	-
Hori.	5460.000	PK	47.65	32.22	16.99	39.75	2.28	59.39	73.9	14.5	350	98	-
Hori.	5030.033	AV	40.02	32.02	16.67	39.70	2.28	51.29	53.9	2.6	350	98	VBW:10 kHz
Hori.	5460.000	AV	37.58	32.22	16.99	39.75	2.28	49.32	53.9	4.5	350	98	VBW:10 kHz
Vert.	5030.033	PK	45.92	32.02	16.67	39.70	2.28	57.19	73.9	16.7	112	262	-
Vert.	5460.000	PK	46.56	32.22	16.99	39.75	2.28	58.30	73.9	15.6	112	262	-
Vert.	5030.033	AV	36.55	32.02	16.67	39.70	2.28	47.82	53.9	6.0	112	262	VBW:10 kHz
Vert.	5460.000	AV	36.95	32.22	16.99	39.75	2.28	48.69	53.9	5.2	112	262	VBW:10 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.	5470.000	PK	48.13	32.24	16.99	39.75	2.28	59.89	-35.34	-27.0	8.3	350	98	-
Vert.	5470.000	PK	46.87	32.24	16.99	39.75	2.28	58.63	-36.60	-27.0	9.6	112	262	-

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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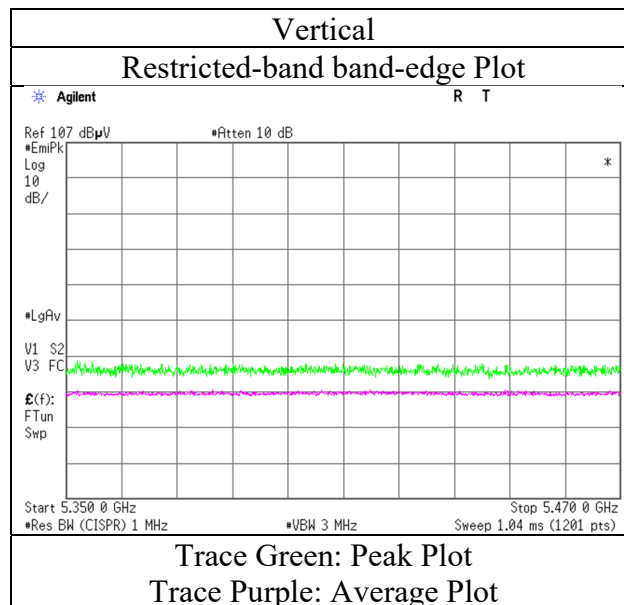
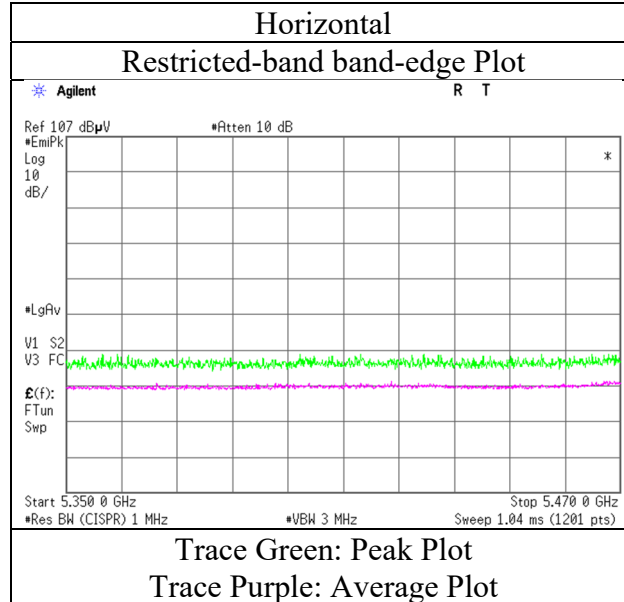
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## Radiated Spurious Emission

Report No. 13554183S-E-R1  
 Test place Shonan EMC Lab.  
 Semi Anechoic Chamber 1  
 Date Oct 25, 2020  
 Temperature / Humidity 23 deg.C, 58 %RH  
 Engineer Toshinori Yamada  
 Mode Tx 11ac-40 5510 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-E-R1  
Test place Shonan EMC Lab.  
Semi Anechoic Chamber 1  
Date Oct 25, 2020  
Temperature / Humidity 23 deg.C, 58 %RH  
Engineer Toshinori Yamada  
( 1 GHz -6.4 GHz )  
Mode Tx 11ac-40 5670 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	47.78	32.64	17.16	39.92	2.28	59.94	-35.29	-27.0	8.2	315	94	-
Vert.	5725.000	PK	47.13	32.64	17.16	39.92	2.28	59.29	-35.94	-27.0	8.9	120	235	-

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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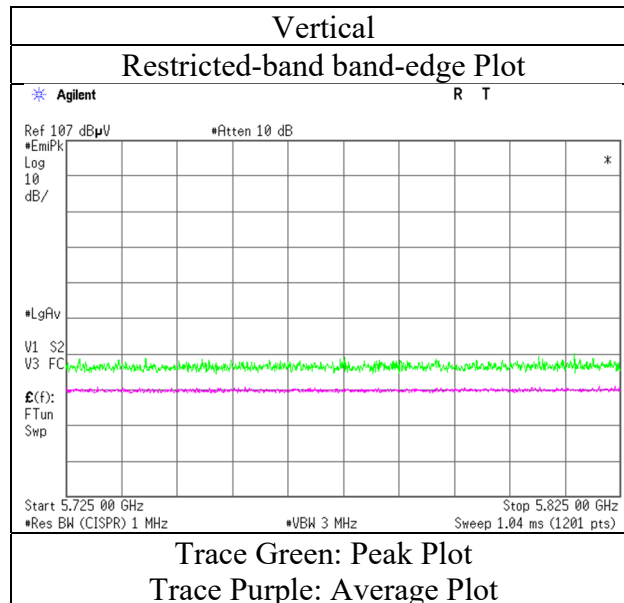
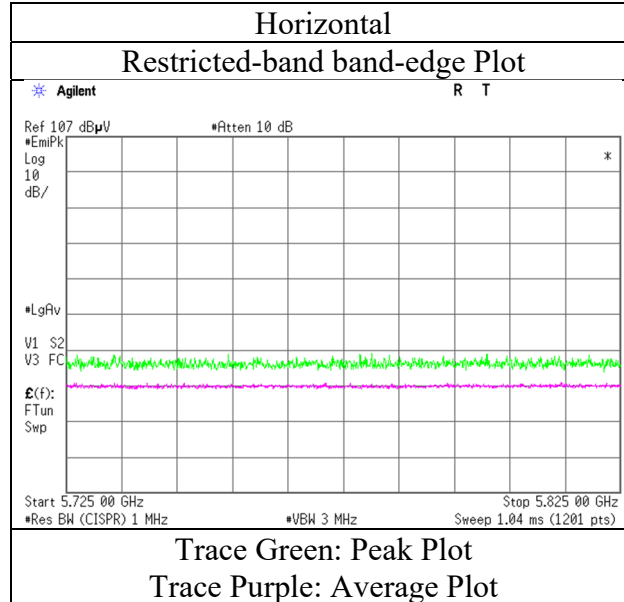
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## Radiated Spurious Emission

Report No. 13554183S-E-R1  
Test place Shonan EMC Lab.  
Semi Anechoic Chamber 1  
Date Oct 25, 2020  
Temperature / Humidity 23 deg.C, 58 %RH  
Engineer Toshinori Yamada  
Mode Tx 11ac-40 5670 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-E-R1  
Test place Shonan EMC Lab.  
Semi Anechoic Chamber 1  
Date Oct 25, 2020  
Temperature / Humidity 23 deg.C, 58 %RH  
Engineer Toshinori Yamada  
( 1 GHz -6.4 GHz )  
Mode Tx 11ac-40 5755 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	46.79	32.44	17.11	39.86	2.28	58.76	-36.47	-27.0	9.4	388	86	-
Hori.	5700.000	PK	47.30	32.56	17.14	39.90	2.28	59.38	-35.85	10.0	45.8	388	86	-
Hori.	5720.000	PK	50.23	32.62	17.15	39.92	2.28	62.36	-32.87	15.6	48.4	388	86	-
Hori.	5722.438	PK	51.89	32.63	17.16	39.92	2.28	64.04	-31.19	21.2	52.3	388	86	-
Hori.	5725.000	PK	54.76	32.64	17.16	39.92	2.28	66.92	-28.31	27.0	55.3	388	86	-
Vert.	5650.000	PK	47.15	32.44	17.11	39.86	2.28	59.12	-36.11	-27.0	9.1	106	233	-
Vert.	5700.000	PK	47.55	32.56	17.14	39.90	2.28	59.63	-35.60	10.0	45.6	106	233	-
Vert.	5720.000	PK	51.90	32.62	17.15	39.92	2.28	64.03	-31.20	15.6	46.8	106	233	-
Vert.	5725.000	PK	52.72	32.64	17.16	39.92	2.28	64.88	-30.35	27.0	57.3	106	233	-

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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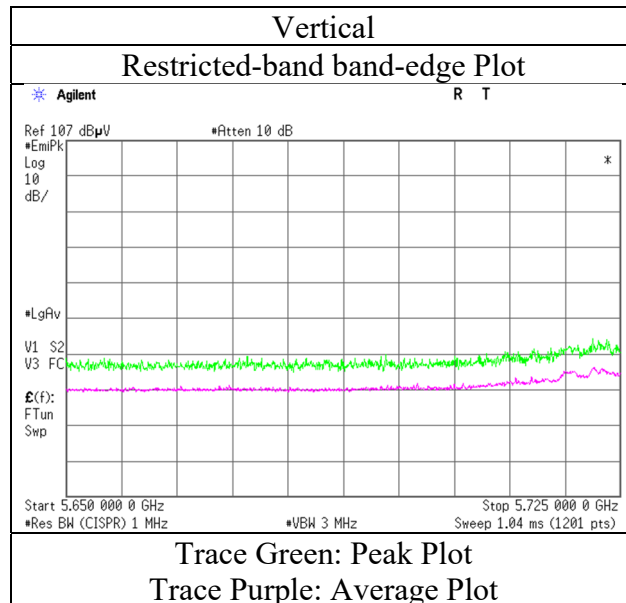
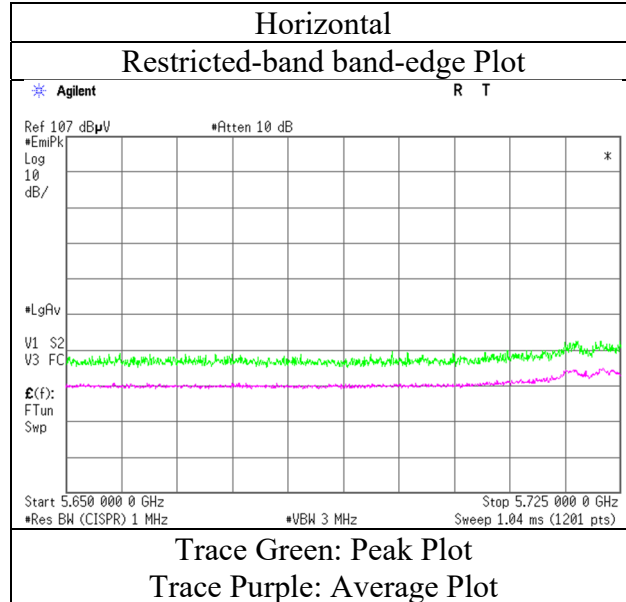
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## Radiated Spurious Emission

Report No. 13554183S-E-R1  
Test place Shonan EMC Lab.  
Semi Anechoic Chamber 1  
Date Oct 25, 2020  
Temperature / Humidity 23 deg.C, 58 %RH  
Engineer Toshinori Yamada  
Mode Tx 11ac-40 5755 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-E-R1  
Test place Shonan EMC Lab.  
Semi Anechoic Chamber 1  
Date Oct 25, 2020  
Temperature / Humidity 23 deg.C, 58 %RH  
Engineer Toshinori Yamada  
( 1 GHz -6.4 GHz )  
Mode Tx 11ac-40 5795 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	47.18	32.91	17.24	40.02	2.28	59.59	-35.64	27.0	62.6	400	90	-
Hori.	5855.000	PK	47.31	32.92	17.24	40.02	2.28	59.73	-35.50	15.6	51.1	400	90	-
Hori.	5875.000	PK	46.76	32.95	17.27	40.04	2.28	59.22	-36.01	10.0	46.0	400	90	-
Hori.	5925.000	PK	46.72	32.99	17.29	40.07	2.28	59.21	-36.02	-27.0	<b>9.0</b>	400	90	-
Vert.	5850.000	PK	47.42	32.91	17.24	40.02	2.28	59.83	-35.40	27.0	62.4	104	235	-
Vert.	5855.000	PK	47.20	32.92	17.24	40.02	2.28	59.62	-35.61	15.6	51.2	104	235	-
Vert.	5875.000	PK	46.89	32.95	17.27	40.04	2.28	59.35	-35.88	10.0	45.8	104	235	-
Vert.	5925.000	PK	46.66	32.99	17.29	40.07	2.28	59.15	-36.08	-27.0	<b>9.0</b>	104	235	-

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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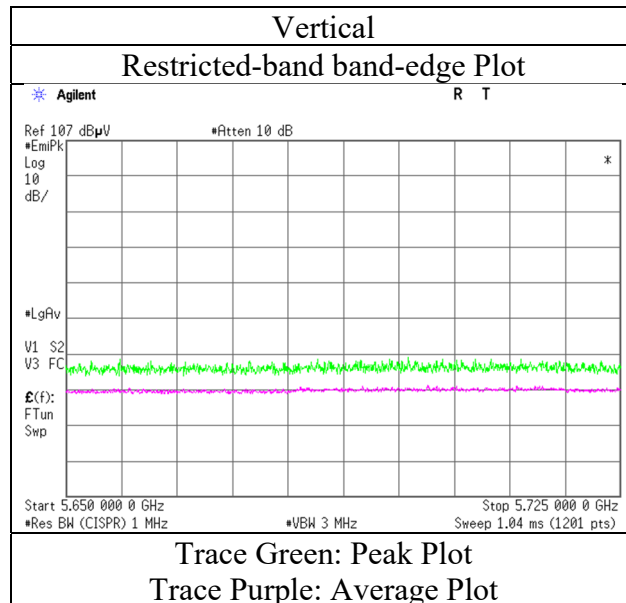
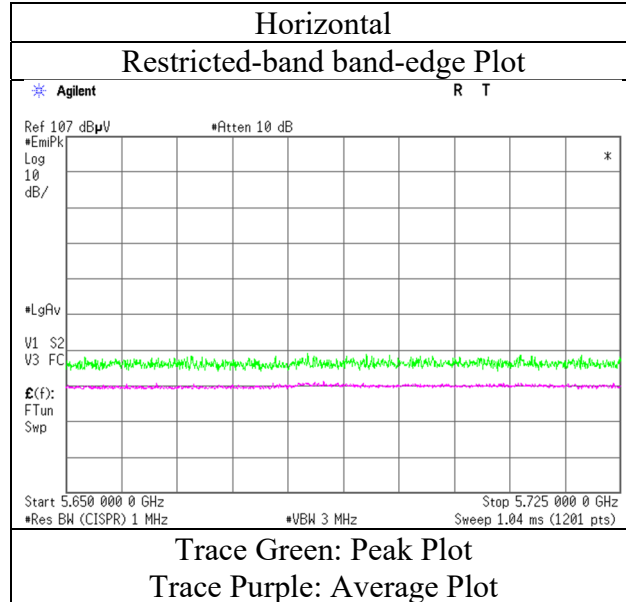
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## Radiated Spurious Emission

Report No. 13554183S-E-R1  
 Test place Shonan EMC Lab.  
 Semi Anechoic Chamber 1  
 Date Oct 25, 2020  
 Temperature / Humidity 23 deg.C, 58 %RH  
 Engineer Toshinori Yamada  
 Mode Tx 11ac-40 5795 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-E-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	1
Date	Oct 25, 2020	Oct 26, 2020	Oct 28, 2020	Oct 29, 2020
Temperature / Humidity	23 deg.C, 58 %RH	22 deg.C, 52 %RH	22 deg.C, 49 %RH	22 deg.C, 50 %RH
Engineer	Toshinori Yamada	Yosuke Murakami	Toshinori Yamada	Toshinori Yamada
	( 1 GHz -6.4 GHz )	( 6.4 GHz -10 GHz )	( 10 GHz -18 GHz )	( 18 GHz -40 GHz )
Mode	Tx 11ac-80 5210 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.	4730.021	PK	48.00	31.35	16.43	39.74	2.28	58.32	73.9	15.5	385	85	-
Hori.	5150.000	PK	49.23	32.25	16.76	39.72	2.28	60.80	73.9	13.1	385	85	-
Hori.	15630.000	PK	45.96	39.69	12.66	39.25	-9.54	49.52	73.9	24.3	100	0	-
Hori.	4730.021	AV	38.08	31.35	16.43	39.74	2.28	48.40	53.9	5.5	385	85	VBW:4.3 kHz
Hori.	5150.000	AV	38.94	32.25	16.76	39.72	2.28	50.51	53.9	3.3	385	85	VBW:4.3 kHz
Hori.	15630.000	AV	36.26	39.69	12.66	39.25	-9.54	39.82	53.9	14.0	100	0	VBW:4.3 kHz
Vert.	4730.021	PK	46.77	31.35	16.43	39.74	2.28	57.09	73.9	16.8	112	306	-
Vert.	5150.000	PK	47.62	32.25	16.76	39.72	2.28	59.19	73.9	14.7	112	306	-
Vert.	15630.000	PK	46.58	39.69	12.66	39.25	-9.54	50.14	73.9	23.7	100	0	-
Vert.	4730.021	AV	36.22	31.35	16.43	39.74	2.28	46.54	53.9	7.3	112	306	VBW:4.3 kHz
Vert.	5150.000	AV	37.07	32.25	16.76	39.72	2.28	48.64	53.9	5.2	112	306	VBW:4.3 kHz
Vert.	15630.000	AV	35.86	39.69	12.66	39.25	-9.54	39.42	53.9	14.4	100	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.	10420.000	PK	48.32	36.61	10.02	39.99	-9.54	45.42	-49.81	-27.0	22.8	192	232	-
Vert.	10420.000	PK	49.66	36.61	10.02	40.00	-9.54	46.75	-48.48	-27.0	21.4	207	269	-

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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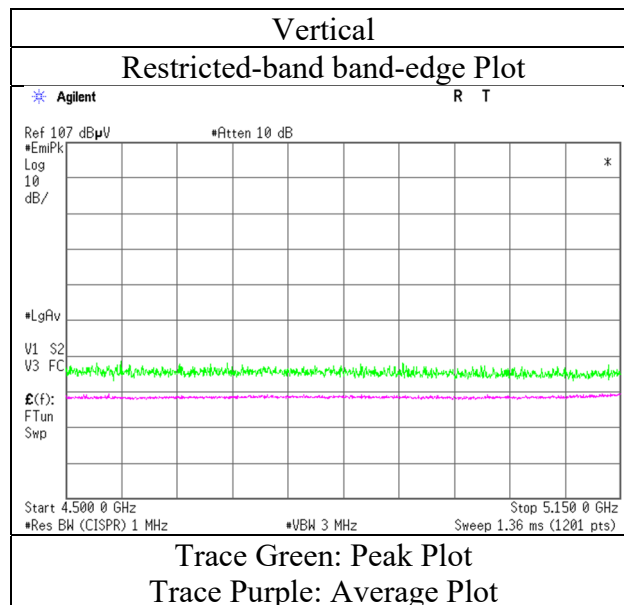
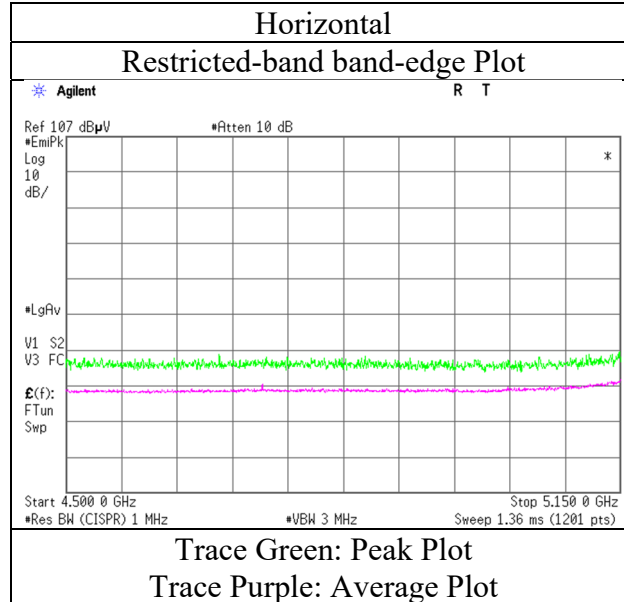
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## Radiated Spurious Emission

Report No.	13554183S-E-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	Oct 25, 2020
Temperature / Humidity	23 deg.C, 58 %RH
Engineer	Toshinori Yamada
Mode	Tx 11ac-80 5210 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-E-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	1
Date	Oct 25, 2020	Oct 26, 2020	Oct 28, 2020	Oct 29, 2020
Temperature / Humidity	23 deg.C, 58 %RH	22 deg.C, 52 %RH	22 deg.C, 49 %RH	22 deg.C, 50 %RH
Engineer	Toshinori Yamada	Yosuke Murakami	Toshinori Yamada	Toshinori Yamada
	( 1 GHz -6.4 GHz )	( 6.4 GHz -10 GHz )	( 10 GHz -18 GHz )	( 18 GHz -40 GHz )
Mode	Tx 11ac-80 5290 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.	4810.043	PK	47.12	31.48	16.51	39.73	2.28	57.66	73.9	16.2	326	113	-
Hori.	5350.000	PK	47.30	31.99	16.91	39.74	2.28	58.74	73.9	15.1	326	113	-
Hori.	15870.000	PK	44.59	40.07	12.63	39.58	-9.54	48.17	73.9	25.7	100	0	-
Hori.	4810.043	AV	36.42	31.48	16.51	39.73	2.28	46.96	53.9	6.9	326	113	VBW:4.3 kHz
Hori.	5350.000	AV	36.71	31.99	16.91	39.74	2.28	48.15	53.9	5.7	326	113	VBW:4.3 kHz
Hori.	15870.000	AV	35.65	40.07	12.63	39.58	-9.54	39.23	53.9	14.6	100	0	VBW:4.3 kHz
Vert.	4810.043	PK	46.15	31.48	16.51	39.73	2.28	56.69	73.9	17.2	113	255	-
Vert.	5350.000	PK	46.75	31.99	16.91	39.74	2.28	58.19	73.9	15.7	113	255	-
Vert.	15870.000	PK	44.88	40.07	12.63	39.58	-9.54	48.46	73.9	25.4	100	0	-
Vert.	4810.043	AV	36.32	31.48	16.51	39.73	2.28	46.86	53.9	7.0	113	255	VBW:4.3 kHz
Vert.	5350.000	AV	36.10	31.99	16.91	39.74	2.28	47.54	53.9	6.3	113	255	VBW:4.3 kHz
Vert.	15870.000	AV	35.52	40.07	12.63	39.58	-9.54	39.10	53.9	14.8	100	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.	10580.000	PK	46.63	37.12	10.07	40.07	-9.54	44.21	-51.02	-27.0	24.0	211	238	-
Vert.	10580.000	PK	48.35	37.12	10.07	40.07	-9.54	45.93	-49.30	-27.0	22.3	213	265	-

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.**

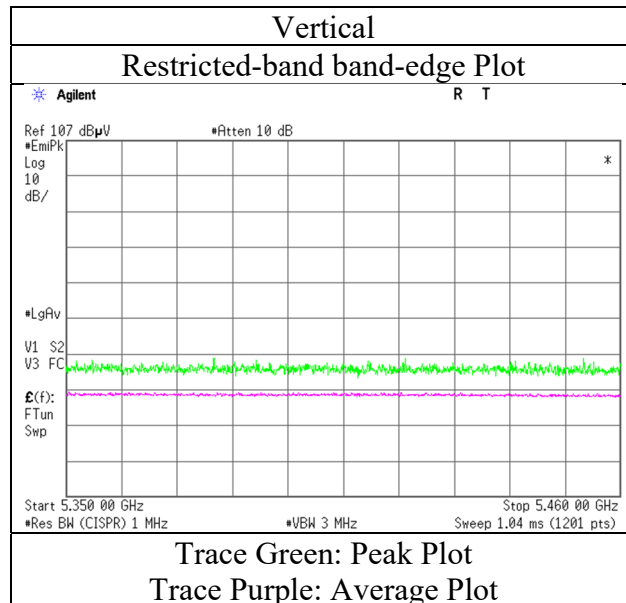
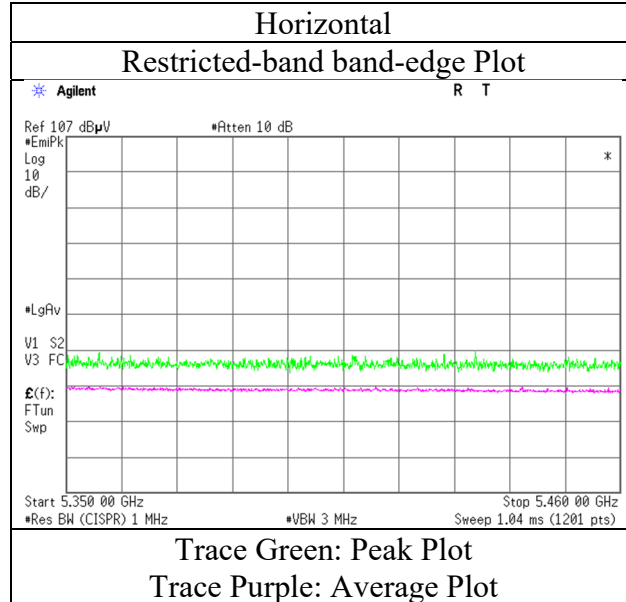
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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## Radiated Spurious Emission

Report No. 13554183S-E-R1  
Test place Shonan EMC Lab.  
Semi Anechoic Chamber 1  
Date Oct 25, 2020  
Temperature / Humidity 23 deg.C, 58 %RH  
Engineer Toshinori Yamada  
Mode Tx 11ac-80 5290 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-E-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	1
Date	Oct 25, 2020	Oct 26, 2020	Oct 28, 2020	Oct 29, 2020
Temperature / Humidity	23 deg.C, 58 %RH	22 deg.C, 52 %RH	22 deg.C, 49 %RH	22 deg.C, 50 %RH
Engineer	Toshinori Yamada	Yosuke Murakami	Toshinori Yamada	Toshinori Yamada
	( 1 GHz -6.4 GHz )	( 6.4 GHz -10 GHz )	( 10 GHz -18 GHz )	( 18 GHz -40 GHz )
Mode	Tx 11ac-80 5530 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.	5050.023	PK	47.06	32.12	16.69	39.71	2.28	58.44	73.9	15.4	353	105	-
Hori.	5460.000	PK	47.47	32.22	16.99	39.75	2.28	59.21	73.9	14.6	353	105	-
Hori.	11060.000	PK	45.41	37.51	10.34	39.65	-9.54	44.07	73.9	29.8	248	192	-
Hori.	5050.023	AV	39.31	32.12	16.69	39.71	2.28	50.69	53.9	3.2	353	105	VBW:4.3 kHz
Hori.	5460.000	AV	36.84	32.22	16.99	39.75	2.28	48.58	53.9	5.3	353	105	VBW:4.3 kHz
Hori.	11060.000	AV	37.31	37.51	10.34	39.65	-9.54	35.97	53.9	17.9	248	192	VBW:4.3 kHz
Vert.	5050.023	PK	45.13	32.12	16.69	39.71	2.28	56.51	73.9	17.3	103	226	-
Vert.	5460.000	PK	46.87	32.22	16.99	39.75	2.28	58.61	73.9	15.2	103	226	-
Vert.	11060.000	PK	47.91	37.51	10.34	39.65	-9.54	46.57	73.9	27.3	206	257	-
Vert.	5050.023	AV	35.44	32.12	16.69	39.71	2.28	46.82	53.9	7.0	103	226	VBW:4.3 kHz
Vert.	5460.000	AV	36.20	32.22	16.99	39.75	2.28	47.94	53.9	5.9	103	226	VBW:4.3 kHz
Vert.	11060.000	AV	39.18	37.51	10.34	39.65	-9.54	37.84	53.9	16.0	206	257	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.	5465.000	PK	49.07	32.23	16.99	39.75	2.28	60.82	-34.41	-27.0	7.4	353	105	-
Hori.	5470.000	PK	47.95	32.24	16.99	39.75	2.28	59.71	-35.52	-27.0	8.5	353	105	-
Hori.	16590.000	PK	45.06	39.95	13.37	40.33	-9.54	48.51	-46.72	-27.0	19.7	100	0	-
Vert.	5470.000	PK	47.43	32.24	16.99	39.75	2.28	59.19	-36.04	-27.0	9.0	103	226	-
Vert.	16590.000	PK	45.12	39.95	13.37	40.33	-9.54	48.57	-46.66	-27.0	19.6	100	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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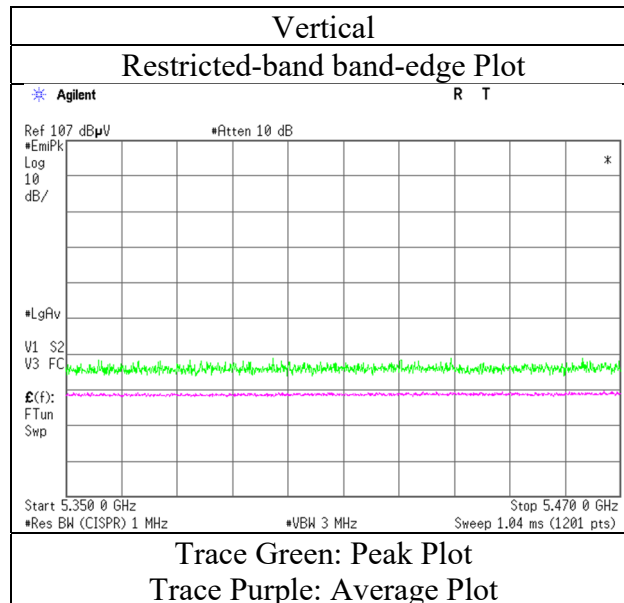
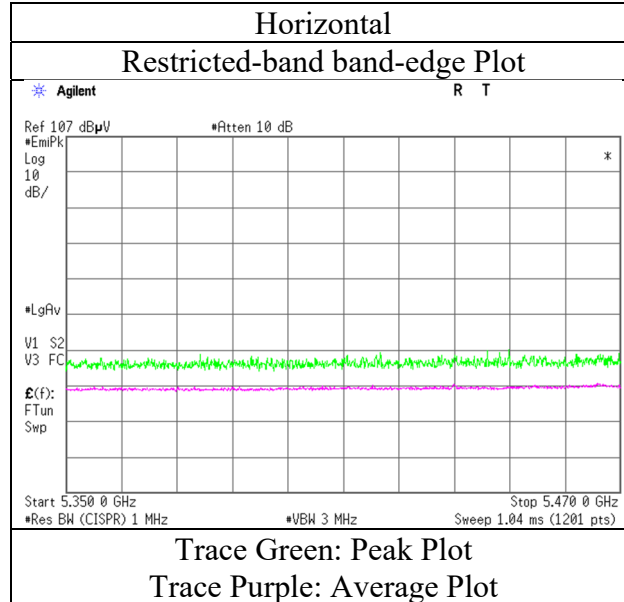
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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## Radiated Spurious Emission

Report No. 13554183S-E-R1  
Test place Shonan EMC Lab.  
Semi Anechoic Chamber 1  
Date Oct 25, 2020  
Temperature / Humidity 23 deg.C, 58 %RH  
Engineer Toshinori Yamada  
Mode Tx 11ac-80 5530 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-E-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	1
Date	Oct 25, 2020	Oct 26, 2020	Oct 28, 2020	Oct 29, 2020
Temperature / Humidity	23 deg.C, 58 %RH	22 deg.C, 52 %RH	22 deg.C, 49 %RH	22 deg.C, 50 %RH
Engineer	Toshinori Yamada	Yosuke Murakami	Toshinori Yamada	Toshinori Yamada
	( 1 GHz -6.4 GHz )	( 6.4 GHz -10 GHz )	( 10 GHz -18 GHz )	( 18 GHz -40 GHz )
Mode	Tx 11ac-80 5610 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.	5130.075	PK	47.72	32.28	16.74	39.71	2.28	59.31	73.9	14.5	390	94	-
Hori.	11220.000	PK	45.64	37.65	10.43	39.58	-9.54	44.60	73.9	29.3	247	192	-
Hori.	5130.075	AV	39.95	32.28	16.74	39.71	2.28	51.54	53.9	2.3	390	94	VBW:4.3 kHz
Hori.	11220.000	AV	36.57	37.65	10.43	39.58	-9.54	35.53	53.9	18.3	247	192	VBW:4.3 kHz
Vert.	5130.075	PK	46.11	32.28	16.74	39.71	2.28	57.70	73.9	16.2	119	230	-
Vert.	11220.000	PK	45.71	37.65	10.43	39.58	-9.54	44.67	73.9	29.2	207	111	-
Vert.	5130.075	AV	35.90	32.28	16.74	39.71	2.28	47.49	53.9	6.4	119	230	VBW:4.3 kHz
Vert.	11220.000	AV	37.12	37.65	10.43	39.58	-9.54	36.08	53.9	17.8	207	111	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.	5725.000	PK	47.06	32.64	17.16	39.92	2.28	59.22	-36.01	-27.0	9.0	390	94	-
Hori.	16830.000	PK	45.52	39.66	13.43	39.97	-9.54	49.10	-46.13	-27.0	19.1	100	0	-
Vert.	5725.000	PK	47.09	32.64	17.16	39.92	2.28	59.25	-35.98	-27.0	8.9	119	230	-
Vert.	16830.000	PK	46.09	39.66	13.43	39.97	-9.54	49.67	-45.56	-27.0	18.5	100	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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**Shonan EMC Lab.**

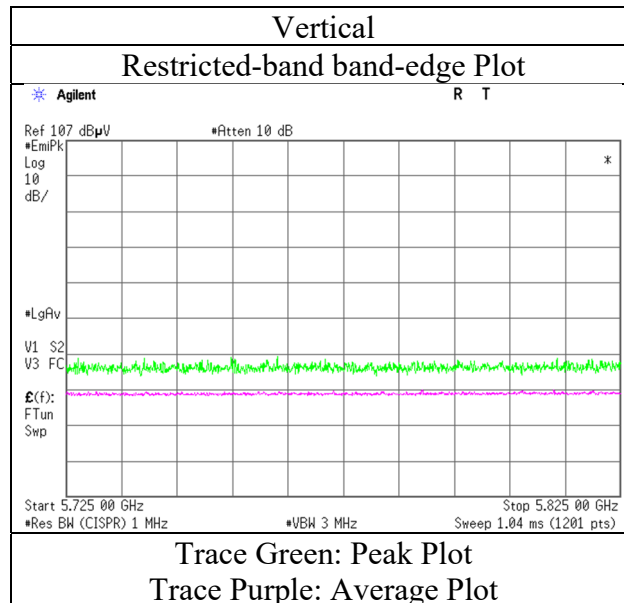
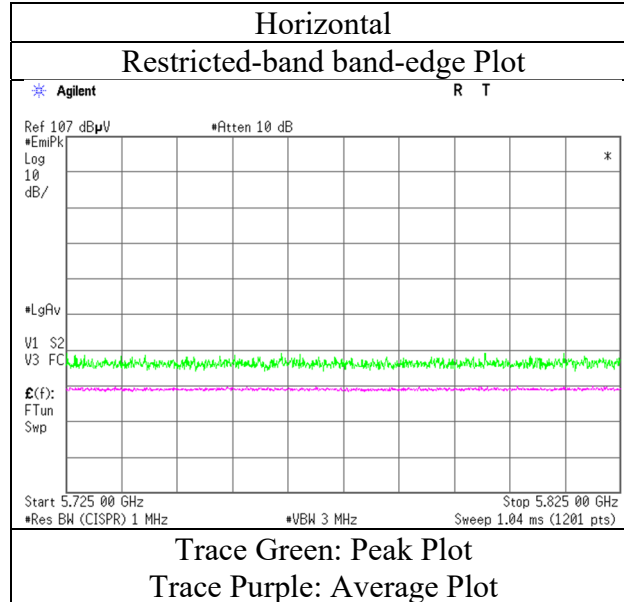
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Facsimile : +81 463 50 6401

## Radiated Spurious Emission

Report No. 13554183S-E-R1  
Test place Shonan EMC Lab.  
Semi Anechoic Chamber 1  
Date Oct 25, 2020  
Temperature / Humidity 23 deg.C, 58 %RH  
Engineer Toshinori Yamada  
Mode Tx 11ac-80 5610 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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Facsimile : +81 463 50 6401

## Radiated Spurious Emission

Report No.	13554183S-E-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	1
Date	Oct 26, 2020	Oct 26, 2020	Oct 28, 2020	Oct 29, 2020
Temperature / Humidity	22 deg.C, 52 %RH	22 deg.C, 52 %RH	22 deg.C, 49 %RH	22 deg.C, 50 %RH
Engineer	Toshinori Yamada	Yosuke Murakami	Toshinori Yamada	Toshinori Yamada
	( 1 GHz -6.4 GHz )	( 6.4 GHz -10 GHz )	( 10 GHz -18 GHz )	( 18 GHz -40 GHz )
Mode	Tx 11ac-80 5690 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.	11380.000	PK	44.34	38.07	10.52	39.51	-9.54	43.88	73.9	30.0	192	228	-
Hori.	11380.000	AV	35.01	38.07	10.52	39.51	-9.54	34.55	53.9	19.3	192	228	VBW:4.3 kHz
Vert.	11380.000	PK	44.88	38.07	10.52	39.51	-9.54	44.42	73.9	29.4	239	334	-
Vert.	11380.000	AV	35.34	38.07	10.52	39.51	-9.54	34.88	53.9	19.0	239	334	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.	5470.000	PK	46.97	32.24	16.99	39.75	2.28	58.73	-36.50	-27.0	9.5	393	93	-
Hori.	5850.000	PK	46.85	32.91	17.24	40.02	2.28	59.26	-35.97	-27.0	8.9	393	93	-
Hori.	5855.000	PK	46.75	32.92	17.24	40.02	2.28	59.17	-36.06	-27.0	9.0	393	93	-
Hori.	5875.000	PK	47.43	32.95	17.27	40.04	2.28	59.89	-35.34	-27.0	8.3	393	93	-
Hori.	5925.000	PK	46.36	32.99	17.29	40.07	2.28	58.85	-36.38	-27.0	9.3	393	93	-
Hori.	17070.000	PK	44.36	39.83	13.50	39.50	-9.54	48.65	-46.58	-27.0	19.5	100	0	-
Vert.	5470.000	PK	46.39	32.24	16.99	39.75	2.28	58.15	-37.08	-27.0	10.0	111	237	-
Vert.	5850.000	PK	46.94	32.91	17.24	40.02	2.28	59.35	-35.88	-27.0	8.8	111	237	-
Vert.	5855.000	PK	46.87	32.92	17.24	40.02	2.28	59.29	-35.94	-27.0	8.9	111	237	-
Vert.	5875.000	PK	46.50	32.95	17.27	40.04	2.28	58.96	-36.27	-27.0	9.2	111	237	-
Vert.	5925.000	PK	46.33	32.99	17.29	40.07	2.28	58.82	-36.41	-27.0	9.4	111	237	-
Vert.	17070.000	PK	44.16	39.83	13.50	39.50	-9.54	48.45	-46.78	-27.0	19.7	100	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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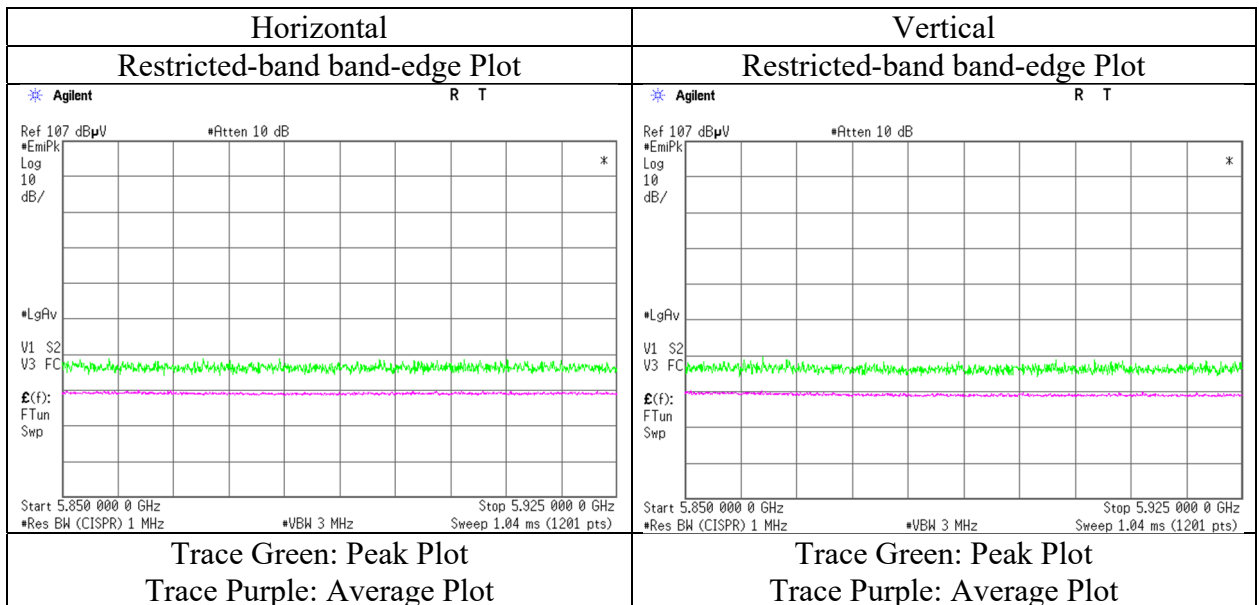
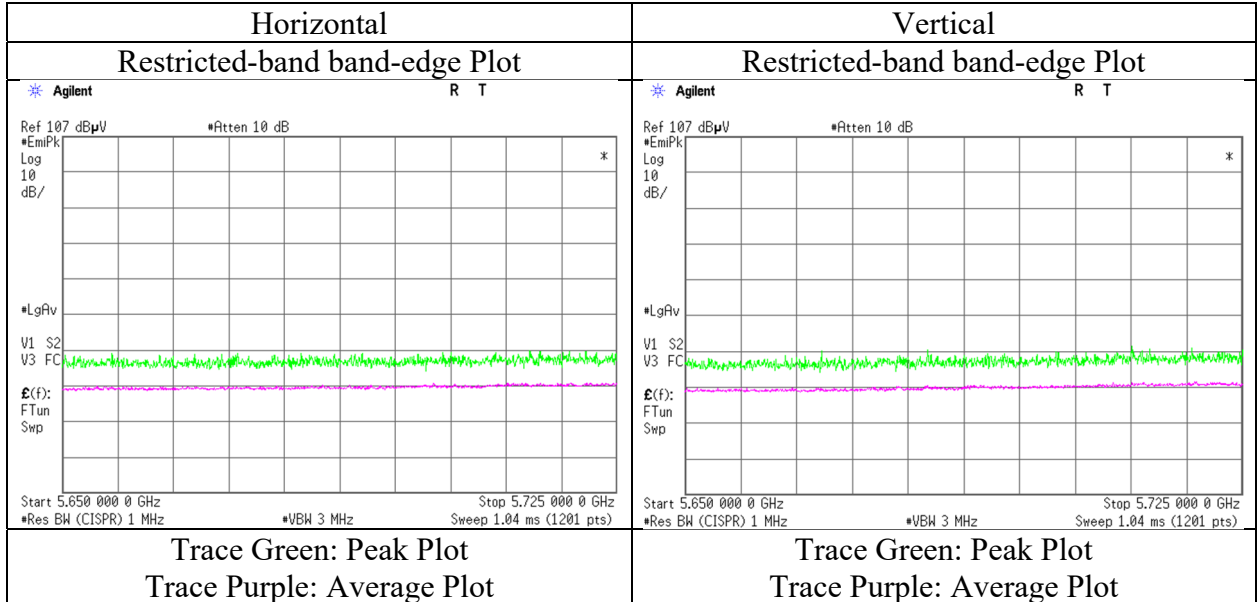
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## Radiated Spurious Emission

Report No.	13554183S-E-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	Oct 26, 2020
Temperature / Humidity	22 deg.C, 52 %RH
Engineer	Toshinori Yamada
Mode	Tx 11ac-80 5690 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-E-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	1
Date	Oct 25, 2020	Oct 26, 2020	Oct 28, 2020	Oct 29, 2020
Temperature / Humidity	23 deg.C, 58 %RH	22 deg.C, 52 %RH	22 deg.C, 49 %RH	22 deg.C, 50 %RH
Engineer	Toshinori Yamada	Yosuke Murakami	Toshinori Yamada	Toshinori Yamada
	( 1 GHz -6.4 GHz )	( 6.4 GHz -10 GHz )	( 10 GHz -18 GHz )	( 18 GHz -40 GHz )
Mode	Tx 11ac-80 5775 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.	11550.000	PK	42.57	38.29	10.61	39.42	-9.54	42.51	73.9	31.3	245	186	-
Hori.	11550.000	AV	32.36	38.29	10.61	39.42	-9.54	32.30	53.9	21.6	245	186	VBW:4.3 kHz
Vert.	11550.000	PK	43.04	38.29	10.61	39.42	-9.54	42.98	73.9	30.9	228	336	-
Vert.	11550.000	AV	33.12	38.29	10.61	39.42	-9.54	33.06	53.9	20.8	228	336	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.	5295.086	PK	47.62	31.92	16.87	39.73	2.28	58.96	-36.27	-27.0	9.2	383	83	-
Hori.	5650.000	PK	47.10	32.44	17.11	39.86	2.28	59.07	-36.16	-27.0	9.1	383	83	-
Hori.	5700.000	PK	48.82	32.56	17.14	39.90	2.28	60.90	-34.33	10.0	44.3	383	83	-
Hori.	5720.000	PK	48.93	32.62	17.15	39.92	2.28	61.06	-34.17	15.6	49.7	383	83	-
Hori.	5725.000	PK	49.12	32.64	17.16	39.92	2.28	61.28	-33.95	27.0	60.9	383	83	-
Hori.	5850.000	PK	47.30	32.91	17.24	40.02	2.28	59.71	-35.52	27.0	62.5	383	83	-
Hori.	5855.000	PK	47.25	32.92	17.24	40.02	2.28	59.67	-35.56	15.6	51.1	383	83	-
Hori.	5875.000	PK	47.14	32.95	17.27	40.04	2.28	59.60	-35.63	10.0	45.6	383	83	-
Hori.	5925.000	PK	46.87	32.99	17.29	40.07	2.28	59.36	-35.87	-27.0	<b>8.8</b>	383	83	-
Hori.	17325.000	PK	43.87	40.37	13.59	38.74	-9.54	49.55	-45.68	-27.0	18.6	100	0	-
Vert.	5295.086	PK	46.91	31.92	16.87	39.73	2.28	58.25	-36.98	-27.0	9.9	110	239	-
Vert.	5650.000	PK	46.10	32.44	17.11	39.86	2.28	58.07	-37.16	-27.0	10.1	110	239	-
Vert.	5700.000	PK	48.46	32.56	17.14	39.90	2.28	60.54	-34.69	10.0	44.6	110	239	-
Vert.	5720.000	PK	49.50	32.62	17.15	39.92	2.28	61.63	-33.60	15.6	49.2	110	239	-
Vert.	5725.000	PK	49.55	32.64	17.16	39.92	2.28	61.71	-33.52	27.0	60.5	110	239	-
Vert.	5850.000	PK	47.44	32.91	17.24	40.02	2.28	59.85	-35.38	27.0	62.3	110	239	-
Vert.	5855.000	PK	47.15	32.92	17.24	40.02	2.28	59.57	-35.66	15.6	51.2	110	239	-
Vert.	5875.000	PK	47.01	32.95	17.27	40.04	2.28	59.47	-35.76	10.0	45.7	110	239	-
Vert.	5925.000	PK	46.90	32.99	17.29	40.07	2.28	59.39	-35.84	-27.0	<b>8.8</b>	110	239	-
Vert.	17325.000	PK	43.56	40.37	13.59	38.74	-9.54	49.24	-45.99	-27.0	18.9	100	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

**UL Japan, Inc.**

**Shonan EMC Lab.**

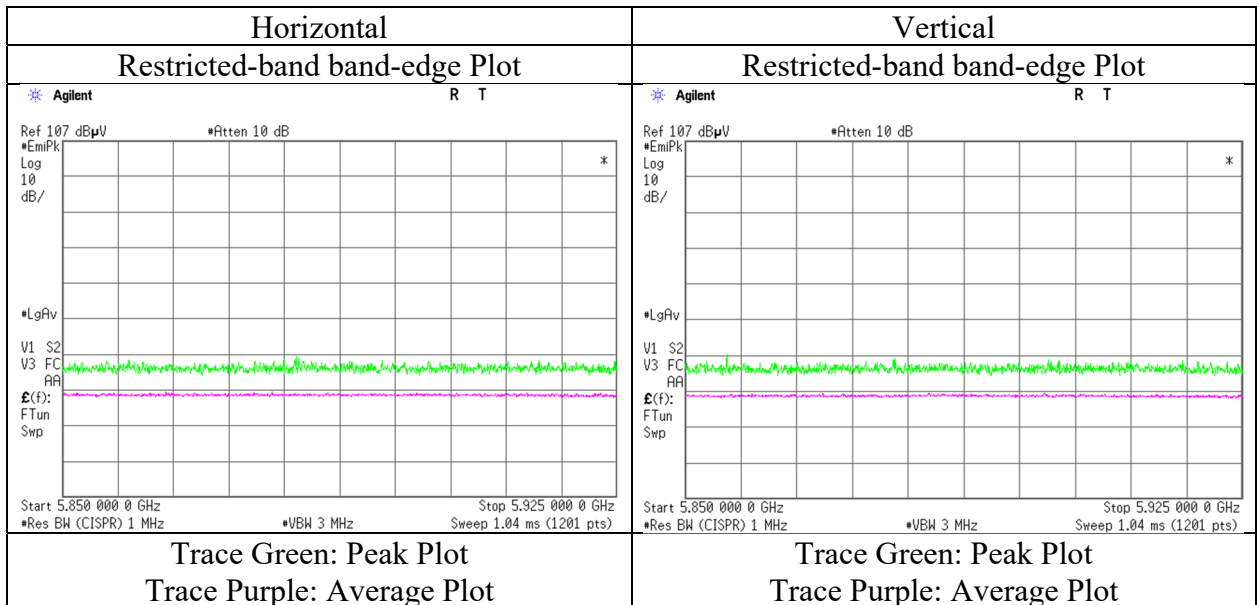
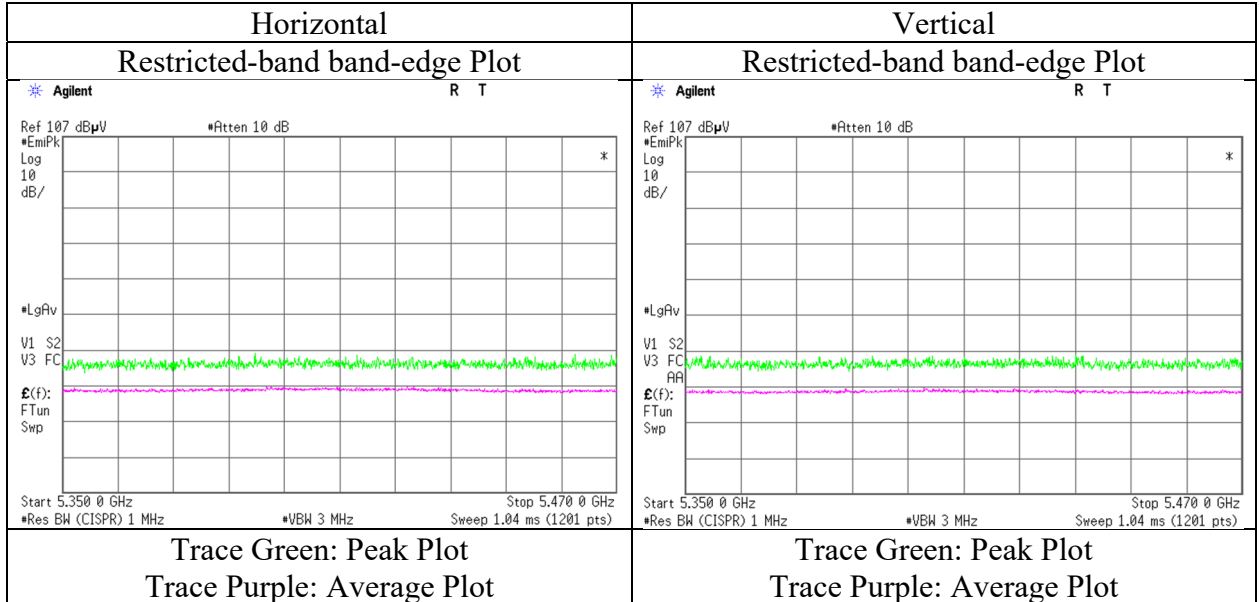
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## Radiated Spurious Emission

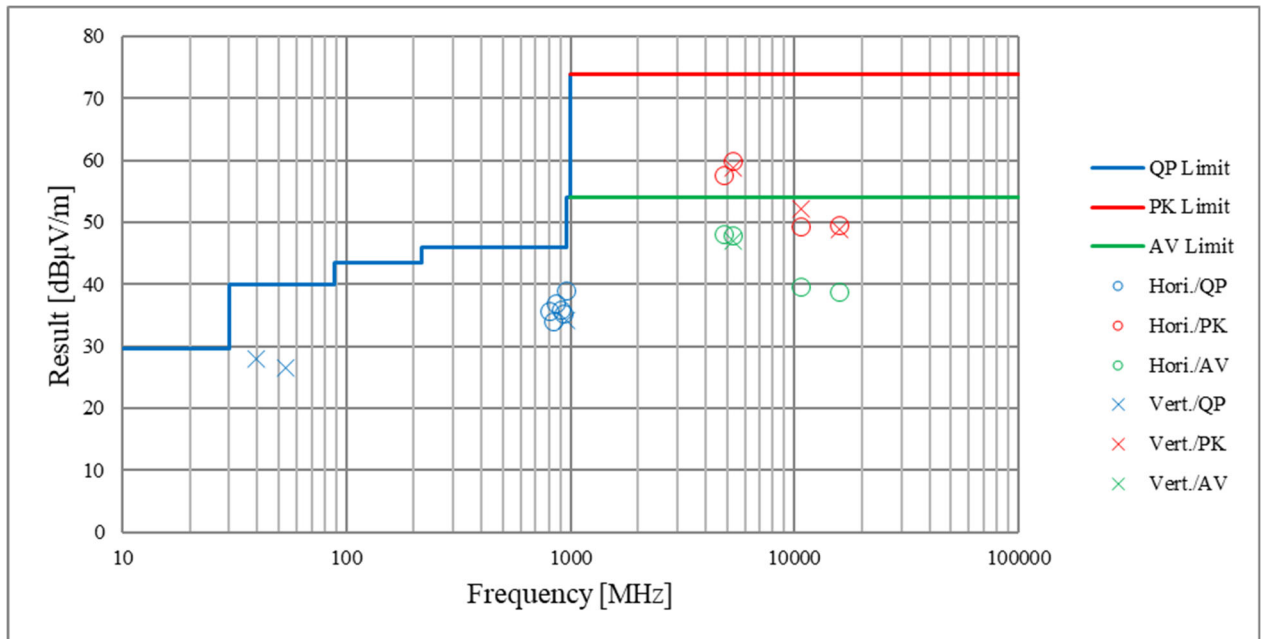
Report No.	13554183S-E-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	Oct 25, 2020
Temperature / Humidity	23 deg.C, 58 %RH
Engineer	Toshinori Yamada
Mode	Tx 11ac-80 5775 MHz



\* 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**  
**(Plot data, Worst case)**

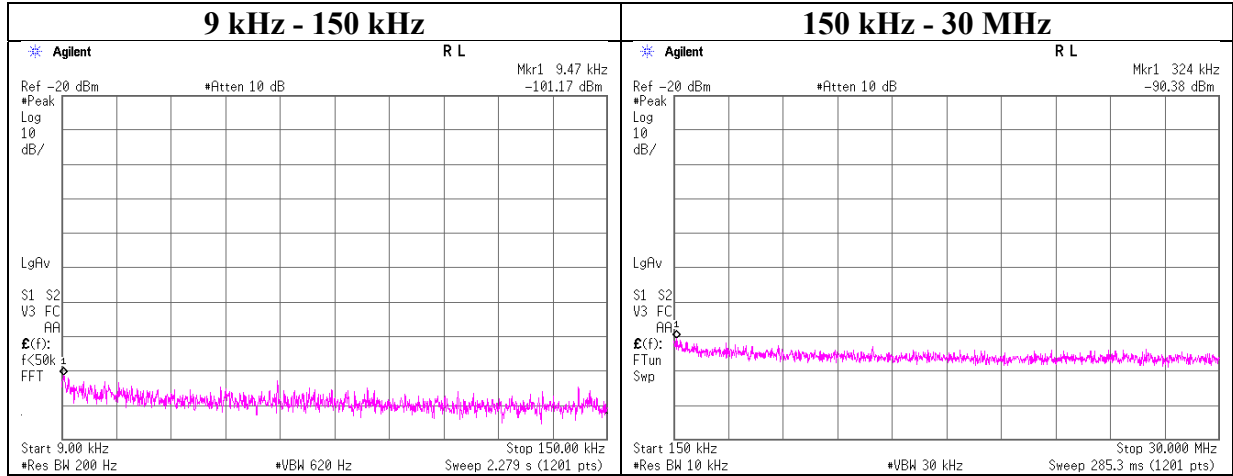
Report No.	13554183S-E-R1				
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	1	1	1	1	1
Date	Nov 02, 2020	Oct 26, 2020	Oct 26, 2020	Oct 27, 2020	Oct 29, 2020
Temperature / Humidity	20 deg.C, 44 %RH	22 deg.C, 52 %RH	22 deg.C, 52 %RH	23 deg.C, 51 %RH	22 deg.C, 50 %RH
Engineer	Yasumasa Owaki (30 MHz -1 GHz)	Toshinori Yamada (1 GHz -6.4 GHz)	Yosuke Murakami (6.4 GHz -10 GHz)	Toshinori Yamada (10 GHz -18 GHz)	Toshinori Yamada (18 GHz -40 GHz)
Mode	Tx 11n-20 5320 MHz				



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

## Conducted Spurious Emission

Report No. 13554183S-E-R1  
 Test place Shonan EMC Lab. No.5 Shielded Room  
 Date October 22, 2020  
 Temperature / Humidity 25 deg. C / 53 % RH  
 Engineer Makoto Hosaka  
 Mode Tx 11n-20 5320 MHz ANT 0



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
9.47	-101.2	0.01	9.5	2.6	2	-86.0	300	6.0	-24.8	48.0	72.8	-
324.00	-90.4	0.01	9.5	2.6	2	-75.2	300	6.0	-14.0	17.3	31.3	-

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

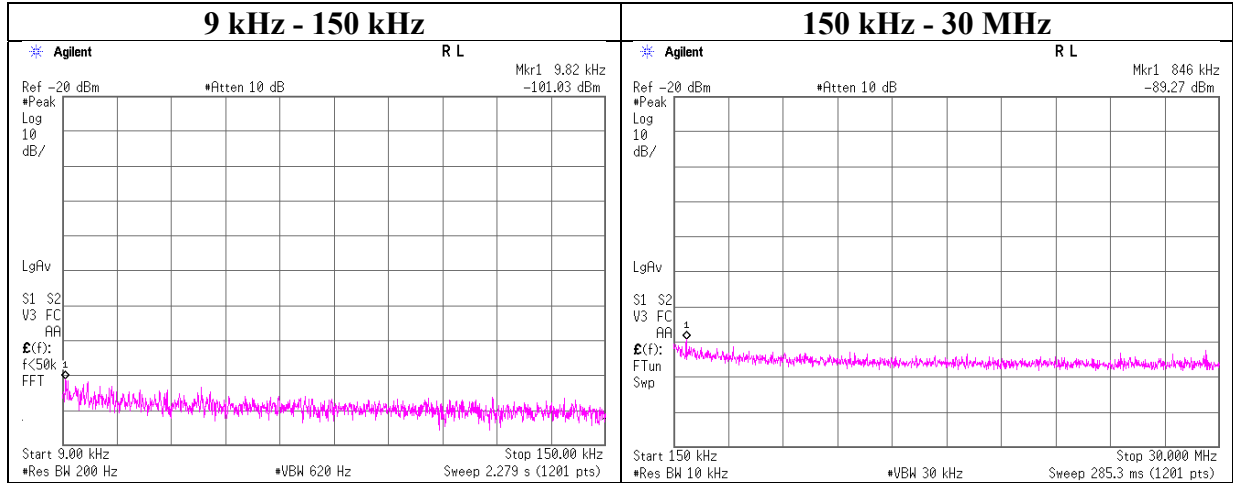
$$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log (N)$$

N: Number of output



## Conducted Spurious Emission

Report No. 13554183S-E-R1  
 Test place Shonan EMC Lab. No.5 Shielded Room  
 Date October 22, 2020  
 Temperature / Humidity 25 deg. C / 53 % RH  
 Engineer Makoto Hosaka  
 Mode Tx 11n-20 5320 MHz ANT 1



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
9.82	-101.0	0.01	9.5	5.8	2	-82.7	300	6.0	-21.4	47.7	69.1	-
846.00	-89.3	0.01	9.5	5.8	2	-70.9	30	6.0	10.3	29.0	18.7	-

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

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

N: Number of output

## **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	SAT10-14	154591	Attenuator	Weinschel Corp.	54A-10	81595	2020/04/01	12
AT	SCC-G52	179106	Coaxial Cable	Junkosha	MWX241-01000KMSKM S/B	1901Q061-R	2020/04/01	12
AT	SCC-G53	179107	Coaxial Cable	Junkosha	MWX241-01000KMSKM S/B	1901Q062-R	2020/04/01	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	SJM-17	145339	Measure	ASKUL	-	-	-	-
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	SPSS-07	169912	Power sensor	Keysight Technologies Inc	N1923A	MY57290005	2020/01/28	12
AT	STM-G7	171614	Terminator	Weinschel - API Technologies Corp	M1459A	88995	2020/06/03	12
AT	STR-08	150463	Test Receiver	Rohde & Schwarz	ESW44	101581	2019/11/22 *1)	12
AT	STS-05	146212	Digital Hitester	Hioki	3805-50	80997828	2020/10/19	12
AT,RE	SSA-02	145800	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY48250106	2020/04/16	12

**Test equipment(2/3)**

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
CE,RE	COTS-SEMI-5	170932	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3(RE,CE,M E,PE)	-	-	-
CE,RE	KJM-09	145929	Measure	KOMELON	KMC-36	-	-	-
CE,RE	STR-06	146208	Test Receiver	Rohde & Schwarz	ESCI	101259	2020/04/01	12
CE,RE	STS-01	145792	Digital Hitester	Hioki	3805-50	80997812	2020/10/19	12
RE	KAT6-04	144899	Attenuator	Inmet	18N-6dB	-	2019/12/05	12
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	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-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	SAT10-06	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
RE	SCC-A1/A3/A5/A7/A8/A13/SRSE-01	144967	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/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/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	2020/04/12	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)
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-G41	151617	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S006	2020/01/08	12
RE	SCC-G57	179540	Coaxial Cable	HUBER+SUNER	SUCOFLEX 102	802815/2	2020/05/12	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-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-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	SRENT-09	150461	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY46186392	2020/02/10	12
RE	SRENT-15	160899	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY46185516	2020/01/15	12
RE	STR-07	146209	Receiver, EMI	Rohde & Schwarz	ESU26	100484	2020/09/07	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:

CE: Conducted Emission

RE: Radiated Emission

AT: Antenna Terminal Conducted test

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