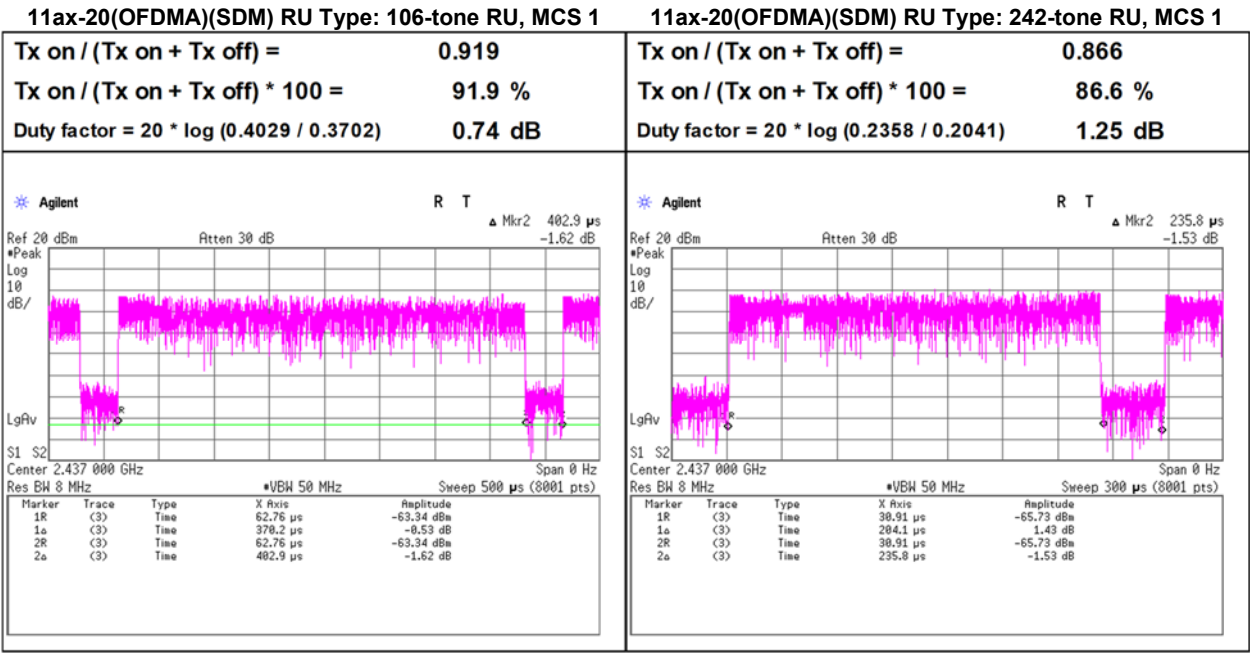


Burst rate confirmation

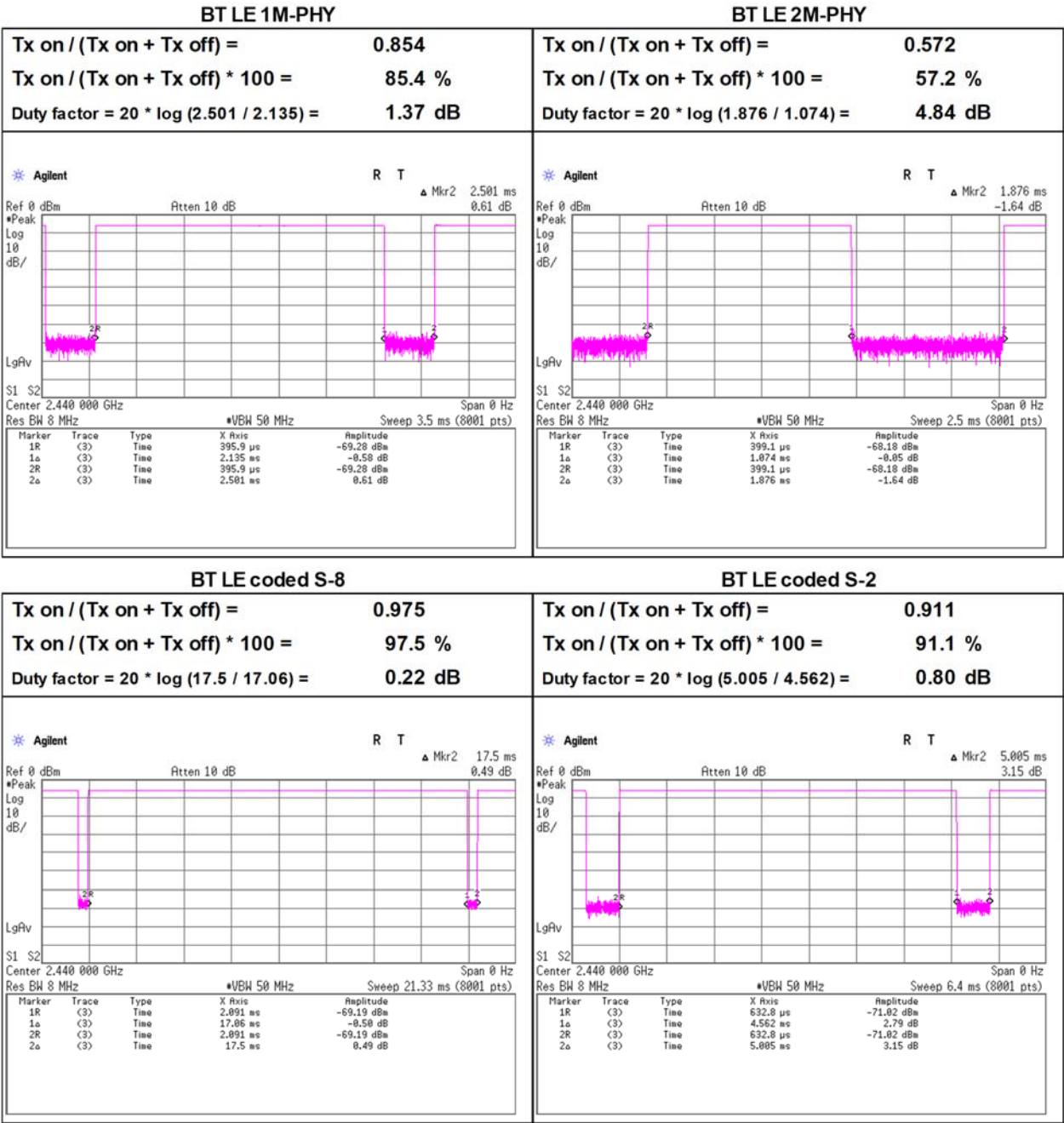
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	April 30, 2024
Temperature / Humidity	24 deg. C / 57 % RH
Engineer	Kazuya Noda
Mode	Tx, Ant 0



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Burst rate confirmation

Test place Shonan EMC Lab. No.1 Measurement Room
Date September 16, 2023
Temperature / Humidity 24 deg. C / 40 % RH
Engineer Yosuke Murakami
Mode Tx, Ant 0



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC2	WAC2	WAC2
Date	November 6, 2023	November 20, 2023	November 21, 2023
Temperature / Humidity	22 deg.C, 62 %RH	22 deg.C, 42 %RH	21 deg.C, 46 %RH
Engineer	Hiromasa Sato	Kenichi Adachi	Kenichi Adachi
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11b 2412 MHz, Ant 2		

(* 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.	2390.000	PK	48.58	27.62	-24.05	-	2.37	54.52	73.9	19.3	234	266	-
Hori.	4824.000	PK	50.48	31.66	-36.00	-	2.37	48.51	73.9	25.3	115	112	-
Hori.	7236.000	PK	47.76	36.11	-34.47	-	2.37	51.77	73.9	22.1	150	0	-
Hori.	9648.000	PK	46.49	37.72	-31.42	-	2.37	55.16	73.9	18.7	150	0	-
Hori.	7236.000	AV	36.05	36.11	-34.47	-	2.37	40.06	53.9	13.8	150	0	Floor noise
Hori.	9648.000	AV	34.56	37.72	-31.42	-	2.37	43.23	53.9	10.6	150	0	Floor noise
Vert.	2390.000	PK	47.08	27.62	-24.05	-	2.37	53.02	73.9	20.8	100	256	-
Vert.	4824.000	PK	50.38	31.66	-36.00	-	2.37	48.41	73.9	25.4	145	98	-
Vert.	7236.000	PK	47.66	36.11	-34.47	-	2.37	51.67	73.9	22.2	150	0	-
Vert.	9648.000	PK	46.38	37.72	-31.42	-	2.37	55.05	73.9	18.8	150	0	-
Vert.	7236.000	AV	35.98	36.11	-34.47	-	2.37	39.99	53.9	13.9	150	0	Floor noise
Vert.	9648.000	AV	34.45	37.72	-31.42	-	2.37	43.12	53.9	10.7	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	35.32	27.62	-24.05	-	0.35	2.37	41.61	53.9	12.2	*1)
Hori.	4824.000	AV	38.98	31.66	-36.00	-	0.35	2.37	37.36	53.9	16.5	-
Vert.	2390.000	AV	34.80	27.62	-24.05	-	0.35	2.37	41.09	53.9	12.8	*1)
Vert.	4824.000	AV	38.55	31.66	-36.00	-	0.35	2.37	36.93	53.9	16.9	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

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

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]	Remark
Hori.	2412.000	PK	93.25	27.64	-24.03	-	2.37	99.23	-	-	Carrier
Hori.	2400.000	PK	50.58	27.63	-24.05	-	2.37	56.53	79.2	22.6	-
Vert.	2412.000	PK	89.56	27.64	-24.03	-	2.37	95.54	-	-	Carrier
Vert.	2400.000	PK	46.84	27.63	-24.05	-	2.37	52.79	75.5	22.7	-

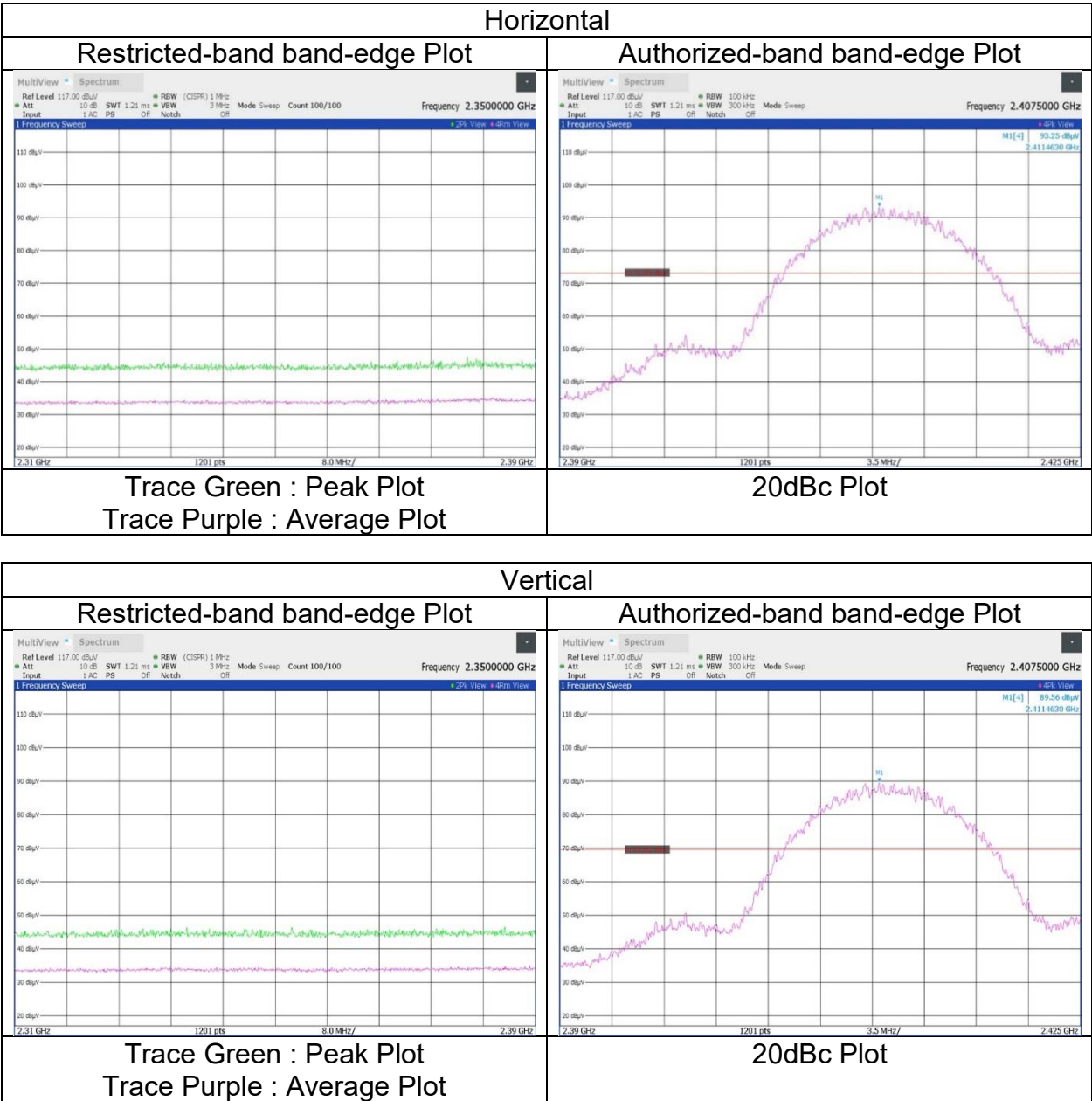
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	November 6, 2023
Temperature / Humidity	22 deg.C, 62 %RH
Engineer	Hiromasa Sato
	(1 GHz -2.8 GHz)
Mode	Tx 11b 2412 MHz, Ant 2



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

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC2	WAC2	WAC2
Date	November 6, 2023	November 20, 2023	November 21, 2023
Temperature / Humidity	22 deg.C, 62 %RH	22 deg.C, 42 %RH	21 deg.C, 46 %RH
Engineer	Hiromasa Sato	Kenichi Adachi	Kenichi Adachi
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11b 2437 MHz, Ant 2		

(* 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.	4874.000	PK	50.93	31.85	-35.99	-	2.37	49.16	73.9	24.7	153	111	-
Hori.	7311.000	PK	48.44	36.28	-34.31	-	2.37	52.78	73.9	21.1	150	0	Floor noise
Hori.	9748.000	PK	45.48	37.71	-31.30	-	2.37	54.26	73.9	19.6	150	0	Floor noise
Hori.	7311.000	AV	36.88	36.28	-34.31	-	2.37	41.22	53.9	12.6	150	0	Floor noise
Hori.	9748.000	AV	34.08	37.71	-31.30	-	2.37	42.86	53.9	11.0	150	0	Floor noise
Vert.	4874.000	PK	52.06	31.85	-35.99	-	2.37	50.29	73.9	23.6	154	97	-
Vert.	7311.000	PK	48.38	36.28	-34.31	-	2.37	52.72	73.9	21.1	150	0	Floor noise
Vert.	9748.000	PK	45.41	37.71	-31.30	-	2.37	54.19	73.9	19.7	150	0	Floor noise
Vert.	7311.000	AV	36.84	36.28	-34.31	-	2.37	41.18	53.9	12.7	150	0	Floor noise
Vert.	9748.000	AV	33.96	37.71	-31.30	-	2.37	42.74	53.9	11.1	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.94 \text{ m} / 3.0 \text{ m}) = 2.37 \text{ dB}$

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4874.000	AV	38.86	31.85	-35.99	-	0.35	2.37	37.44	53.9	16.4	-
Vert.	4874.000	AV	39.64	31.85	-35.99	-	0.35	2.37	38.22	53.9	15.6	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94 \text{ m} / 3.0 \text{ m}) = 2.37 \text{ dB}$

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

Duty factor refer to "Burst rate confirmation" sheet.

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC2	WAC2	WAC2
Date	November 6, 2023	November 20, 2023	November 21, 2023
Temperature / Humidity	22 deg.C, 62 %RH	22 deg.C, 42 %RH	21 deg.C, 46 %RH
Engineer	Hiromasa Sato (1 GHz -2.8 GHz)	Kenichi Adachi (2.8 GHz -10 GHz)	Kenichi Adachi (10 GHz -26.5 GHz)
Mode	Tx 11b 2462 MHz, Ant 2		

(* 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.	2483.500	PK	48.12	27.64	-23.98	-	2.37	54.15	73.9	19.7	258	243	-
Hori.	4924.000	PK	51.11	32.02	-35.97	-	2.37	49.53	73.9	24.3	146	110	-
Hori.	7386.000	PK	48.16	36.42	-34.14	-	2.37	52.81	73.9	21.0	150	0	Floor noise
Hori.	9848.000	PK	46.74	37.71	-31.16	-	2.37	55.66	73.9	18.2	150	0	Floor noise
Hori.	7386.000	AV	36.68	36.42	-34.14	-	2.37	41.33	53.9	12.5	150	0	Floor noise
Hori.	9848.000	AV	34.69	37.71	-31.16	-	2.37	43.61	53.9	10.2	150	0	Floor noise
Vert.	2483.500	PK	47.50	27.64	-23.98	-	2.37	53.53	73.9	20.3	130	262	-
Vert.	4924.000	PK	51.72	32.02	-35.97	-	2.37	50.14	73.9	23.7	149	99	-
Vert.	7386.000	PK	48.04	36.42	-34.14	-	2.37	52.69	73.9	21.2	150	0	Floor noise
Vert.	9848.000	PK	46.67	37.71	-31.16	-	2.37	55.59	73.9	18.3	150	0	Floor noise
Vert.	7386.000	AV	36.61	36.42	-34.14	-	2.37	41.26	53.9	12.6	150	0	Floor noise
Vert.	9848.000	AV	34.60	37.71	-31.16	-	2.37	43.52	53.9	10.3	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	35.04	27.64	-23.98	-	0.35	2.37	41.42	53.9	12.4	*1)
Hori.	4924.000	AV	39.06	32.02	-35.97	-	0.35	2.37	37.83	53.9	16.0	-
Vert.	2483.500	AV	34.66	27.64	-23.98	-	0.35	2.37	41.04	53.9	12.8	*1)
Vert.	4924.000	AV	40.34	32.02	-35.97	-	0.35	2.37	39.11	53.9	14.7	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Duty factor refer to "Burst rate confirmation" sheet.

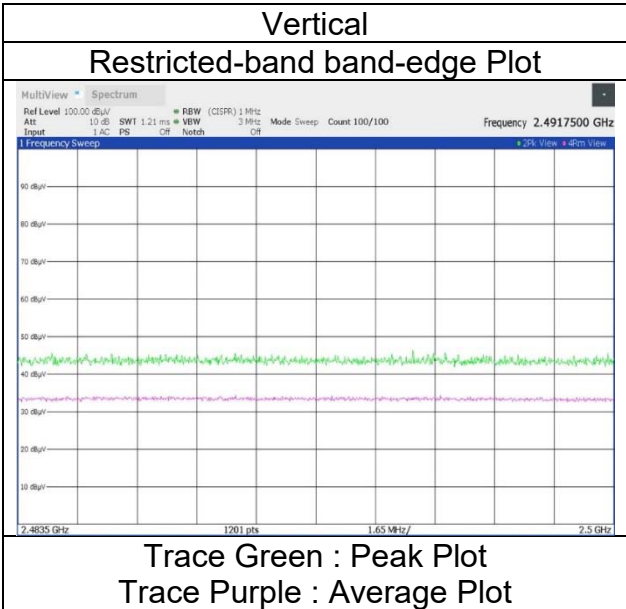
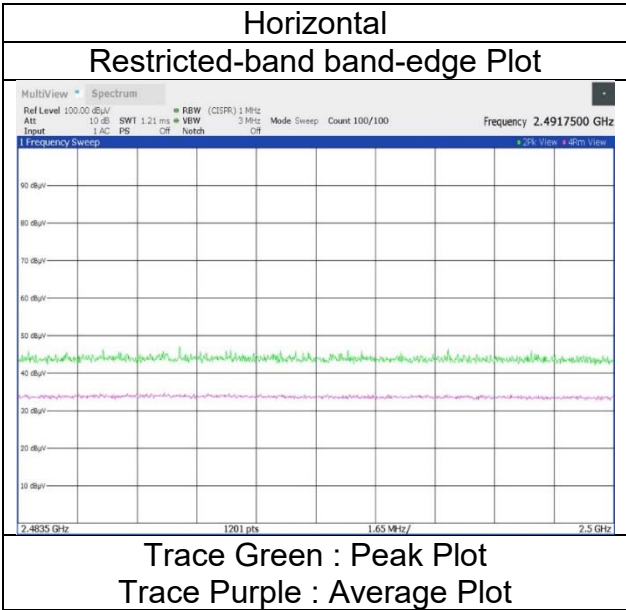
*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Shonan EMC Lab.
WAC2
November 6, 2023
22 deg.C, 62 %RH
Hiromasa Sato
(1 GHz -2.8 GHz)
Tx 11b 2462 MHz, Ant 2



* 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

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC2	WAC2	WAC2
Date	November 7, 2023	November 20, 2023	November 21, 2023
Temperature / Humidity	24 deg.C, 72 %RH	22 deg.C, 42 %RH	21 deg.C, 46 %RH
Engineer	Miku Ikudome	Kenichi Adachi	Kenichi Adachi
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11b 2472 MHz, Ant 2		

(* 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.	2483.500	PK	48.40	27.64	-23.98	-	2.37	54.43	73.9	19.4	245	241	-
Hori.	4944.000	PK	49.21	32.07	-35.95	-	2.37	47.70	73.9	26.2	154	111	-
Hori.	7416.000	PK	49.02	36.45	-34.08	-	2.37	53.76	73.9	20.1	150	0	Floor noise
Hori.	9888.000	PK	46.42	37.72	-31.10	-	2.37	55.41	73.9	18.4	150	0	Floor noise
Hori.	7416.000	AV	36.48	36.45	-34.08	-	2.37	41.22	53.9	12.6	150	0	Floor noise
Hori.	9888.000	AV	34.82	37.72	-31.10	-	2.37	43.81	53.9	10.0	150	0	Floor noise
Vert.	2483.500	PK	47.30	27.64	-23.98	-	2.37	53.33	73.9	20.5	110	271	-
Vert.	4944.000	PK	49.32	32.07	-35.95	-	2.37	47.81	73.9	26.0	147	98	-
Vert.	7416.000	PK	48.94	36.45	-34.08	-	2.37	53.68	73.9	20.2	150	0	Floor noise
Vert.	9888.000	PK	46.34	37.72	-31.10	-	2.37	55.33	73.9	18.5	150	0	Floor noise
Vert.	7416.000	AV	36.45	36.45	-34.08	-	2.37	41.19	53.9	12.7	150	0	Floor noise
Vert.	9888.000	AV	34.76	37.72	-31.10	-	2.37	43.75	53.9	10.1	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	36.49	27.64	-23.98	-	0.35	2.37	42.87	53.9	11.0	*1)
Hori.	4944.000	AV	37.22	32.07	-35.95	-	0.35	2.37	36.06	53.9	17.8	-
Vert.	2483.500	AV	35.62	27.64	-23.98	-	0.35	2.37	42.00	53.9	11.9	*1)
Vert.	4944.000	AV	37.33	32.07	-35.95	-	0.35	2.37	36.17	53.9	17.7	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter))(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Duty factor refer to "Burst rate confirmation" sheet.

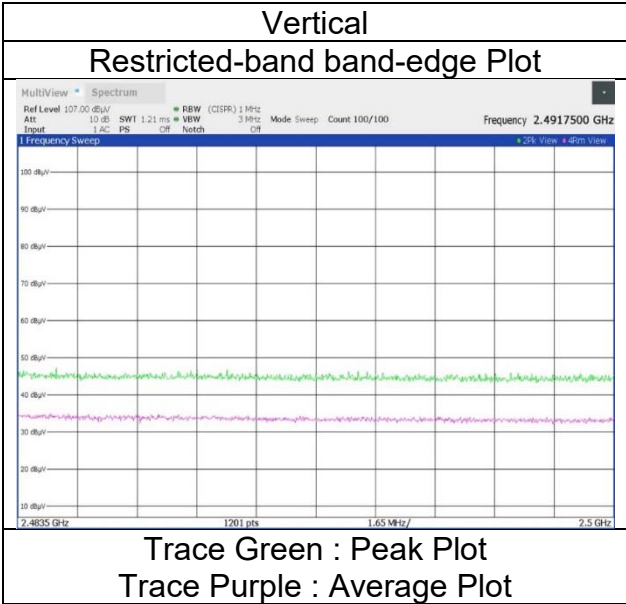
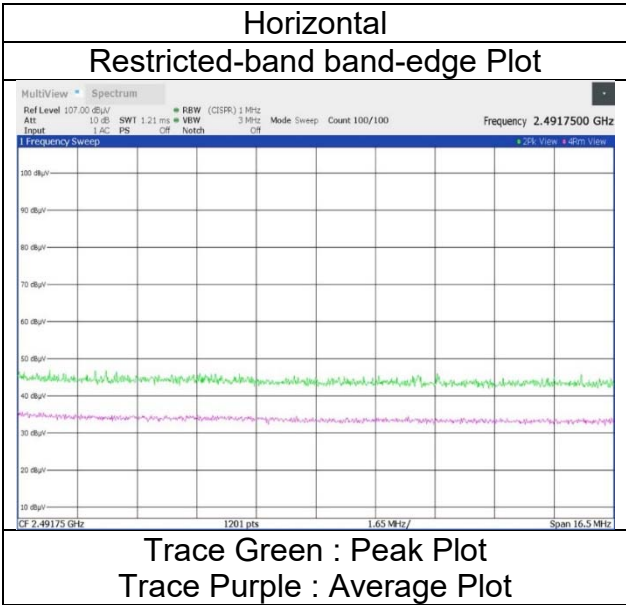
*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Shonan EMC Lab.
WAC2
November 7, 2023
24 deg.C, 72 %RH
Miku Ikudome
(1 GHz -2.8 GHz)
Tx 11b 2472 MHz, Ant 2



* 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

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC2	WAC2	WAC2
Date	November 6, 2023	November 20, 2023	November 21, 2023
Temperature / Humidity	22 deg.C, 62 %RH	22 deg.C, 42 %RH	21 deg.C, 46 %RH
Engineer	Hiromasa Sato (1 GHz -2.8 GHz)	Kenichi Adachi (2.8 GHz -10 GHz)	Kenichi Adachi (10 GHz -26.5 GHz)
Mode	Tx 11g 2412 MHz, Ant 2		

(* 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.	2390.000	PK	53.85	27.62	-24.05	-	2.37	59.79	73.9	14.1	299	240	-
Hori.	4824.000	PK	48.92	31.66	-36.00	-	2.37	46.95	73.9	26.9	118	111	-
Hori.	7236.000	PK	47.79	36.11	-34.47	-	2.37	51.80	73.9	22.1	150	0	Floor noise
Hori.	9648.000	PK	46.52	37.72	-31.42	-	2.37	55.19	73.9	18.7	150	0	Floor noise
Hori.	7236.000	AV	36.11	36.11	-34.47	-	2.37	40.12	53.9	13.7	150	0	Floor noise
Hori.	9648.000	AV	34.59	37.72	-31.42	-	2.37	43.26	53.9	10.6	150	0	Floor noise
Vert.	2390.000	PK	51.66	27.62	-24.05	-	2.37	57.60	73.9	16.3	100	257	-
Vert.	4824.000	PK	48.86	31.66	-36.00	-	2.37	46.89	73.9	27.0	147	96	-
Vert.	7236.000	PK	47.71	36.11	-34.47	-	2.37	51.72	73.9	22.1	150	0	Floor noise
Vert.	9648.000	PK	46.44	37.72	-31.42	-	2.37	55.11	73.9	18.7	150	0	Floor noise
Vert.	7236.000	AV	36.04	36.11	-34.47	-	2.37	40.05	53.9	13.8	150	0	Floor noise
Vert.	9648.000	AV	34.48	37.72	-31.42	-	2.37	43.15	53.9	10.7	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	40.16	27.62	-24.05	-	1.43	2.37	47.53	53.9	6.3	*1)
Hori.	4824.000	AV	37.24	31.66	-36.00	-	1.43	2.37	36.70	53.9	17.2	-
Vert.	2390.000	AV	38.31	27.62	-24.05	-	1.43	2.37	45.68	53.9	8.2	*1)
Vert.	4824.000	AV	37.11	31.66	-36.00	-	1.43	2.37	36.57	53.9	17.3	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

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

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]	Remark
Hori.	2412.000	PK	90.90	27.64	-24.03	-	2.37	96.88	-	-	Carrier
Hori.	2400.000	PK	46.28	27.63	-24.05	-	2.37	52.23	76.8	24.5	-
Vert.	2412.000	PK	87.86	27.64	-24.03	-	2.37	93.84	-	-	Carrier
Vert.	2400.000	PK	44.20	27.63	-24.05	-	2.37	50.15	73.8	23.6	-

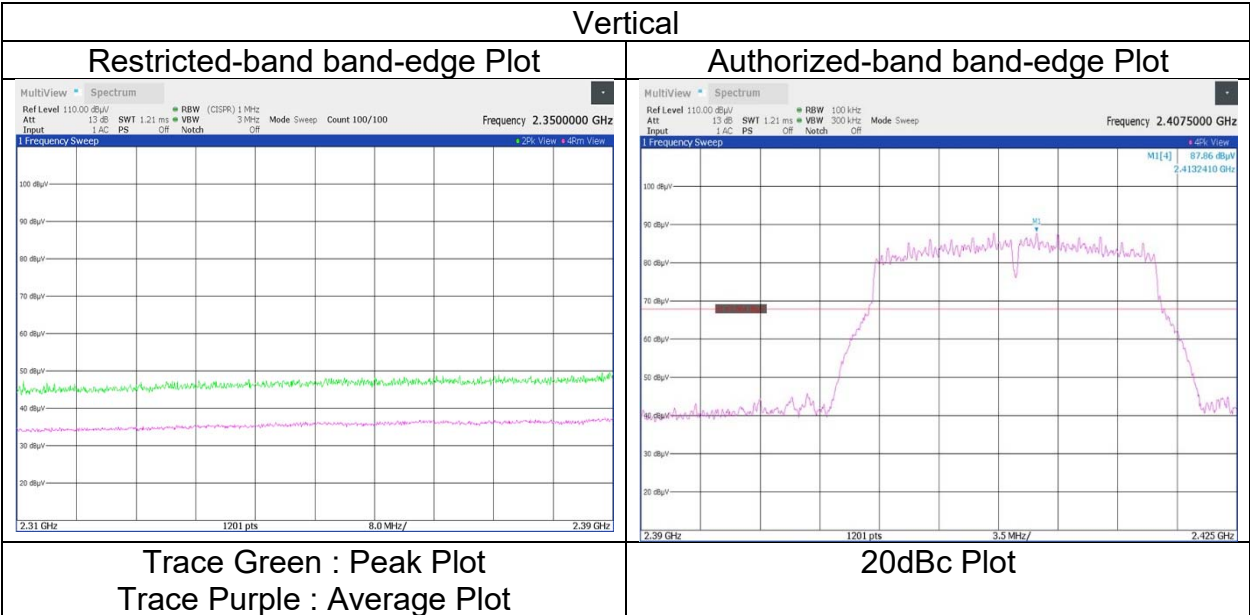
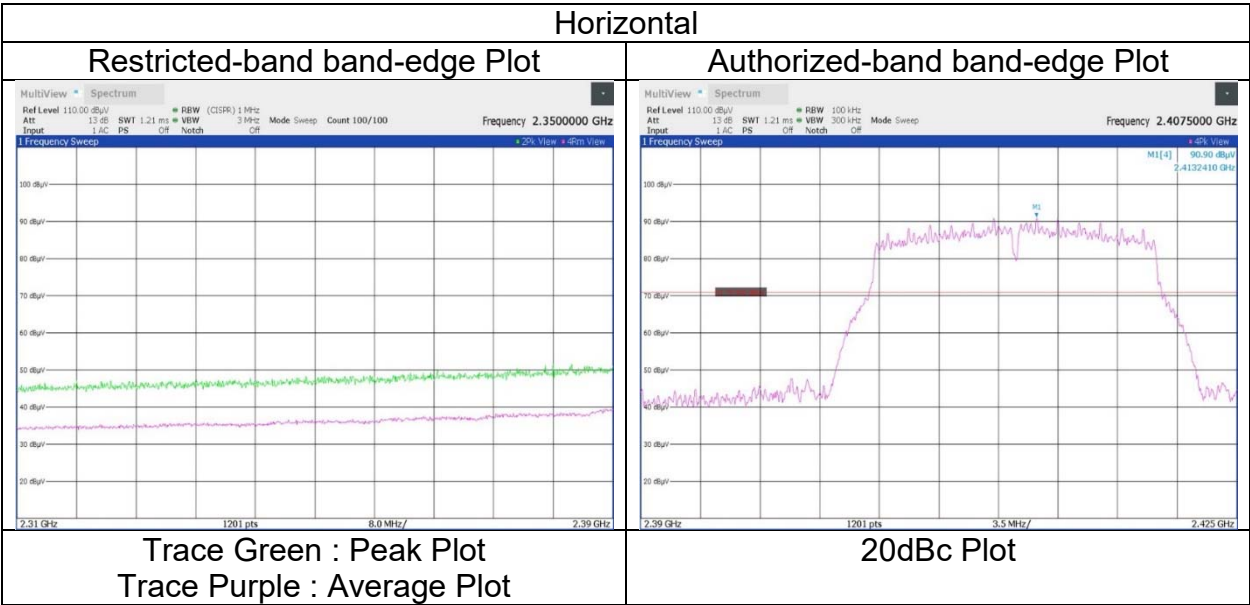
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	November 6, 2023
Temperature / Humidity	22 deg.C, 62 %RH
Engineer	Hiromasa Sato
	(1 GHz -2.8 GHz)
Mode	Tx 11g 2412 MHz, Ant 2



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

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC2	WAC2	WAC2
Date	November 6, 2023	November 20, 2023	November 21, 2023
Temperature / Humidity	22 deg.C, 62 %RH	22 deg.C, 42 %RH	21 deg.C, 46 %RH
Engineer	Hiromasa Sato	Kenichi Adachi	Kenichi Adachi
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11g 2437 MHz, Ant 2		

(* 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.	4874.000	PK	49.14	31.85	-35.99	-	2.37	47.37	73.9	26.5	152	113	-
Hori.	7311.000	PK	48.52	36.28	-34.31	-	2.37	52.86	73.9	21.0	150	0	Floor noise
Hori.	9748.000	PK	45.51	37.71	-31.30	-	2.37	54.29	73.9	19.6	150	0	Floor noise
Hori.	7311.000	AV	36.92	36.28	-34.31	-	2.37	41.26	53.9	12.6	150	0	Floor noise
Hori.	9748.000	AV	34.18	37.71	-31.30	-	2.37	42.96	53.9	10.9	150	0	Floor noise
Vert.	4874.000	PK	49.02	31.85	-35.99	-	2.37	47.25	73.9	26.6	149	97	-
Vert.	7311.000	PK	48.44	36.28	-34.31	-	2.37	52.78	73.9	21.1	150	0	Floor noise
Vert.	9748.000	PK	45.48	37.71	-31.30	-	2.37	54.26	73.9	19.6	150	0	Floor noise
Vert.	7311.000	AV	36.89	36.28	-34.31	-	2.37	41.23	53.9	12.6	150	0	Floor noise
Vert.	9748.000	AV	34.02	37.71	-31.30	-	2.37	42.80	53.9	11.1	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4874.000	AV	37.31	31.85	-35.99	-	1.43	2.37	36.97	53.9	16.9	-
Vert.	4874.000	AV	37.24	31.85	-35.99	-	1.43	2.37	36.90	53.9	17.0	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Duty factor refer to "Burst rate confirmation" sheet.

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC2	WAC2	WAC2
Date	November 6, 2023	November 20, 2023	November 21, 2023
Temperature / Humidity	22 deg.C, 62 %RH	22 deg.C, 42 %RH	21 deg.C, 46 %RH
Engineer	Hiromasa Sato (1 GHz -2.8 GHz)	Kenichi Adachi (2.8 GHz -10 GHz)	Kenichi Adachi (10 GHz -26.5 GHz)
Mode	Tx 11g 2462 MHz, Ant 2		

(* 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.	2483.500	PK	52.34	27.64	-23.98	-	2.37	58.37	73.9	15.5	289	237	-
Hori.	4924.000	PK	49.52	32.02	-35.97	-	2.37	47.94	73.9	25.9	154	109	-
Hori.	7386.000	PK	48.22	36.42	-34.14	-	2.37	52.87	73.9	21.0	150	0	Floor noise
Hori.	9848.000	PK	48.84	37.71	-31.16	-	2.37	57.76	73.9	16.1	150	0	Floor noise
Hori.	7386.000	AV	36.78	36.42	-34.14	-	2.37	41.43	53.9	12.4	150	0	Floor noise
Hori.	9848.000	AV	34.68	37.71	-31.16	-	2.37	43.60	53.9	10.3	150	0	Floor noise
Vert.	2483.500	PK	50.84	27.64	-23.98	-	2.37	56.87	73.9	17.0	101	237	-
Vert.	4924.000	PK	49.41	32.02	-35.97	-	2.37	47.83	73.9	26.0	147	99	-
Vert.	7386.000	PK	48.14	36.42	-34.14	-	2.37	52.79	73.9	21.1	150	0	Floor noise
Vert.	9848.000	PK	46.72	37.71	-31.16	-	2.37	55.64	73.9	18.2	150	0	Floor noise
Vert.	7386.000	AV	36.66	36.42	-34.14	-	2.37	41.31	53.9	12.5	150	0	Floor noise
Vert.	9848.000	AV	34.63	37.71	-31.16	-	2.37	43.55	53.9	10.3	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	38.67	27.64	-23.98	-	1.43	2.37	46.13	53.9	7.7	*1)
Hori.	4924.000	AV	37.38	32.02	-35.97	-	1.43	2.37	37.23	53.9	16.6	-
Vert.	2483.500	AV	37.26	27.64	-23.98	-	1.43	2.37	44.72	53.9	9.1	*1)
Vert.	4924.000	AV	37.22	32.02	-35.97	-	1.43	2.37	37.07	53.9	16.8	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Duty factor refer to "Burst rate confirmation" sheet.

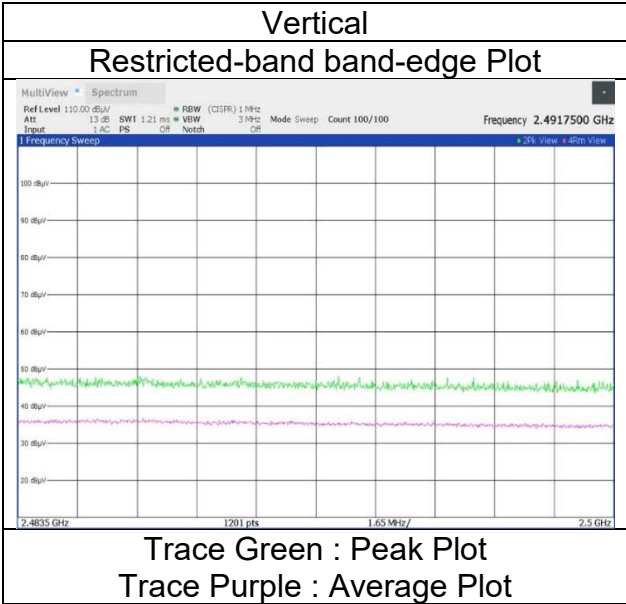
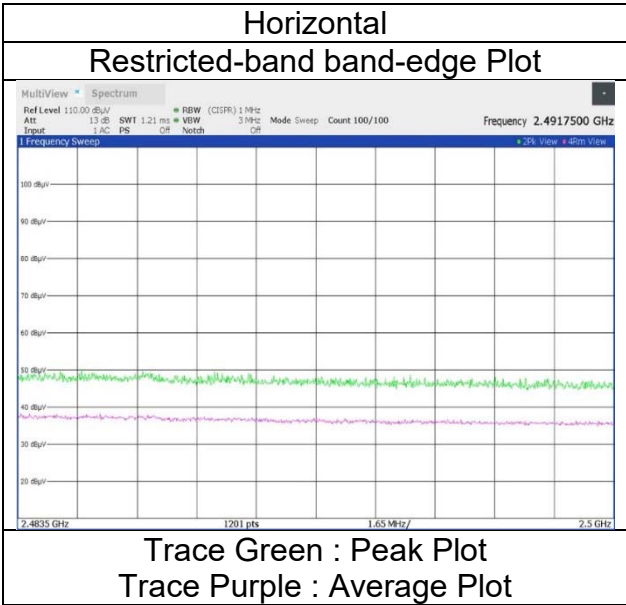
*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Shonan EMC Lab.
WAC2
November 6, 2023
22 deg.C, 62 %RH
Hiromasa Sato
(1 GHz -2.8 GHz)
Tx 11g 2462 MHz, Ant 2



* 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

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC2	WAC2	WAC2
Date	November 7, 2023	November 20, 2023	November 21, 2023
Temperature / Humidity	24 deg.C, 72 %RH	22 deg.C, 42 %RH	21 deg.C, 46 %RH
Engineer	Miku Ikudome	Kenichi Adachi	Kenichi Adachi
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11g 2472 MHz, Ant 2		

(* 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.	2483.500	PK	49.22	27.64	-23.98	-	2.37	55.25	73.9	18.6	245	243	-
Hori.	2484.276	PK	49.91	27.64	-23.98	-	2.37	55.94	73.9	17.9	245	243	-
Hori.	4944.000	PK	49.18	32.07	-35.95	-	2.37	47.67	73.9	26.2	153	116	-
Hori.	7416.000	PK	49.13	36.45	-34.08	-	2.37	53.87	73.9	20.0	150	0	Floor noise
Hori.	9888.000	PK	46.58	37.72	-31.10	-	2.37	55.57	73.9	18.3	150	0	Floor noise
Hori.	7416.000	AV	36.58	36.45	-34.08	-	2.37	41.32	53.9	12.5	150	0	Floor noise
Hori.	9888.000	AV	34.83	37.72	-31.10	-	2.37	43.82	53.9	10.0	150	0	Floor noise
Vert.	2483.500	PK	48.71	27.64	-23.98	-	2.37	54.74	73.9	19.1	111	274	-
Vert.	2484.167	PK	48.82	27.64	-23.98	-	2.37	54.85	73.9	19.0	111	274	-
Vert.	4944.000	PK	49.27	32.07	-35.95	-	2.37	47.76	73.9	26.1	147	97	-
Vert.	7416.000	PK	49.01	36.45	-34.08	-	2.37	53.75	73.9	20.1	150	0	Floor noise
Vert.	9888.000	PK	46.52	37.72	-31.10	-	2.37	55.51	73.9	18.3	150	0	Floor noise
Vert.	7416.000	AV	36.51	36.45	-34.08	-	2.37	41.25	53.9	12.6	150	0	Floor noise
Vert.	9888.000	AV	34.78	37.72	-31.10	-	2.37	43.77	53.9	10.1	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	37.33	27.64	-23.98	-	1.43	2.37	44.79	53.9	9.1	*1)
Hori.	2484.276	AV	38.10	27.64	-23.98	-	1.43	2.37	45.56	53.9	8.3	-
Hori.	4944.000	AV	37.21	32.07	-35.95	-	1.43	2.37	37.13	53.9	16.7	-
Vert.	2483.500	AV	36.67	27.64	-23.98	-	1.43	2.37	44.13	53.9	9.7	*1)
Vert.	2484.167	AV	36.60	27.64	-23.98	-	1.43	2.37	44.06	53.9	9.8	-
Vert.	4944.000	AV	37.28	32.07	-35.95	-	1.43	2.37	37.20	53.9	16.7	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Duty factor refer to "Burst rate confirmation" sheet.

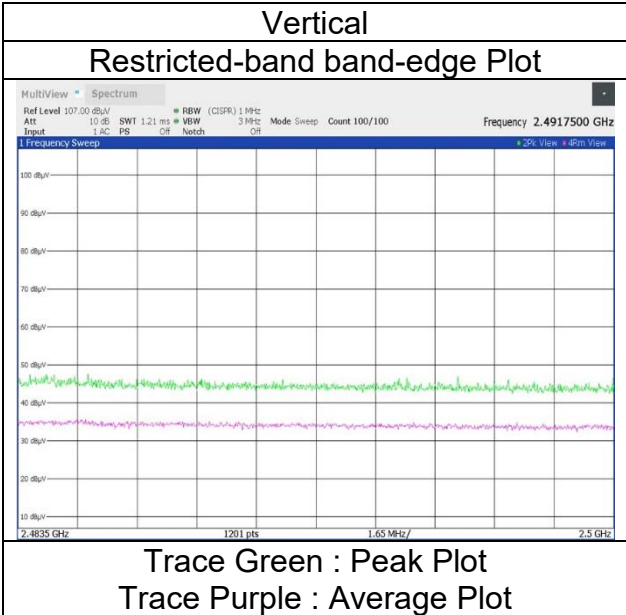
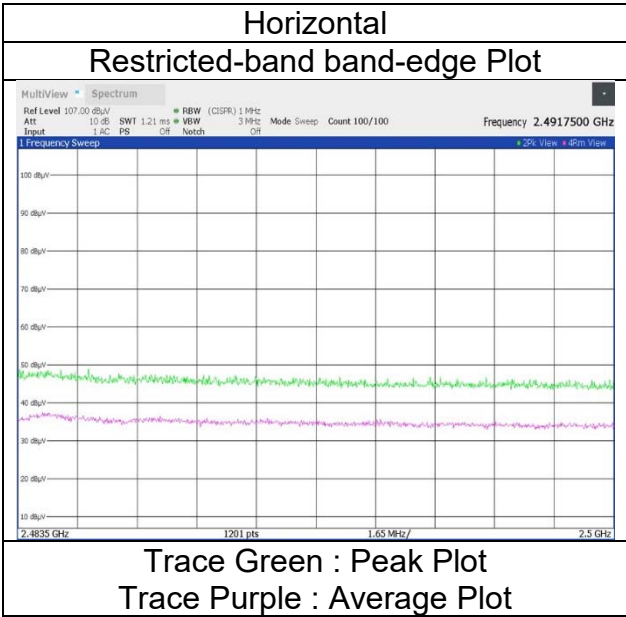
*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Shonan EMC Lab.
WAC2
November 7, 2023
24 deg.C, 72 %RH
Miku Ikudome
(1 GHz -2.8 GHz)
Tx 11g 2472 MHz, Ant 2



* 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

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC2	WAC2	WAC2
Date	November 6, 2023	November 20, 2023	November 21, 2023
Temperature / Humidity	22 deg.C, 62 %RH	22 deg.C, 42 %RH	21 deg.C, 46 %RH
Engineer	Hiromasa Sato	Kenichi Adachi	Kenichi Adachi
Mode	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
	Tx 11n-20 (SISO) 2412 MHz, Ant 2		

(* 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.	87.888	QP	46.90	7.83	7.07	33.08	0.00	28.72	40.0	11.2	400	112	-
Hori.	250.009	QP	55.20	11.78	7.32	32.83	0.00	41.47	46.0	4.5	132	30	-
Hori.	2390.000	PK	54.26	27.62	-24.05	-	2.37	60.20	73.9	13.7	239	252	-
Hori.	4824.000	PK	48.94	31.66	-36.00	-	2.37	46.97	73.9	26.9	152	112	-
Hori.	7236.000	PK	47.54	36.11	-34.47	-	2.37	51.55	73.9	22.3	150	0	Floor noise
Hori.	9648.000	PK	46.45	37.72	-31.42	-	2.37	55.12	73.9	18.7	150	0	Floor noise
Hori.	7236.000	AV	36.06	36.11	-34.47	-	2.37	40.07	53.9	13.8	150	0	Floor noise
Hori.	9648.000	AV	34.48	37.72	-31.42	-	2.37	43.15	53.9	10.7	150	0	Floor noise
Vert.	33.795	QP	41.50	17.24	6.26	32.63	0.00	32.37	40.0	7.6	100	145	-
Vert.	69.944	QP	49.20	6.66	6.35	33.05	0.00	29.16	40.0	10.8	100	232	-
Vert.	78.168	QP	47.90	6.38	6.98	33.07	0.00	28.19	40.0	11.8	100	245	-
Vert.	97.278	QP	50.00	9.67	6.89	33.08	0.00	33.48	43.5	10.0	100	129	-
Vert.	118.309	QP	46.40	12.91	6.64	33.07	0.00	32.88	43.5	10.6	100	84	-
Vert.	125.009	QP	47.60	13.58	6.70	33.06	0.00	34.82	43.5	8.6	100	263	-
Vert.	176.913	QP	40.60	16.20	7.05	33.00	0.00	30.85	43.5	12.6	100	21	-
Vert.	723.292	QP	36.00	20.16	8.44	31.45	0.00	33.15	46.0	12.8	108	349	-
Vert.	2390.000	PK	51.69	27.62	-24.05	-	2.37	57.63	73.9	16.2	100	242	-
Vert.	4824.000	PK	48.82	31.66	-36.00	-	2.37	46.85	73.9	27.0	146	98	-
Vert.	7236.000	PK	47.48	36.11	-34.47	-	2.37	51.49	73.9	22.4	150	0	Floor noise
Vert.	9648.000	PK	46.34	37.72	-31.42	-	2.37	55.01	73.9	18.8	150	0	Floor noise
Vert.	7236.000	AV	35.94	36.11	-34.47	-	2.37	39.95	53.9	13.9	150	0	Floor noise
Vert.	9648.000	AV	34.42	37.72	-31.42	-	2.37	43.09	53.9	10.8	150	0	Floor noise

1 GHz to 18 GHz : Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Distance factor

Other bands : Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	40.34	27.62	-24.05	-	1.63	2.37	47.91	53.9	5.9	*1)
Hori.	4824.000	AV	37.18	31.66	-36.00	-	1.63	2.37	36.84	53.9	17.0	-
Vert.	2390.000	AV	38.13	27.62	-24.05	-	1.63	2.37	45.70	53.9	8.2	*1)
Vert.	4824.000	AV	37.07	31.66	-36.00	-	1.63	2.37	36.73	53.9	17.1	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

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

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]	Remark
Hori.	2412.000	PK	91.11	27.64	-24.03	-	2.37	97.09	-	-	Carrier
Hori.	2400.000	PK	46.23	27.63	-24.05	-	2.37	52.18	77.0	24.8	-
Vert.	2412.000	PK	88.32	27.64	-24.03	-	2.37	94.30	-	-	Carrier
Vert.	2400.000	PK	43.84	27.63	-24.05	-	2.37	49.79	74.3	24.5	-

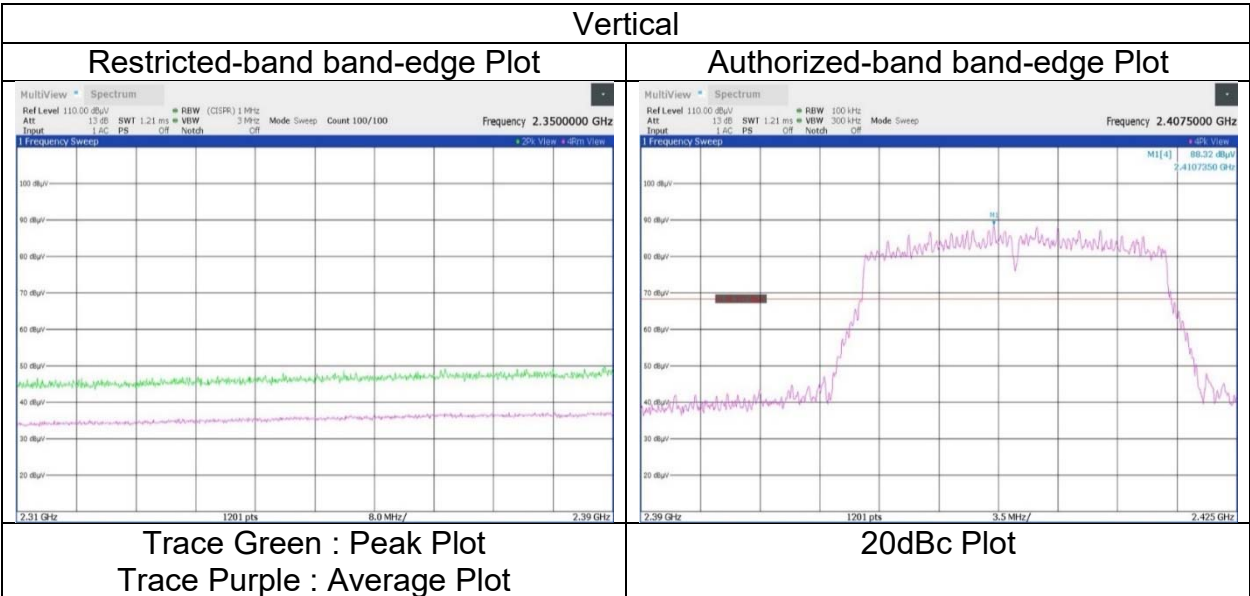
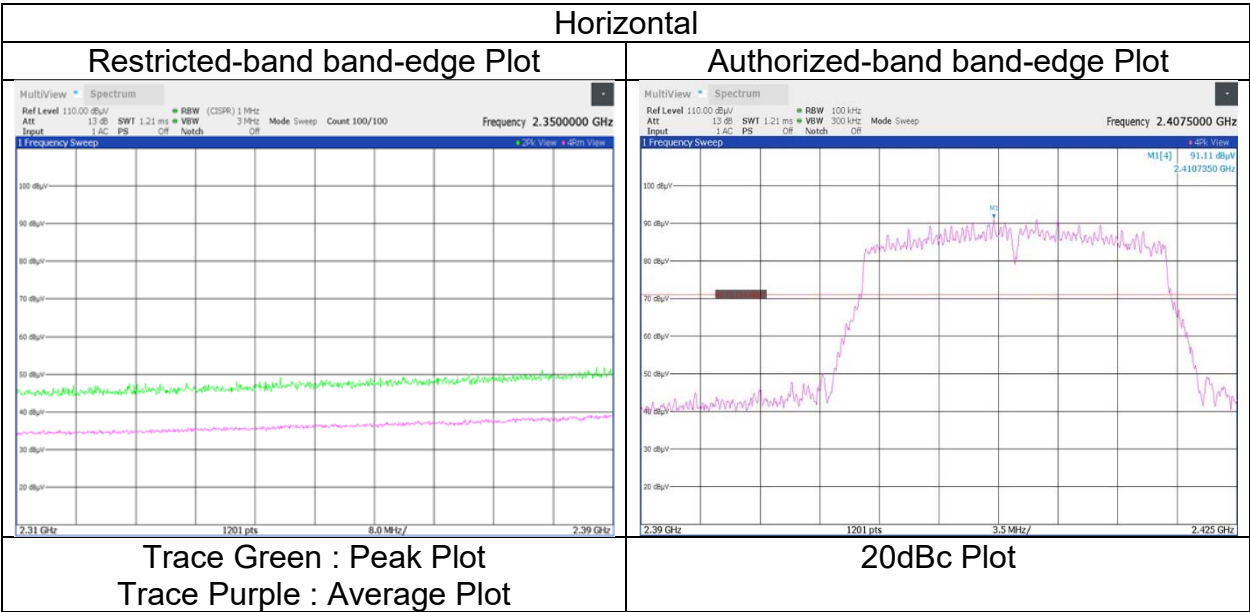
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	November 6, 2023
Temperature / Humidity	22 deg.C, 62 %RH
Engineer	Hiromasa Sato
	(1 GHz -2.8 GHz)
Mode	Tx 11n-20 (SISO) 2412 MHz, Ant 2



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

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC2	WAC2	WAC2
Date	November 6, 2023	November 20, 2023	November 21, 2023
Temperature / Humidity	22 deg.C, 62 %RH	22 deg.C, 42 %RH	21 deg.C, 46 %RH
Engineer	Hiromasa Sato	Kenichi Adachi	Kenichi Adachi
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11n-20 (SISO) 2437 MHz, Ant 2		

(* 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.	4874.000	PK	49.11	31.85	-35.99	-	2.37	47.34	73.9	26.5	154	113	-
Hori.	7311.000	PK	48.51	36.28	-34.31	-	2.37	52.85	73.9	21.0	150	0	Floor noise
Hori.	9748.000	PK	45.43	37.71	-31.30	-	2.37	54.21	73.9	19.6	150	0	Floor noise
Hori.	7311.000	AV	36.89	36.28	-34.31	-	2.37	41.23	53.9	12.6	150	0	Floor noise
Hori.	9748.000	AV	34.04	37.71	-31.30	-	2.37	42.82	53.9	11.0	150	0	Floor noise
Vert.	4874.000	PK	48.99	31.85	-35.99	-	2.37	47.22	73.9	26.6	146	97	-
Vert.	7311.000	PK	48.36	36.28	-34.31	-	2.37	52.70	73.9	21.2	150	0	Floor noise
Vert.	9748.000	PK	45.38	37.71	-31.30	-	2.37	54.16	73.9	19.7	150	0	Floor noise
Vert.	7311.000	AV	36.80	36.28	-34.31	-	2.37	41.14	53.9	12.7	150	0	Floor noise
Vert.	9748.000	AV	33.92	37.71	-31.30	-	2.37	42.70	53.9	11.2	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4874.000	AV	37.28	31.85	-35.99	-	1.63	2.37	37.14	53.9	16.7	-
Vert.	4874.000	AV	37.21	31.85	-35.99	-	1.63	2.37	37.07	53.9	16.8	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Duty factor refer to "Burst rate confirmation" sheet.

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC2	WAC2	WAC2
Date	November 6, 2023	November 20, 2023	November 21, 2023
Temperature / Humidity	22 deg.C, 62 %RH	22 deg.C, 42 %RH	21 deg.C, 46 %RH
Engineer	Hiromasa Sato (1 GHz -2.8 GHz)	Kenichi Adachi (2.8 GHz -10 GHz)	Kenichi Adachi (10 GHz -26.5 GHz)
Mode	Tx 11n-20 (SISO) 2462 MHz, Ant 2		

(* 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.	2483.500	PK	59.63	27.64	-28.21	-	2.37	61.43	73.9	12.4	216	237	-
Hori.	4924.000	PK	47.67	32.16	-35.83	-	2.37	46.37	73.9	27.5	150	0	Floor noise
Hori.	7386.000	PK	46.85	36.49	-33.90	-	2.37	51.81	73.9	22.0	150	0	Floor noise
Hori.	9848.000	PK	46.06	37.63	-31.38	-	2.37	54.68	73.9	19.2	150	0	Floor noise
Hori.	4924.000	AV	34.93	32.16	-35.83	-	2.37	33.63	53.9	20.2	150	0	Floor noise
Hori.	7386.000	AV	35.22	36.49	-33.90	-	2.37	40.18	53.9	13.7	150	0	Floor noise
Hori.	9848.000	AV	34.29	37.63	-31.38	-	2.37	42.91	53.9	10.9	150	0	Floor noise
Vert.	2483.500	PK	48.97	27.64	-28.21	-	2.37	50.77	73.9	23.1	139	33	-
Vert.	4924.000	PK	47.49	32.16	-35.83	-	2.37	46.19	73.9	27.7	150	0	Floor noise
Vert.	7386.000	PK	46.79	36.49	-33.90	-	2.37	51.75	73.9	22.1	150	0	Floor noise
Vert.	9848.000	PK	45.84	37.63	-31.38	-	2.37	54.46	73.9	19.4	150	0	Floor noise
Vert.	4924.000	AV	35.17	32.16	-35.83	-	2.37	33.87	53.9	20.0	150	0	Floor noise
Vert.	7386.000	AV	35.32	36.49	-33.90	-	2.37	40.28	53.9	13.6	150	0	Floor noise
Vert.	9848.000	AV	34.04	37.63	-31.38	-	2.37	42.66	53.9	11.2	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	45.00	27.64	-28.21	-	1.84	2.37	48.64	53.9	5.2	*1)
Vert.	2483.500	AV	36.83	27.64	-28.21	-	1.84	2.37	40.47	53.9	13.4	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Duty factor refer to "Burst rate confirmation" sheet.

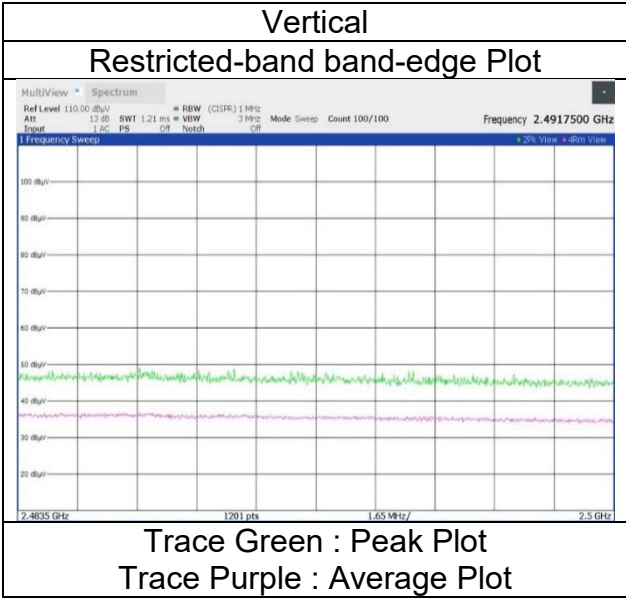
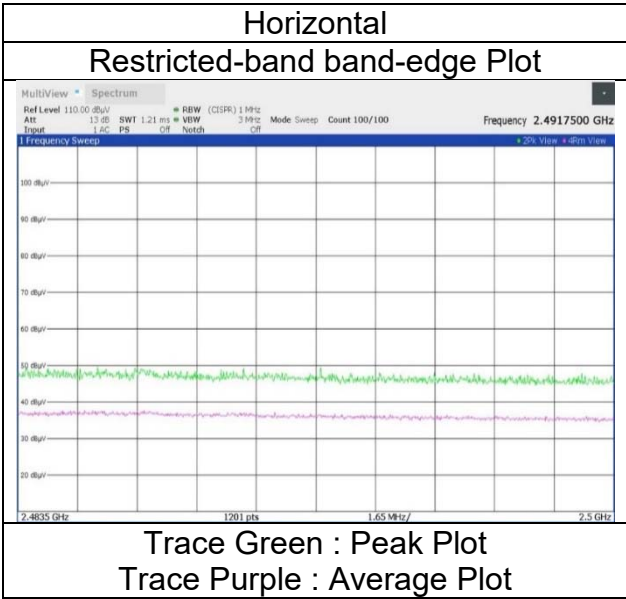
*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Shonan EMC Lab.
WAC2
November 6, 2023
22 deg.C, 62 %RH
Hiromasa Sato
(1 GHz -2.8 GHz)
Tx 11n-20 (SISO) 2462 MHz, Ant 2



* 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

Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	WAC2	WAC2	WAC2	WAC2
Date	September 27, 2023	September 26, 2023	September 25, 2023	September 23, 2023
Temperature / Humidity	26 deg.C, 46 %RH	24 deg.C, 54 %RH	25 deg.C, 53 %RH	24 deg.C, 55 %RH
Engineer	Kouki Yamada	Miku Ikudome	Makoto Hosaka	Makoto Hosaka
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -18 GHz)	(18 GHz -26.5 GHz)
Mode	Tx 11n-20 (SDM) 2472 MHz			

(* 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.	2483.500	PK	52.01	27.64	-23.93	-	2.37	58.09	73.9	15.8	254	128	-
Hori.	4944.000	PK	44.96	32.07	-31.38	-	2.37	48.02	73.9	25.8	175	214	-
Hori.	7416.000	PK	44.18	36.45	-30.79	-	2.37	52.21	73.9	21.6	150	0	Floor Noise
Hori.	9888.000	PK	45.44	37.72	-29.92	-	2.37	55.61	73.9	18.2	150	0	Floor Noise
Hori.	7416.000	AV	32.27	36.45	-30.79	-	2.37	40.30	53.9	13.6	150	0	Floor Noise
Hori.	9888.000	AV	33.73	37.72	-29.92	-	2.37	43.90	53.9	10.0	150	0	Floor Noise
Vert.	2483.500	PK	49.40	27.64	-23.93	-	2.37	55.48	73.9	18.4	100	68	-
Vert.	4944.000	PK	45.00	32.07	-31.38	-	2.37	48.06	73.9	25.8	199	195	-
Vert.	7416.000	PK	44.10	36.45	-30.79	-	2.37	52.13	73.9	21.7	150	0	Floor Noise
Vert.	9888.000	PK	45.65	37.72	-29.92	-	2.37	55.82	73.9	18.0	150	0	Floor Noise
Vert.	7416.000	AV	32.49	36.45	-30.79	-	2.37	40.52	53.9	13.3	150	0	Floor Noise
Vert.	9888.000	AV	33.70	37.72	-29.92	-	2.37	43.87	53.9	10.0	150	0	Floor Noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	40.35	27.64	-23.93	-	0.40	2.37	46.83	53.9	7.0	*1)
Hori.	4944.000	AV	32.66	32.07	-31.38	-	0.40	2.37	36.12	53.9	17.7	-
Vert.	2483.500	AV	37.70	27.64	-23.93	-	0.40	2.37	44.18	53.9	9.7	*1)
Vert.	4944.000	AV	32.78	32.07	-31.38	-	0.40	2.37	36.24	53.9	17.6	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

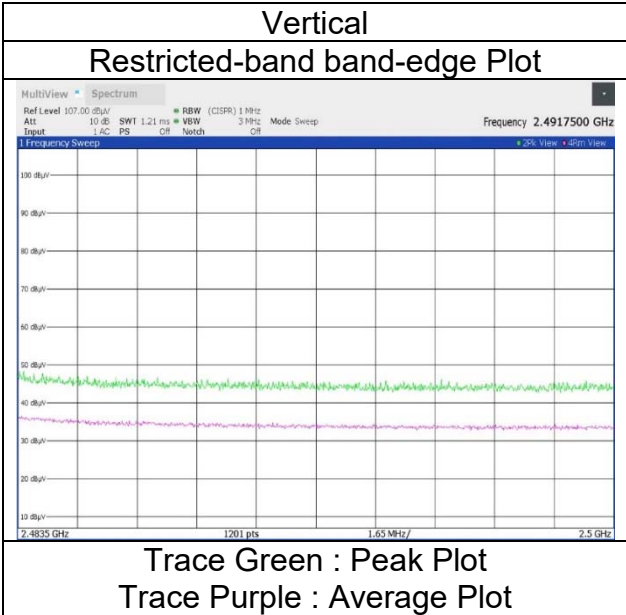
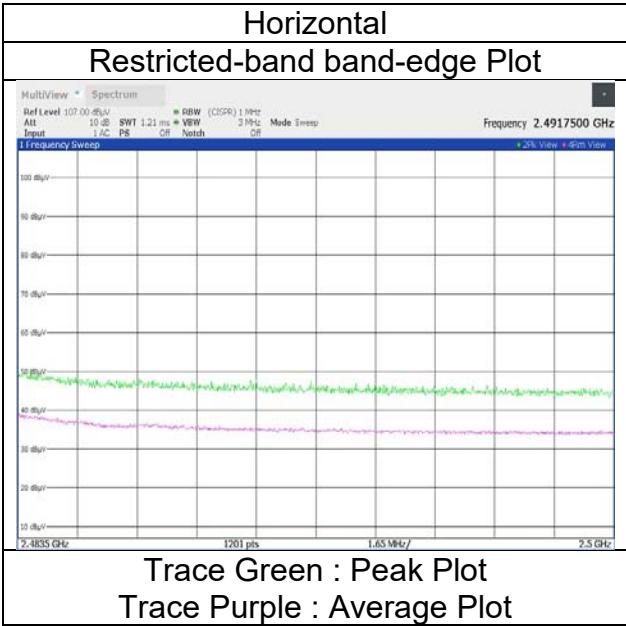
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	September 27, 2023
Temperature / Humidity	26 deg.C, 46 %RH
Engineer	Kouki Yamada
Mode	(1 GHz -2.8 GHz)
	Tx 11n-20 (SDM) 2472 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

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2 WAC2
Date April 12, 2024 April 12, 2024
Temperature / Humidity 22 deg.C, 38 %RH 25 deg.C, 44 %RH
Engineer Miku Ikudome Hiromasa Sato
(1 GHz -10 GHz) (10 GHz -26.5 GHz)
Mode Tx 11ax-20(OFDM)(SISO) 2412 MHz, Ant 2

(* 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.	2390.000	PK	63.36	27.62	-28.27	-	2.37	65.08	73.9	8.8	232	240	-
Hori.	4824.000	PK	47.10	31.79	-35.71	-	2.37	45.55	73.9	28.3	150	0	-
Hori.	7236.000	PK	46.45	36.14	-34.17	-	2.37	50.79	73.9	23.1	150	0	-
Hori.	9648.000	PK	46.07	37.69	-31.59	-	2.37	54.54	73.9	19.3	150	0	-
Hori.	4824.000	AV	35.09	31.79	-35.71	-	2.37	33.54	53.9	20.3	150	0	Floor noise
Hori.	7236.000	AV	35.07	36.14	-34.17	-	2.37	39.41	53.9	14.4	150	0	Floor noise
Hori.	9648.000	AV	34.28	37.69	-31.59	-	2.37	42.75	53.9	11.1	150	0	Floor noise
Vert.	2390.000	PK	55.77	27.62	-28.27	-	2.37	57.49	73.9	16.4	113	80	-
Vert.	4824.000	PK	46.97	31.79	-35.71	-	2.37	45.42	73.9	28.4	150	0	-
Vert.	7236.000	PK	46.58	36.14	-34.17	-	2.37	50.92	73.9	22.9	150	0	-
Vert.	9648.000	PK	46.72	37.69	-31.59	-	2.37	55.19	73.9	18.7	150	0	-
Vert.	4824.000	AV	34.75	31.79	-35.71	-	2.37	33.20	53.9	20.7	150	0	Floor noise
Vert.	7236.000	AV	35.12	36.14	-34.17	-	2.37	39.46	53.9	14.4	150	0	Floor noise
Vert.	9648.000	AV	34.47	37.69	-31.59	-	2.37	42.94	53.9	10.9	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	48.21	27.62	-28.27	-	1.84	2.37	51.77	53.9	2.1	*1)
Vert.	2390.000	AV	42.98	27.62	-28.27	-	1.84	2.37	46.54	53.9	7.3	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

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

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]	Remark
Hori.	2412.000	PK	96.72	27.64	-28.26	-	2.37	98.47	-	-	Carrier
Hori.	2400.000	PK	59.70	27.63	-28.26	-	2.37	61.44	78.4	16.9	-
Vert.	2412.000	PK	90.55	27.64	-28.26	-	2.37	92.30	-	-	Carrier
Vert.	2400.000	PK	53.97	27.63	-28.26	-	2.37	55.71	72.3	16.5	-

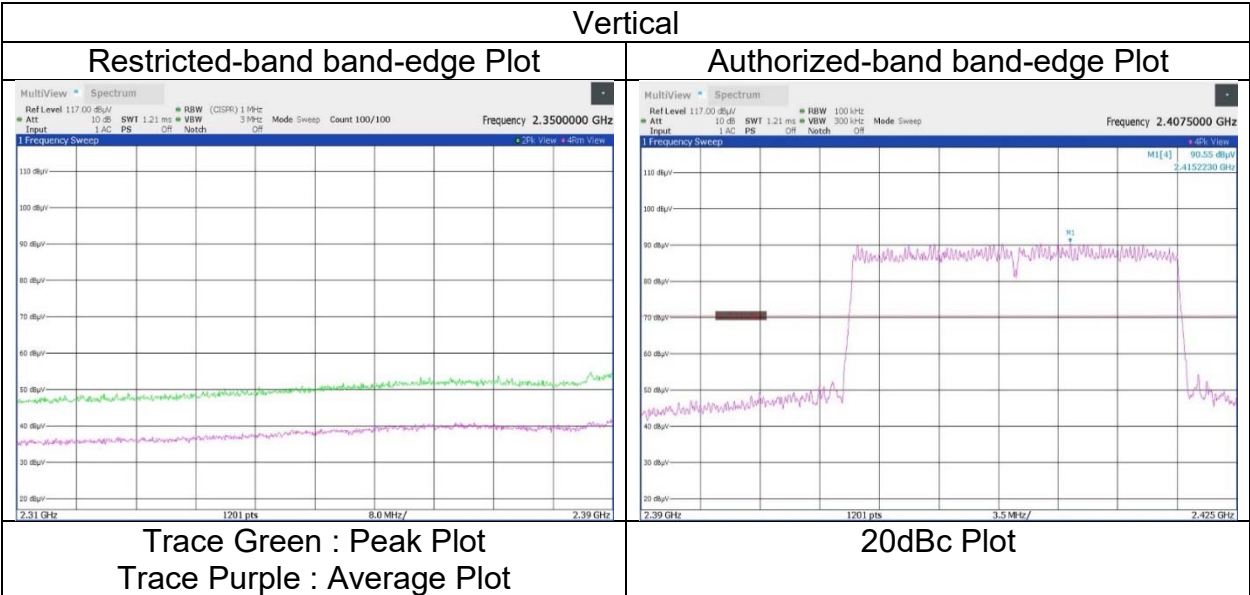
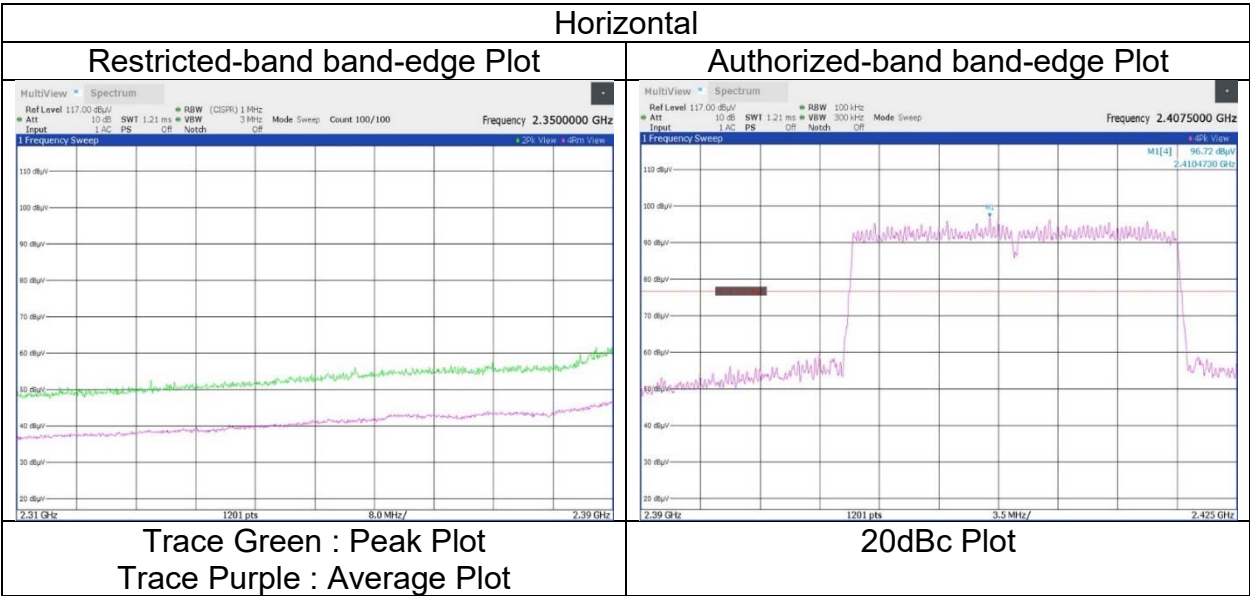
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	April 12, 2024
Temperature / Humidity	22 deg.C, 38 %RH
Engineer	Miku Ikudome
	(1 GHz -2.8 GHz)
Mode	Tx 11ax-20(OFDM)(SISO) 2412 MHz, Ant 2



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

Radiated Spurious Emission

Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	WAC2	WAC2
Date	April 12, 2024	April 12, 2024
Temperature / Humidity	22 deg.C, 38 %RH	25 deg.C, 44 %RH
Engineer	Miku Ikudome	Hiromasa Sato
	(1 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20(OFDM)(SISO) 2437 MHz, Ant 2	

(* 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.	4874.000	PK	46.75	31.99	-35.77	-	2.37	45.34	73.9	28.5	150	0	Floor noise
Hori.	7311.000	PK	47.32	36.34	-34.04	-	2.37	51.99	73.9	21.9	150	0	Floor noise
Hori.	9748.000	PK	45.61	37.65	-31.50	-	2.37	54.13	73.9	19.7	150	0	Floor noise
Hori.	4874.000	AV	35.12	31.99	-35.77	-	2.37	33.71	53.9	20.1	150	0	Floor noise
Hori.	7311.000	AV	35.41	36.34	-34.04	-	2.37	40.08	53.9	13.8	150	0	Floor noise
Hori.	9748.000	AV	34.64	37.65	-31.50	-	2.37	43.16	53.9	10.7	150	0	Floor noise
Vert.	4874.000	PK	46.89	31.99	-35.77	-	2.37	45.48	73.9	28.4	150	0	Floor noise
Vert.	7311.000	PK	47.47	36.34	-34.04	-	2.37	52.14	73.9	21.7	150	0	Floor noise
Vert.	9748.000	PK	45.27	37.65	-31.50	-	2.37	53.79	73.9	20.1	150	0	Floor noise
Vert.	4874.000	AV	34.52	31.99	-35.77	-	2.37	33.11	53.9	20.7	150	0	Floor noise
Vert.	7311.000	AV	35.27	36.34	-34.04	-	2.37	39.94	53.9	13.9	150	0	Floor noise
Vert.	9748.000	AV	34.07	37.65	-31.50	-	2.37	42.59	53.9	11.3	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2 WAC2
Date April 12, 2024 April 12, 2024
Temperature / Humidity 22 deg.C, 38 %RH 25 deg.C, 44 %RH
Engineer Miku Ikudome Hiromasa Sato
(1 GHz -10 GHz) (10 GHz -26.5 GHz)
Mode Tx 11ax-20(OFDM)(SISO) 2462 MHz, Ant 2

(* 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.	2483.500	PK	59.63	27.64	-28.21	-	2.37	61.43	73.9	12.4	216	237	-
Hori.	4924.000	PK	47.67	32.16	-35.83	-	2.37	46.37	73.9	27.5	150	0	Floor noise
Hori.	7386.000	PK	46.85	36.49	-33.90	-	2.37	51.81	73.9	22.0	150	0	Floor noise
Hori.	9848.000	PK	46.06	37.63	-31.38	-	2.37	54.68	73.9	19.2	150	0	Floor noise
Hori.	4924.000	AV	34.93	32.16	-35.83	-	2.37	33.63	53.9	20.2	150	0	Floor noise
Hori.	7386.000	AV	35.22	36.49	-33.90	-	2.37	40.18	53.9	13.7	150	0	Floor noise
Hori.	9848.000	AV	34.29	37.63	-31.38	-	2.37	42.91	53.9	10.9	150	0	Floor noise
Vert.	2483.500	PK	48.97	27.64	-28.21	-	2.37	50.77	73.9	23.1	139	33	-
Vert.	4924.000	PK	47.49	32.16	-35.83	-	2.37	46.19	73.9	27.7	150	0	Floor noise
Vert.	7386.000	PK	46.79	36.49	-33.90	-	2.37	51.75	73.9	22.1	150	0	Floor noise
Vert.	9848.000	PK	45.84	37.63	-31.38	-	2.37	54.46	73.9	19.4	150	0	Floor noise
Vert.	4924.000	AV	35.17	32.16	-35.83	-	2.37	33.87	53.9	20.0	150	0	Floor noise
Vert.	7386.000	AV	35.32	36.49	-33.90	-	2.37	40.28	53.9	13.6	150	0	Floor noise
Vert.	9848.000	AV	34.04	37.63	-31.38	-	2.37	42.66	53.9	11.2	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	45.00	27.64	-28.21	-	1.84	2.37	48.64	53.9	5.2	*1)
Vert.	2483.500	AV	36.83	27.64	-28.21	-	1.84	2.37	40.47	53.9	13.4	*1)

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator or Filter)(below 18 GHz) - Gain(Amplifier) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

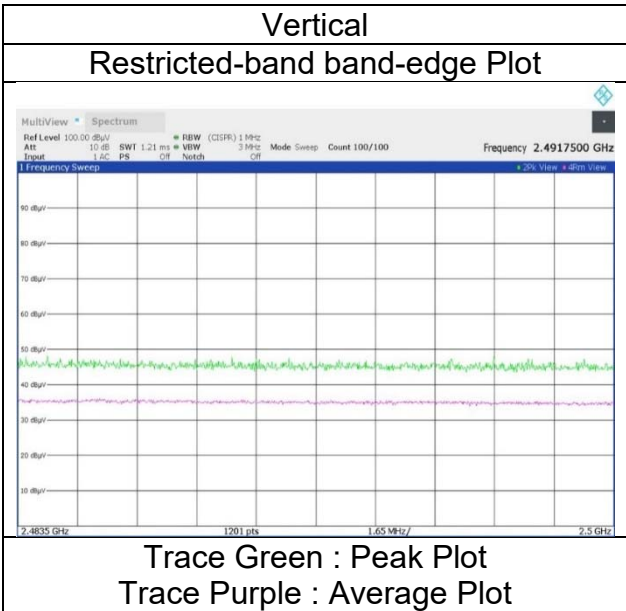
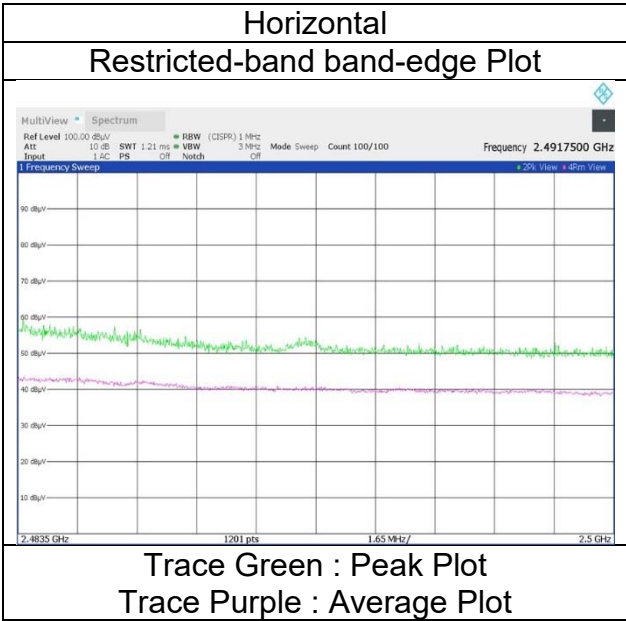
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	April 12, 2024
Temperature / Humidity	22 deg.C, 38 %RH
Engineer	Miku Ikudome
	(1 GHz -2.8 GHz)
Mode	Tx 11ax-20(OFDM)(SISO) 2462 MHz, Ant 2



* 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

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2 WAC2
Date April 12, 2024 April 12, 2024
Temperature / Humidity 22 deg.C, 38 %RH 25 deg.C, 44 %RH
Engineer Miku Ikudome Hiromasa Sato
(1 GHz -10 GHz) (10 GHz -26.5 GHz)
Mode Tx 11ax-20(OFDM)(SDM) 2472 MHz

(* 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.	2483.500	PK	53.61	27.64	-28.21	-	2.37	55.41	73.9	18.4	195	131	-
Hori.	4944.000	PK	47.02	32.21	-35.84	-	2.37	45.76	73.9	28.1	150	0	-
Hori.	7416.000	PK	46.52	36.52	-33.84	-	2.37	51.57	73.9	22.3	150	0	-
Hori.	9888.000	PK	45.77	37.64	-31.34	-	2.37	54.44	73.9	19.4	150	0	-
Hori.	4944.000	AV	35.39	32.21	-35.84	-	2.37	34.13	53.9	19.7	150	0	Floor noise
Hori.	7416.000	AV	35.30	36.52	-33.84	-	2.37	40.35	53.9	13.5	150	0	Floor noise
Hori.	9888.000	AV	34.00	37.64	-31.34	-	2.37	42.67	53.9	11.2	150	0	Floor noise
Vert.	2483.500	PK	51.37	27.64	-28.21	-	2.37	53.17	73.9	20.7	115	58	-
Vert.	4944.000	PK	46.99	32.21	-35.84	-	2.37	45.73	73.9	28.1	150	0	-
Vert.	7416.000	PK	47.17	36.52	-33.84	-	2.37	52.22	73.9	21.6	150	0	-
Vert.	9888.000	PK	46.48	37.64	-31.34	-	2.37	55.15	73.9	18.7	150	0	-
Vert.	4944.000	AV	35.74	32.21	-35.84	-	2.37	34.48	53.9	19.4	150	0	Floor noise
Vert.	7416.000	AV	35.12	36.52	-33.84	-	2.37	40.17	53.9	13.7	150	0	Floor noise
Vert.	9888.000	AV	34.11	37.64	-31.34	-	2.37	42.78	53.9	11.1	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.94 \text{ m} / 3.0 \text{ m}) = 2.37 \text{ dB}$

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	42.21	27.64	-28.21	-	0.91	2.37	44.92	53.9	8.9	*1)
Vert.	2483.500	AV	39.40	27.64	-28.21	-	0.91	2.37	42.11	53.9	11.7	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94 \text{ m} / 3.0 \text{ m}) = 2.37 \text{ dB}$

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

Duty factor refer to "Burst rate confirmation" sheet.

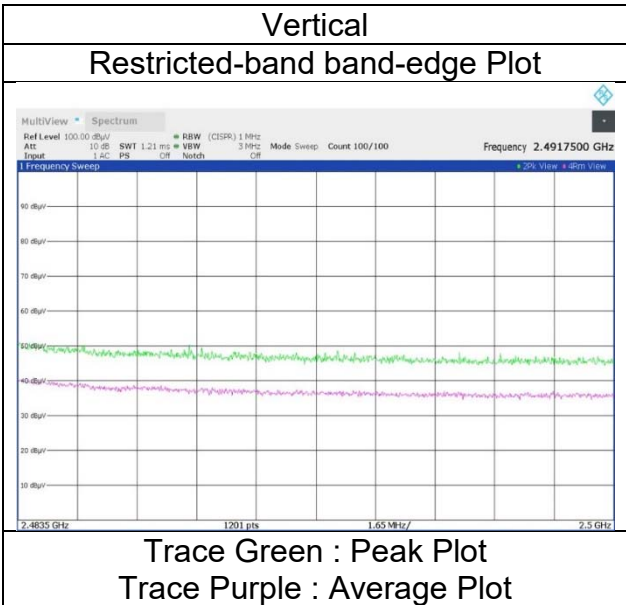
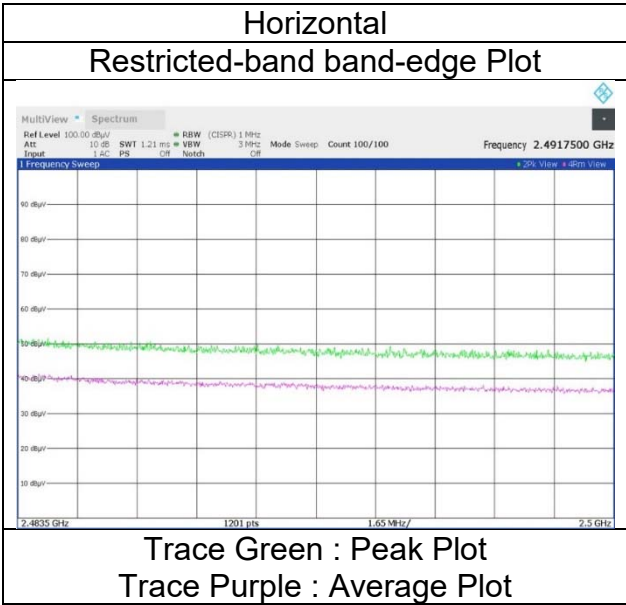
*1) Not out of band emission (Leakage Power)

**Radiated Spurious Emission
(Reference Plot for band-edge)**

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Shonan EMC Lab.
WAC1
October 19, 2024
23 deg.C, 63 %RH
Miku Ikudome
(1 GHz -2.8 GHz)
Tx 11ax-20(OFDM)(SDM) 2472 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

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2
Date May 4, 2024
Temperature / Humidity 23 deg.C, 49 %RH
Engineer Hiromasa Sato
(1 GHz -2.8 GHz)
Mode Tx 11ax-20(OFDMA)(SISO) 26-tone RU 2412 MHz, Ant 2

RU index 0

(* 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.	2390.000	PK	46.83	27.62	-28.27	-	2.37	48.55	73.9	25.3	348	126	-
Vert.	2390.000	PK	46.40	27.62	-28.27	-	2.37	48.12	73.9	25.7	101	60	-

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	35.40	27.62	-28.27	-	0.61	2.37	37.73	53.9	16.1	*1)
Vert.	2390.000	AV	35.47	27.62	-28.27	-	0.61	2.37	37.80	53.9	16.1	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

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

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]	Remark
Hori.	2412.000	PK	95.92	27.64	-28.26	-	2.37	97.67	-	-	Carrier
Hori.	2400.000	PK	48.44	27.63	-28.26	-	2.37	50.18	77.6	27.4	-
Vert.	2412.000	PK	95.57	27.64	-28.26	-	2.37	97.32	-	-	Carrier
Vert.	2400.000	PK	51.44	27.63	-28.26	-	2.37	53.18	77.3	24.1	-

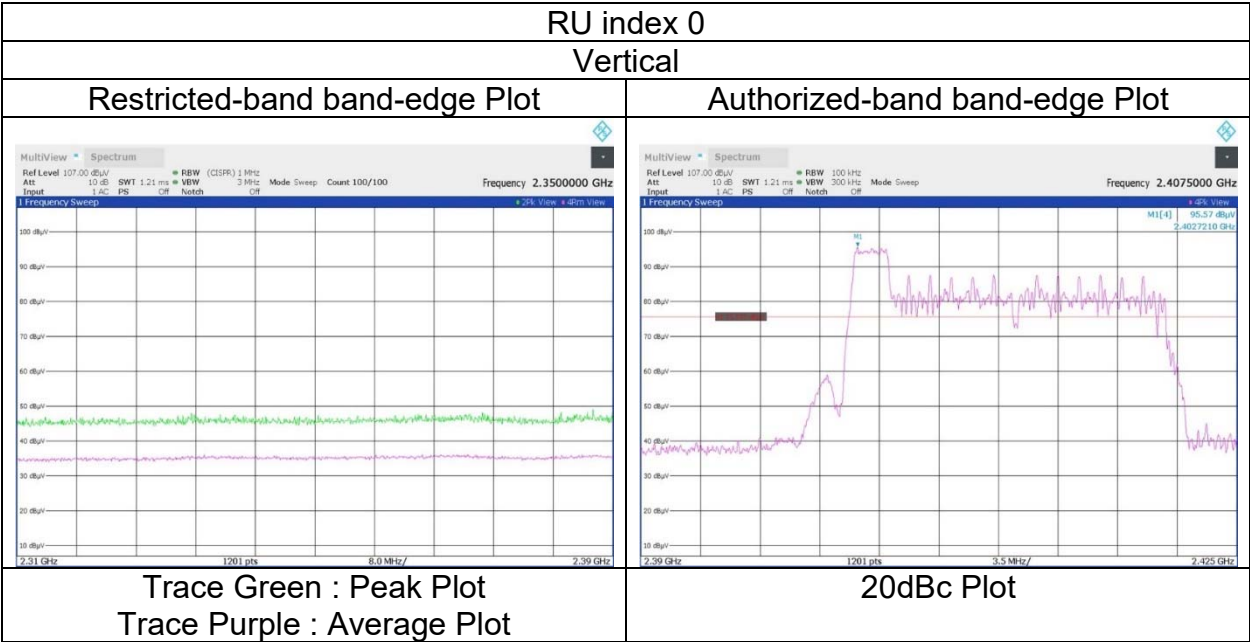
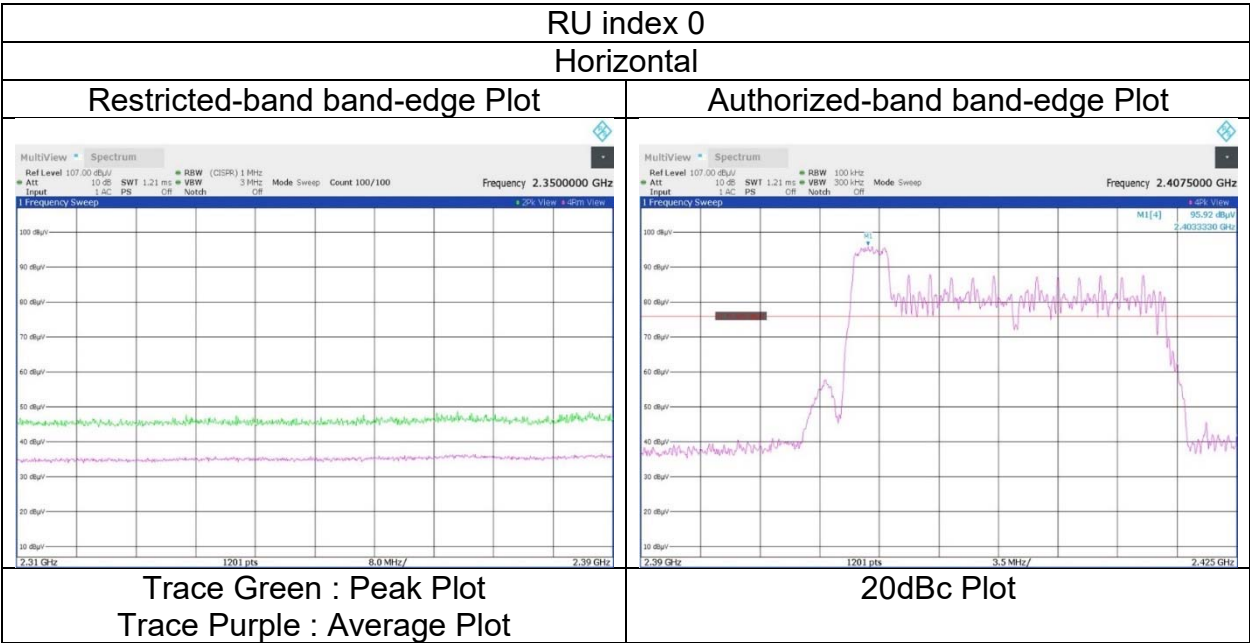
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	May 4, 2024
Temperature / Humidity	23 deg.C, 49 %RH
Engineer	Hiromasa Sato
	(1 GHz -2.8 GHz)
Mode	Tx 11ax-20(OFDMA)(SISO) 26-tone RU 2412 MHz, Ant 2



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2
Date May 4, 2024
Temperature / Humidity 23 deg.C, 49 %RH
Engineer Miku Ikudome
(30 MHz -26.5 GHz)
Mode Tx 11ax-20(OFDMA)(SISO) 26-tone RU 2437 MHz, Ant 2

RU Index 4

(* 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.	83.464	QP	38.33	8.95	6.67	33.07	0.00	20.88	40.0	19.1	210	324	-
Hori.	200.007	QP	41.94	14.47	7.16	32.96	0.00	30.61	43.5	12.8	158	157	-
Hori.	355.978	QP	41.77	15.15	7.62	32.61	0.00	31.93	46.0	14.0	100	211	-
Hori.	480.016	QP	42.80	17.32	7.92	32.30	0.00	35.74	46.0	10.2	225	122	-
Hori.	4874.000	PK	46.94	31.92	-35.99	-	2.37	45.24	73.9	28.6	150	0	Floor noise
Hori.	7311.000	PK	47.32	36.63	-34.31	-	2.37	52.01	73.9	21.8	150	0	Floor noise
Hori.	9748.000	PK	45.89	38.11	-31.30	-	2.37	55.07	73.9	18.8	150	0	Floor noise
Hori.	4874.000	AV	35.23	31.92	-35.99	-	2.37	33.53	53.9	20.3	150	0	Floor noise
Hori.	7311.000	AV	35.40	36.63	-34.31	-	2.37	40.09	53.9	13.8	150	0	Floor noise
Hori.	9748.000	AV	34.13	38.11	-31.30	-	2.37	43.31	53.9	10.5	150	0	Floor noise
Vert.	34.474	QP	41.10	12.61	6.36	32.65	0.00	27.42	40.0	12.5	100	338	-
Vert.	47.816	QP	44.35	10.37	6.46	32.89	0.00	28.29	40.0	11.7	100	336	-
Vert.	61.227	QP	45.51	9.52	6.54	33.01	0.00	28.56	40.0	11.4	100	324	-
Vert.	73.255	QP	43.32	9.18	6.62	33.06	0.00	26.06	40.0	13.9	100	2	-
Vert.	93.169	QP	46.93	9.19	6.72	33.08	0.00	29.76	43.5	13.7	100	30	-
Vert.	4874.000	PK	46.63	31.92	-35.99	-	2.37	44.93	73.9	28.9	150	0	Floor noise
Vert.	7311.000	PK	47.82	36.63	-34.31	-	2.37	52.51	73.9	21.3	150	0	Floor noise
Vert.	9748.000	PK	45.58	38.11	-31.30	-	2.37	54.76	73.9	19.1	150	0	Floor noise
Vert.	4874.000	AV	35.24	31.92	-35.99	-	2.37	33.54	53.9	20.3	150	0	Floor noise
Vert.	7311.000	AV	35.53	36.63	-34.31	-	2.37	40.22	53.9	13.6	150	0	Floor noise
Vert.	9748.000	AV	34.06	38.11	-31.30	-	2.37	43.24	53.9	10.6	150	0	Floor noise

1 GHz to 18 GHz : Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Distance factor

Other bands : Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2
Date May 4, 2024
Temperature / Humidity 23 deg.C, 49 %RH
Engineer Hiromasa Sato
(1 GHz -2.8 GHz)
Mode Tx 11ax-20(OFDMA)(SISO) 26-tone RU 2462 MHz, Ant 2

RU Index 8

(* 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.	2483.500	PK	45.53	27.64	-28.21	-	2.37	47.33	73.9	26.5	356	125	-
Vert.	2483.500	PK	44.60	27.64	-28.21	-	2.37	46.40	73.9	27.5	100	65	-

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	35.46	27.64	-28.21	-	0.61	2.37	37.87	53.9	16.0	*1)
Vert.	2483.500	AV	34.57	27.64	-28.21	-	0.61	2.37	36.98	53.9	16.9	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

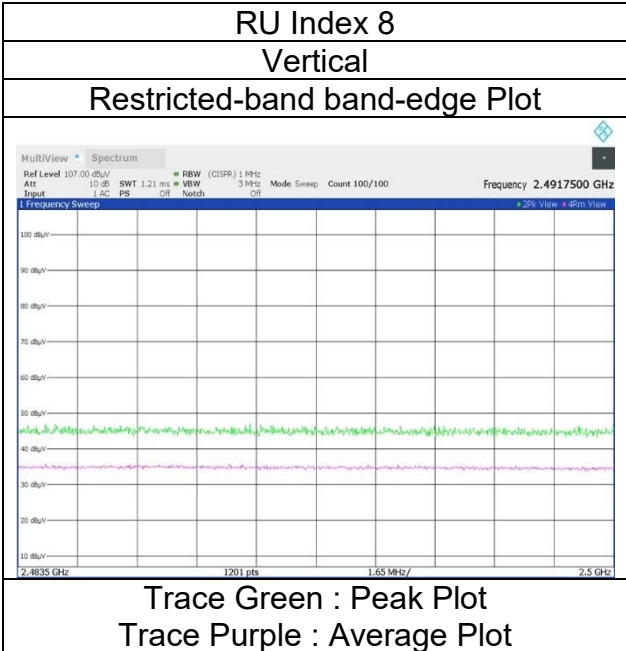
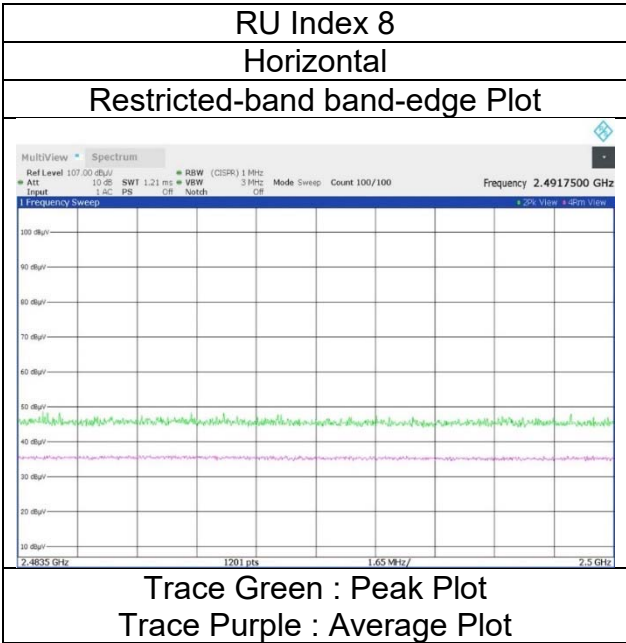
Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
WAC2
May 4, 2024
23 deg.C, 49 %RH
Hiromasa Sato
(1 GHz -2.8 GHz)
Tx 11ax-20(OFDMA)(SISO) 26-tone RU 2462 MHz, Ant 2



* 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

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC1
Date October 19, 2024
Temperature / Humidity 23 deg.C, 63 %RH
Engineer Miku Ikudome
(1 GHz -2.8 GHz)
Mode Tx 11ax-20(OFDMA)(SDM) 26-tone RU 2472 MHz

RU Index 8

(* 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.	2483.500	PK	66.74	27.96	-28.18	-	2.37	68.89	73.9	5.0	273	238	-
Vert.	2483.500	PK	66.35	27.96	-28.18	-	2.37	68.50	73.9	5.4	151	250	-

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	45.75	27.96	-28.18	-	0.17	2.37	48.07	53.9	5.8	*1)
Vert.	2483.500	AV	44.80	27.96	-28.18	-	0.17	2.37	47.12	53.9	6.7	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

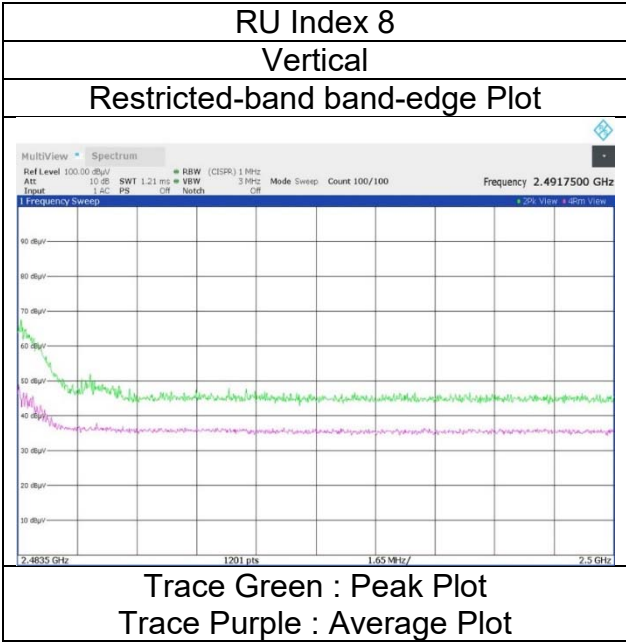
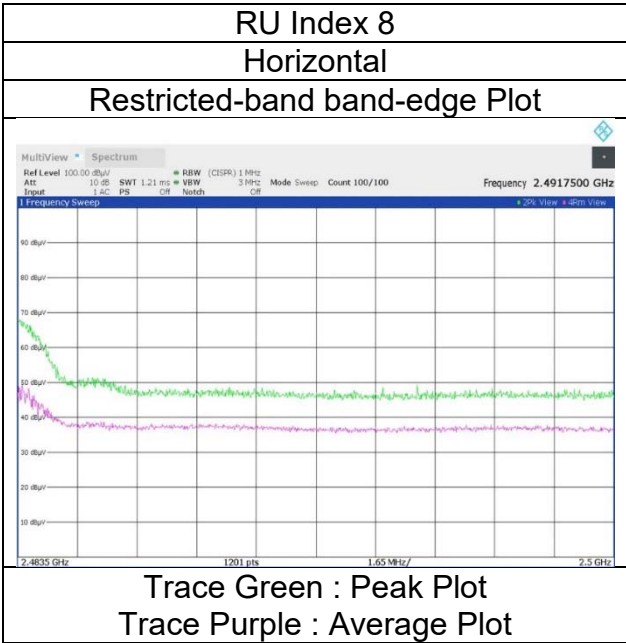
Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
WAC1
October 19, 2024
23 deg.C, 63 %RH
Miku Ikudome
(1 GHz -2.8 GHz)
Tx 11ax-20(OFDMA)(SDM) 26-tone RU 2472 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

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2
Date May 4, 2024
Temperature / Humidity 23 deg.C, 49 %RH
Engineer Hiromasa Sato
 (1 GHz -2.8 GHz)
Mode Tx 11ax-20(OFDMA)(SISO) 52-tone RU 2412 MHz, Ant 2

RU index 37

(* 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.	2390.000	PK	47.69	27.62	-28.27	-	2.37	49.41	73.9	24.4	348	111	-
Vert.	2390.000	PK	49.34	27.62	-28.27	-	2.37	51.06	73.9	22.8	100	67	-

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	37.32	27.62	-28.27	-	1.01	2.37	40.05	53.9	13.8	*1)
Vert.	2390.000	AV	38.79	27.62	-28.27	-	1.01	2.37	41.52	53.9	12.3	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

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

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]	Remark
Hori.	2412.000	PK	98.61	27.64	-28.26	-	2.37	100.36	-	-	Carrier
Hori.	2400.000	PK	60.27	27.63	-28.26	-	2.37	62.01	80.3	18.2	-
Vert.	2412.000	PK	97.31	27.64	-28.26	-	2.37	99.06	-	-	Carrier
Vert.	2400.000	PK	60.19	27.63	-28.26	-	2.37	61.93	79.0	17.0	-

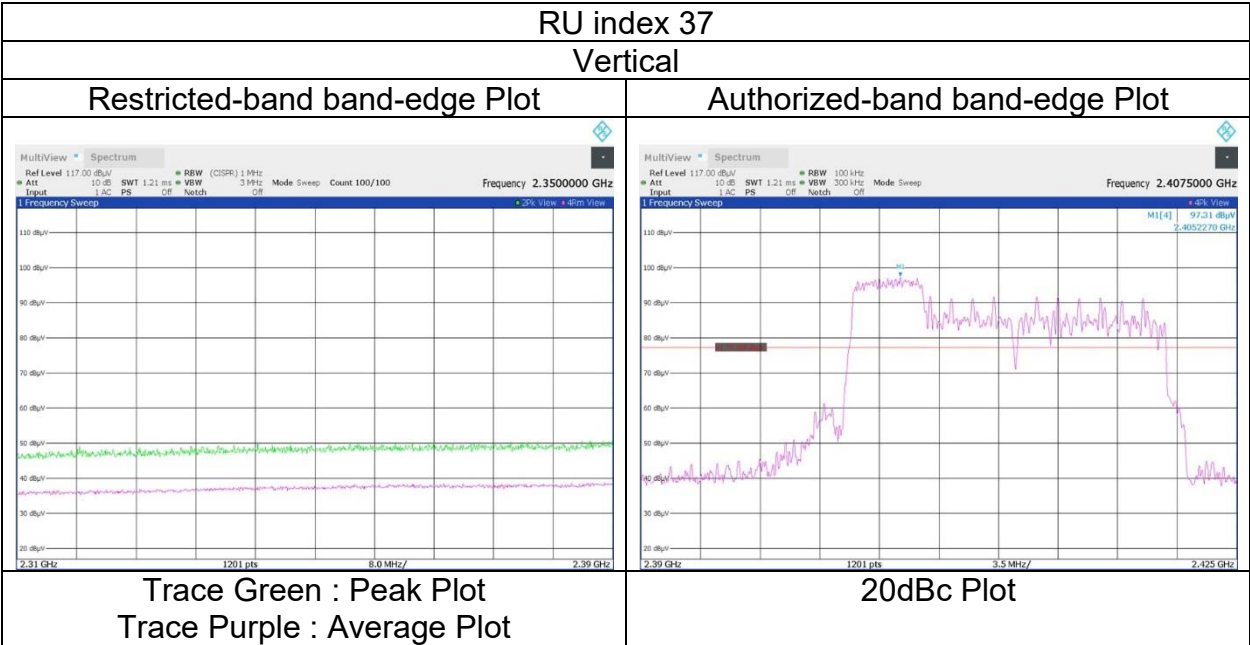
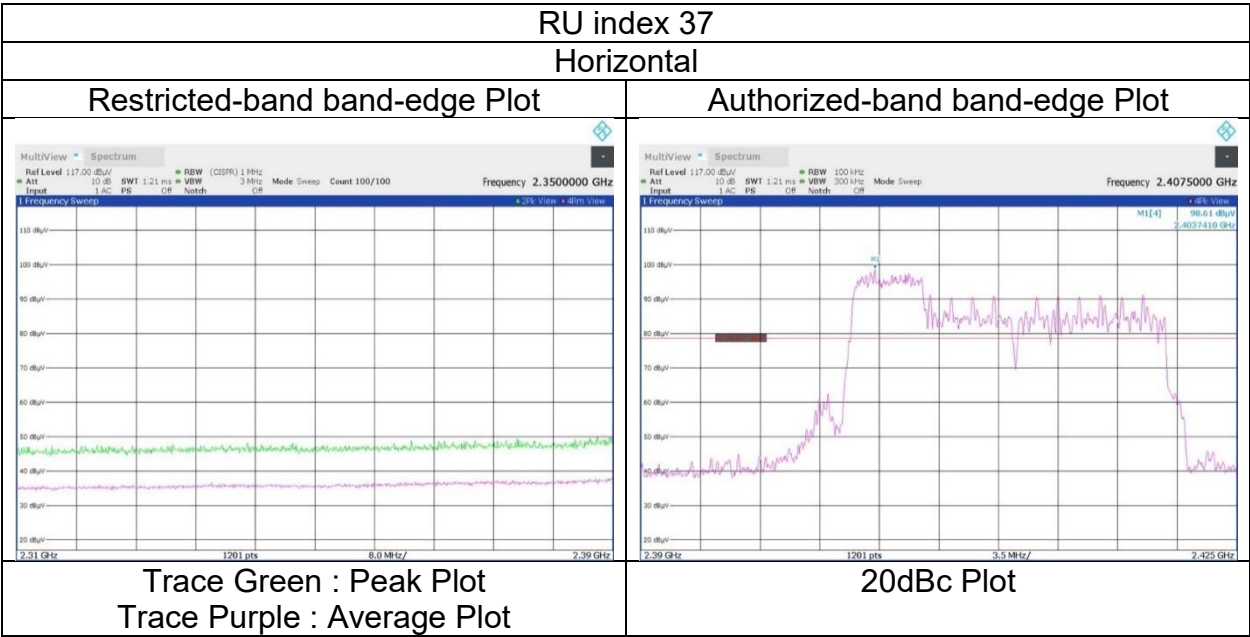
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	May 4, 2024
Temperature / Humidity	23 deg.C, 49 %RH
Engineer	Hiromasa Sato
	(1 GHz -2.8 GHz)
Mode	Tx 11ax-20(OFDMA)(SISO) 52-tone RU 2412 MHz, Ant 2



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2
Date May 4, 2024
Temperature / Humidity 23 deg.C, 49 %RH
Engineer Hiromasa Sato
(1 GHz -2.8 GHz)
Mode Tx 11ax-20(OFDMA)(SISO) 52-tone RU 2462 MHz, Ant 2

RU Index 40

(* 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.	2483.500	PK	49.99	27.64	-28.21	-	2.37	51.79	73.9	22.1	150	146	-
Vert.	2483.500	PK	49.09	27.64	-28.21	-	2.37	50.89	73.9	23.0	102	63	-

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.94 \text{ m} / 3.0 \text{ m}) = 2.37 \text{ dB}$

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	37.37	27.64	-28.21	-	1.01	2.37	40.18	53.9	13.7	*1)
Vert.	2483.500	AV	37.32	27.64	-28.21	-	1.01	2.37	40.13	53.9	13.7	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94 \text{ m} / 3.0 \text{ m}) = 2.37 \text{ dB}$

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

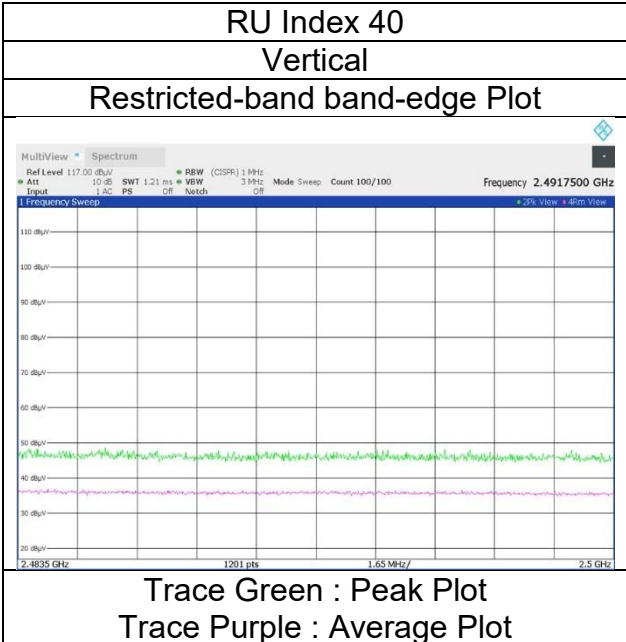
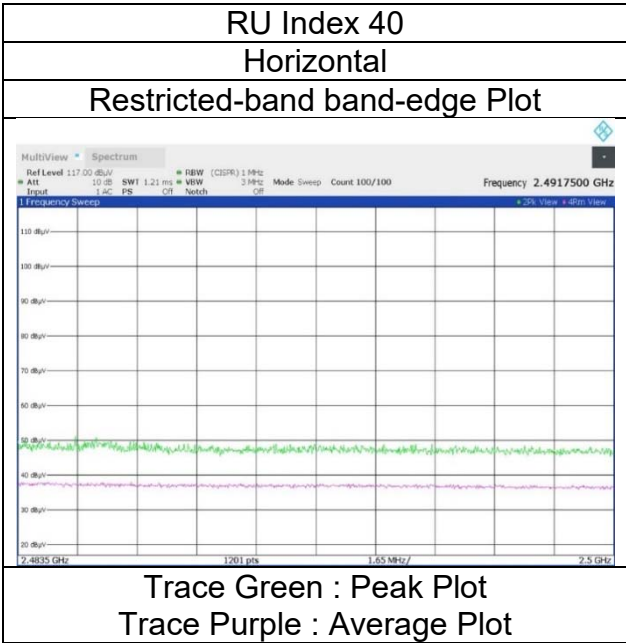
Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
WAC2
May 4, 2024
23 deg.C, 49 %RH
Hiromasa Sato
(1 GHz -2.8 GHz)
Tx 11ax-20(OFDMA)(SISO) 52-tone RU 2462 MHz, Ant 2



* 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

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC1
Date	October 19, 2024
Temperature / Humidity	23 deg.C, 63 %RH
Engineer	Miku Ikudome
	(1 GHz -2.8 GHz)
Mode	Tx 11ax-20(OFDMA)(SDM) 52-tone RU 2472 MHz

RU Index 40

(* 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.	2483.500	PK	67.39	27.96	-28.18	-	2.37	69.54	73.9	4.3	270	241	-
Vert.	2483.500	PK	68.06	27.96	-28.18	-	2.37	70.21	73.9	3.6	115	262	-

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.94 \text{ m} / 3.0 \text{ m}) = 2.37 \text{ dB}$

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	45.97	27.96	-28.18	-	0.37	2.37	48.49	53.9	5.4	*1)
Vert.	2483.500	AV	46.29	27.96	-28.18	-	0.37	2.37	48.81	53.9	5.0	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94 \text{ m} / 3.0 \text{ m}) = 2.37 \text{ dB}$

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

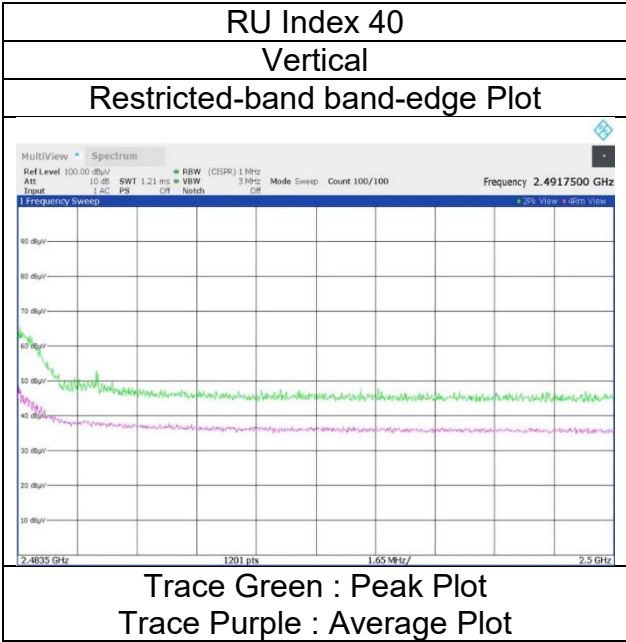
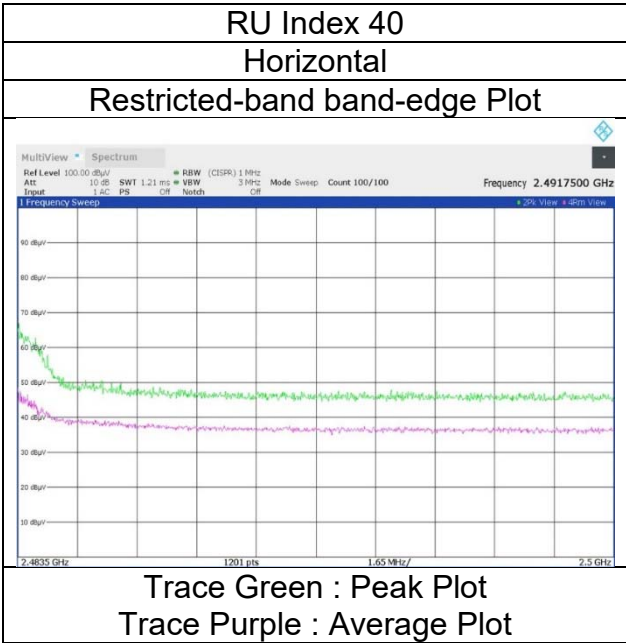
Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

**Radiated Spurious Emission
(Reference Plot for band-edge)**

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
WAC1
October 19, 2024
23 deg.C, 63 %RH
Miku Ikudome
(1 GHz -2.8 GHz)
Tx 11ax-20(OFDMA)(SDM) 52-tone RU 2472 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

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2
Date May 4, 2024
Temperature / Humidity 23 deg.C, 49 %RH
Engineer Hiromasa Sato
(1 GHz -2.8 GHz)
Mode Tx 11ax-20(OFDMA)(SISO) 106-tone RU 2412 MHz, Ant 2

RU index 53

(* 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.	2390.000	PK	55.43	27.62	-28.27	-	2.37	57.15	73.9	16.7	381	117	-
Vert.	2390.000	PK	53.70	27.62	-28.27	-	2.37	55.42	73.9	18.4	100	63	-

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	38.87	27.62	-28.27	-	1.63	2.37	42.22	53.9	11.6	*1)
Vert.	2390.000	AV	38.75	27.62	-28.27	-	1.63	2.37	42.10	53.9	11.8	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

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

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]	Remark
Hori.	2412.000	PK	96.29	27.64	-28.26	-	2.37	98.04	-	-	Carrier
Hori.	2400.000	PK	50.30	27.63	-28.26	-	2.37	52.04	78.0	25.9	-
Vert.	2412.000	PK	96.60	27.64	-28.26	-	2.37	98.35	-	-	Carrier
Vert.	2400.000	PK	60.36	27.63	-28.26	-	2.37	62.10	78.3	16.2	-

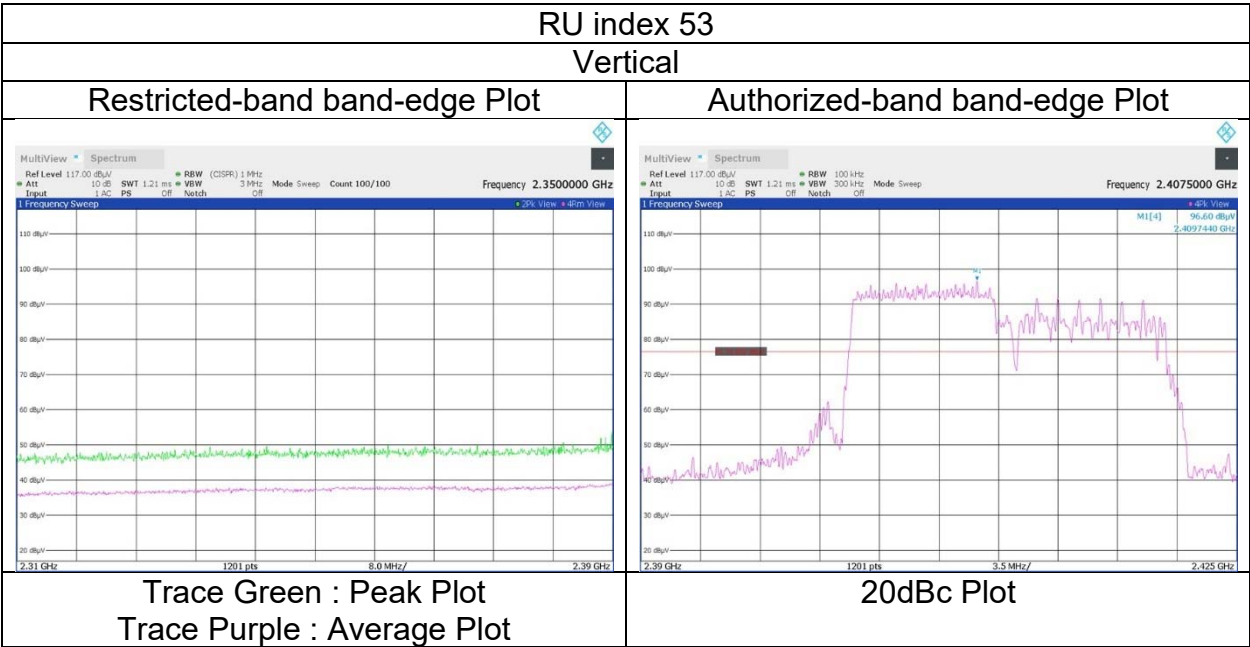
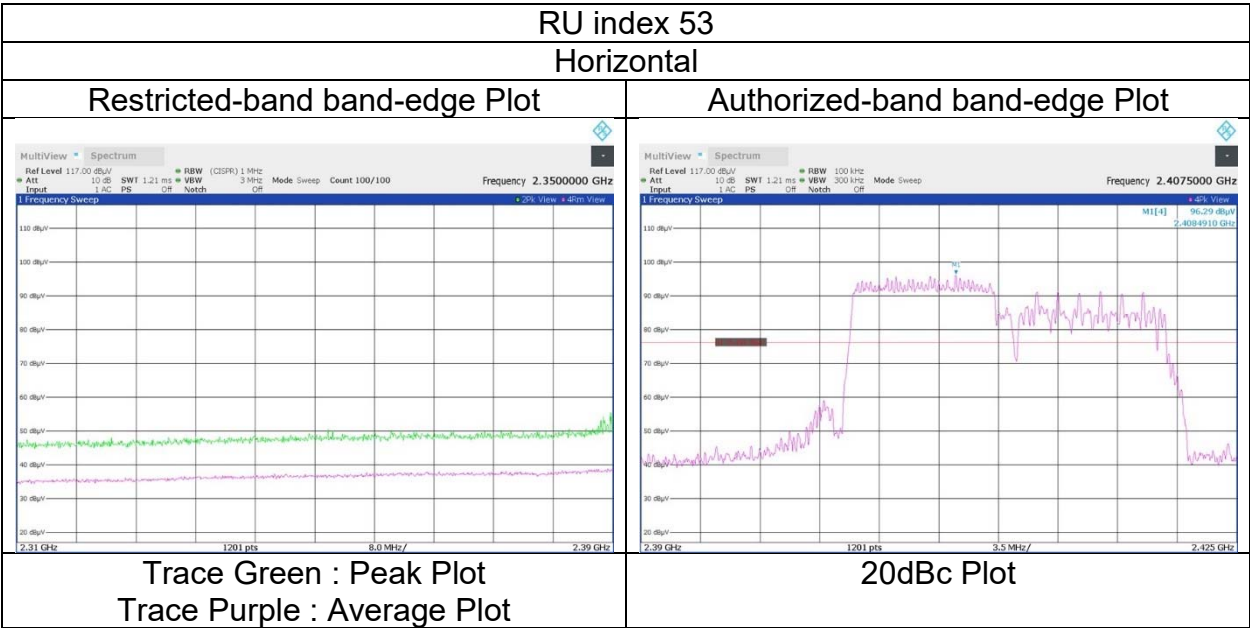
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	May 4, 2024
Temperature / Humidity	23 deg.C, 49 %RH
Engineer	Hiromasa Sato
	(1 GHz -2.8 GHz)
Mode	Tx 11ax-20(OFDMA)(SISO) 106-tone RU 2412 MHz, Ant 2



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2
Date May 4, 2024
Temperature / Humidity 23 deg.C, 49 %RH
Engineer Hiromasa Sato
(1 GHz -2.8 GHz)
Mode Tx 11ax-20(OFDMA)(SISO) 106-tone RU 2462 MHz, Ant 2

RU Index 54

(* 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.	2483.500	PK	49.92	27.64	-28.21	-	2.37	51.72	73.9	22.1	324	118	-
Vert.	2483.500	PK	47.66	27.64	-28.21	-	2.37	49.46	73.9	24.4	100	62	-

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	38.12	27.64	-28.21	-	1.63	2.37	41.55	53.9	12.3	*1)
Vert.	2483.500	AV	36.91	27.64	-28.21	-	1.63	2.37	40.34	53.9	13.5	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

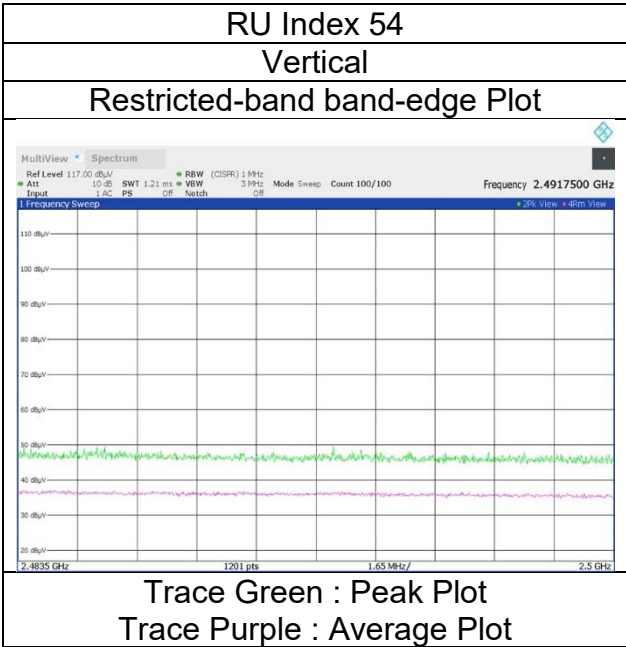
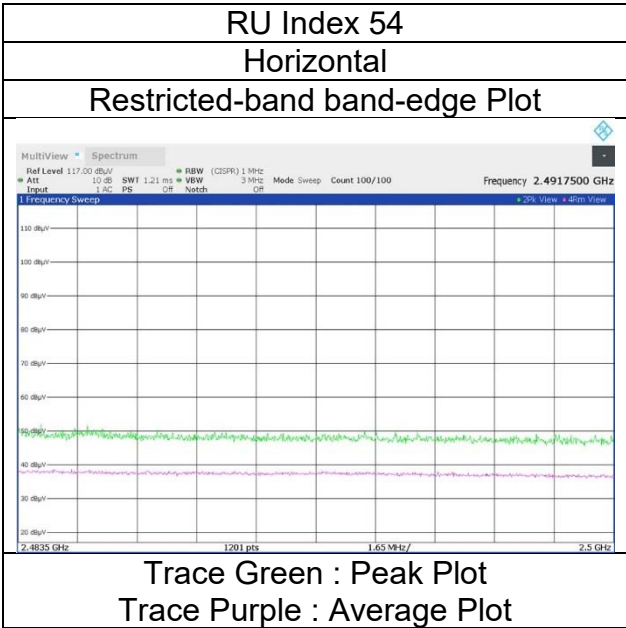
Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
WAC2
May 4, 2024
23 deg.C, 49 %RH
Hiromasa Sato
(1 GHz -2.8 GHz)
Tx 11ax-20(OFDMA)(SISO) 106-tone RU 2462 MHz, Ant 2



* 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

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC1
Date October 19, 2024
Temperature / Humidity 23 deg.C, 63 %RH
Engineer Miku Ikudome
(1 GHz -2.8 GHz)
Mode Tx 11ax-20(OFDMA)(SDM) 106-tone RU 2472 MHz

RU Index 54

(* 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.	2483.500	PK	65.65	27.96	-28.18	-	2.37	67.80	73.9	6.1	268	241	-
Vert.	2483.500	PK	64.77	27.96	-28.18	-	2.37	66.92	73.9	6.9	115	254	-

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	45.52	27.96	-28.18	-	0.74	2.37	48.41	53.9	5.4	*1)
Vert.	2483.500	AV	45.04	27.96	-28.18	-	0.74	2.37	47.93	53.9	5.9	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

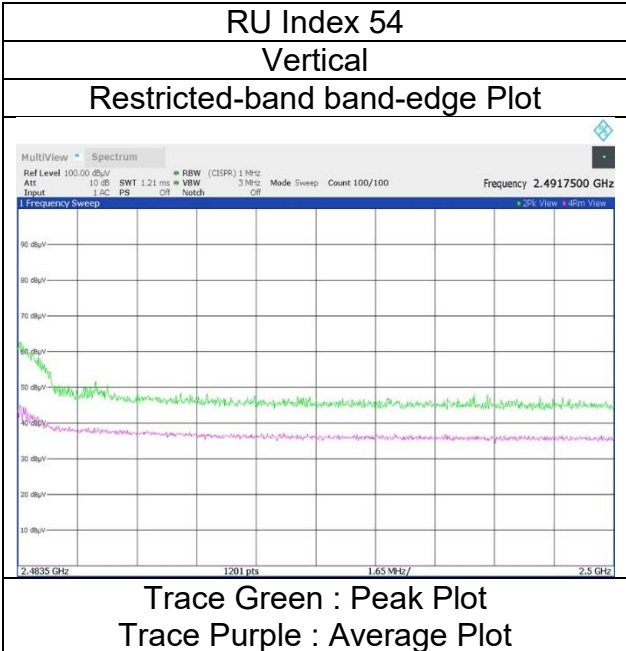
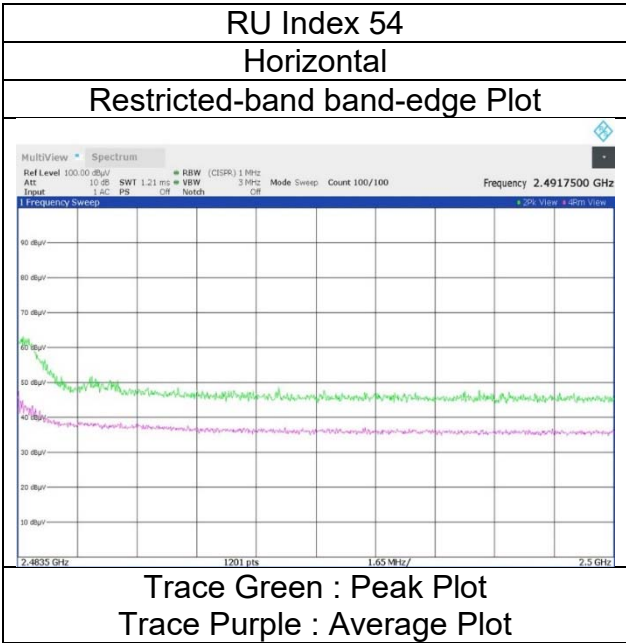
10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

**Radiated Spurious Emission
(Reference Plot for band-edge)**

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC1
Date	October 19, 2024
Temperature / Humidity	23 deg.C, 63 %RH
Engineer	Miku Ikudome
Mode	(1 GHz -2.8 GHz) Tx 11ax-20(OFDMA)(SDM) 106-tone RU 2472 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

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2
Date May 4, 2024
Temperature / Humidity 23 deg.C, 49 %RH
Engineer Hiromasa Sato
(1 GHz -2.8 GHz)
Mode Tx 11ax-20(OFDMA)(SISO) 242-tone RU 2412 MHz, Ant 2

RU index 61

(* 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.	2390.000	PK	49.85	27.62	-28.27	-	2.37	51.57	73.9	22.3	320	126	-
Vert.	2390.000	PK	52.57	27.62	-28.27	-	2.37	54.29	73.9	19.6	100	64	-

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	38.92	27.62	-28.27	-	2.30	2.37	42.94	53.9	10.9	*1)
Vert.	2390.000	AV	39.87	27.62	-28.27	-	2.30	2.37	43.89	53.9	10.0	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

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

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]	Remark
Hori.	2412.000	PK	91.20	27.64	-28.26	-	2.37	92.95	-	-	Carrier
Hori.	2400.000	PK	45.72	27.63	-28.26	-	2.37	47.46	72.9	25.4	-
Vert.	2412.000	PK	93.03	27.64	-28.26	-	2.37	94.78	-	-	Carrier
Vert.	2400.000	PK	49.65	27.63	-28.26	-	2.37	51.39	74.7	23.3	-

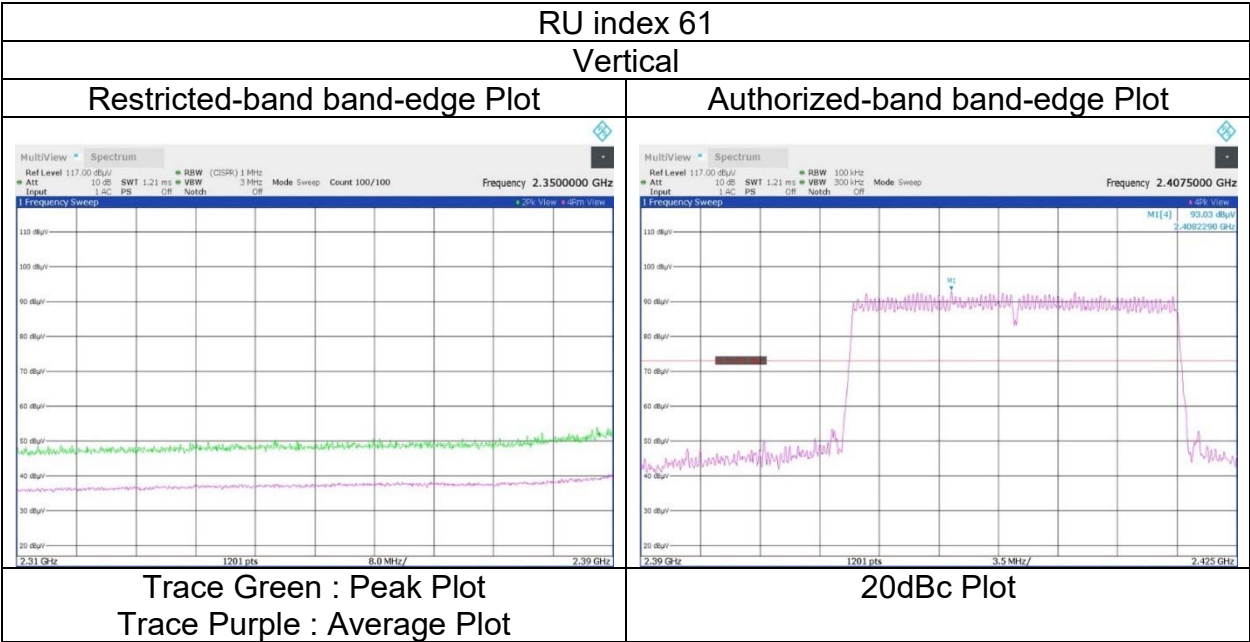
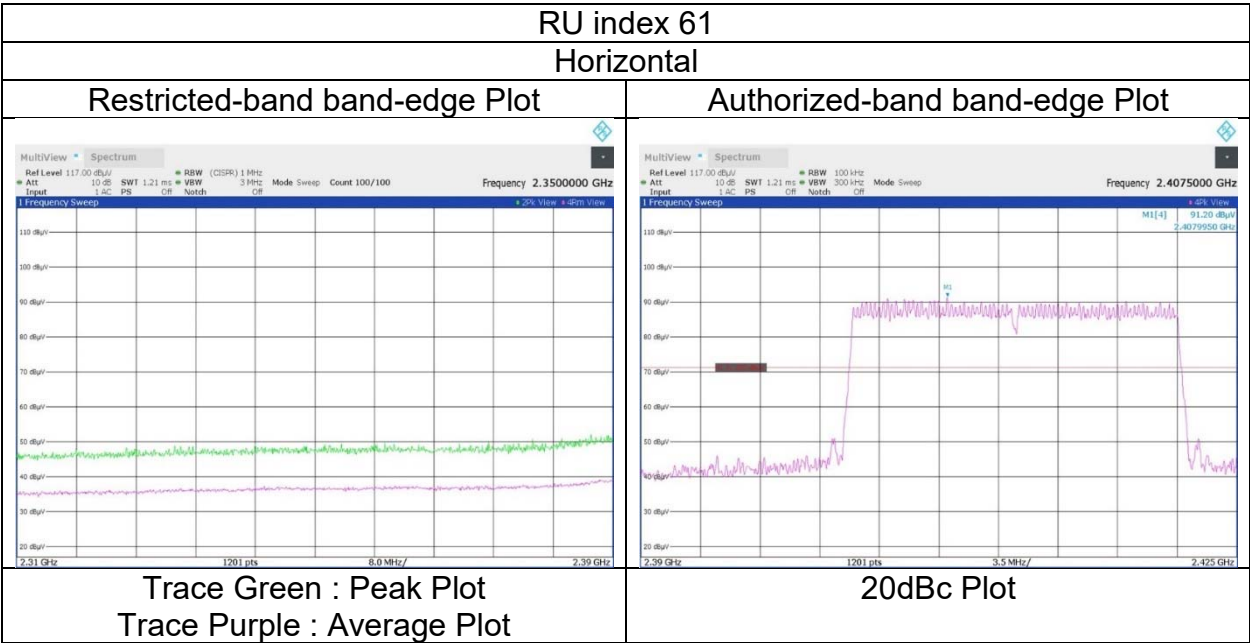
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	May 4, 2024
Temperature / Humidity	23 deg.C, 49 %RH
Engineer	Hiromasa Sato
	(1 GHz -2.8 GHz)
Mode	Tx 11ax-20(OFDMA)(SISO) 242-tone RU 2412 MHz, Ant 2



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2
Date May 4, 2024
Temperature / Humidity 23 deg.C, 49 %RH
Engineer Hiromasa Sato
(1 GHz -2.8 GHz)
Mode Tx 11ax-20(OFDMA)(SISO) 242-tone RU 2462 MHz, Ant 2

RU Index 61

(* 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.	2483.500	PK	52.22	27.64	-28.21	-	2.37	54.02	73.9	19.8	314	115	-
Vert.	2483.500	PK	50.00	27.64	-28.21	-	2.37	51.80	73.9	22.1	100	64	-

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	39.87	27.64	-28.21	-	2.30	2.37	43.97	53.9	9.9	*1)
Vert.	2483.500	AV	38.49	27.64	-28.21	-	2.30	2.37	42.59	53.9	11.3	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

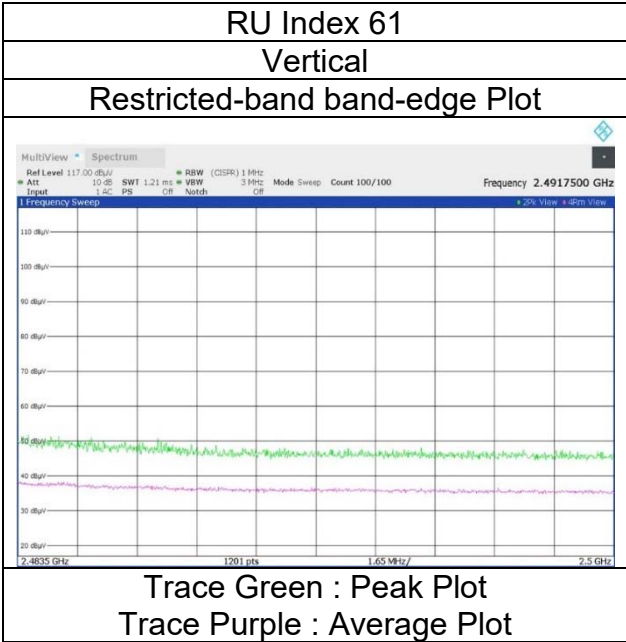
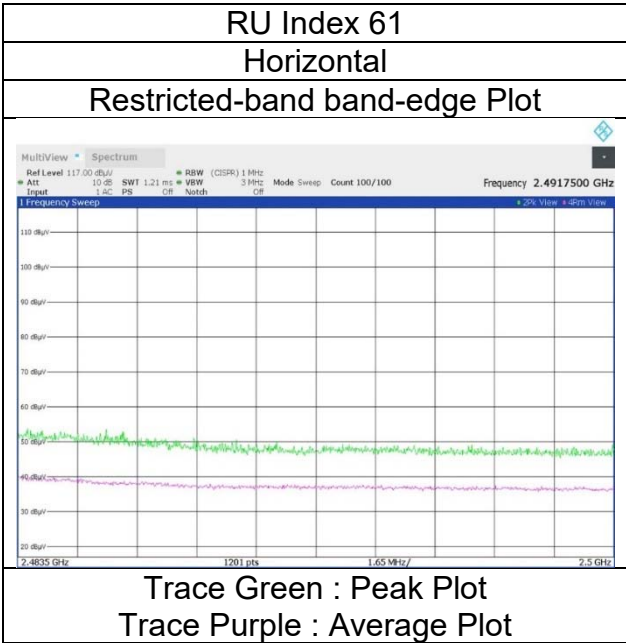
Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
WAC2
May 4, 2024
23 deg.C, 49 %RH
Hiromasa Sato
(1 GHz -2.8 GHz)
Tx 11ax-20(OFDMA)(SISO) 242-tone RU 2462 MHz, Ant 2



* 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

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC1
Date October 19, 2024
Temperature / Humidity 23 deg.C, 63 %RH
Engineer Miku Ikudome
(1 GHz -2.8 GHz)
Mode Tx 11ax-20(OFDMA)(SDM) 242-tone RU 2472 MHz

RU Index 61

(* 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.	2483.500	PK	52.51	27.96	-28.18	-	2.37	54.66	73.9	19.2	269	237	-
Vert.	2483.500	PK	52.64	27.96	-28.18	-	2.37	54.79	73.9	19.1	115	258	-

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	40.96	27.96	-28.18	-	1.25	2.37	44.36	53.9	9.5	*1)
Vert.	2483.500	AV	40.05	27.96	-28.18	-	1.25	2.37	43.45	53.9	10.4	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

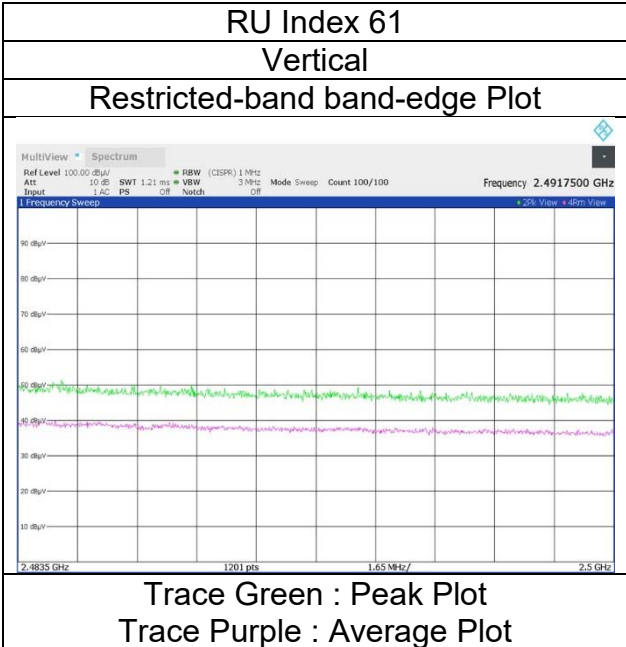
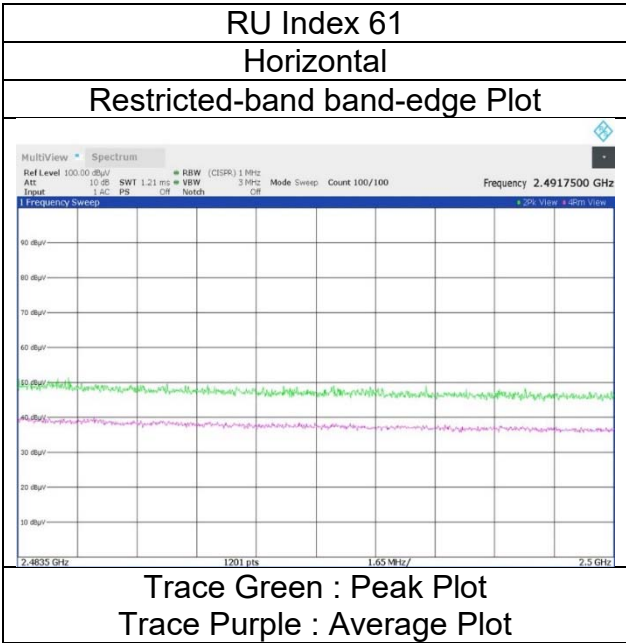
Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
WAC1
October 19, 2024
23 deg.C, 63 %RH
Miku Ikudome
(1 GHz -2.8 GHz)
Tx 11ax-20(OFDMA)(SDM) 242-tone RU 2472 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

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2 WAC2 WAC2 WAC2 WAC2
Date September 28, 2023 September 28, 2023 September 26, 2023 September 25, 2023 September 23, 2023
Temperature / Humidity 27 deg.C, 46 %RH 25 deg.C, 54 %RH 24 deg.C, 54 %RH 25 deg.C, 53 %RH 24 deg.C, 55 %RH
Engineer Kouki Yamada Shiro Kobayashi Yusuke Tanikawara Makoto Hosaka Makoto Hosaka
(30 MHz -1 GHz) (1 GHz -2.8 GHz) (2.8 GHz -10 GHz) (10 GHz -18 GHz) (18 GHz -26.5 GHz)
Mode Tx BT LE 1M-PHY 2402 MHz, Ant 1

(* 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.	87.753	QP	46.90	7.80	7.07	33.08	0.00	28.69	40.0	11.3	400	112	-
Hori.	250.015	QP	56.30	11.78	7.32	32.83	0.00	42.57	46.0	3.4	134	35	-
Hori.	2390.000	PK	45.93	27.62	-24.00	-	2.37	51.92	73.9	21.9	150	259	-
Hori.	4804.000	PK	45.02	31.57	-31.48	-	2.37	47.48	73.9	26.4	192	203	-
Hori.	7206.000	PK	43.76	36.04	-30.83	-	2.37	51.34	73.9	22.5	150	0	-
Hori.	8407.000	PK	44.14	36.86	-30.39	-	2.37	52.98	73.9	20.9	121	193	-
Hori.	9608.000	PK	44.50	37.74	-30.16	-	2.37	54.45	73.9	19.4	150	0	-
Hori.	7206.000	AV	32.62	36.04	-30.83	-	2.37	40.20	53.9	13.7	150	0	Floor Noise
Hori.	9608.000	AV	33.58	37.74	-30.16	-	2.37	43.53	53.9	10.3	150	0	Floor Noise
Vert.	33.907	QP	40.90	17.19	6.26	32.64	0.00	31.71	40.0	8.2	100	140	-
Vert.	70.025	QP	48.70	6.65	6.35	33.05	0.00	28.65	40.0	11.3	100	231	-
Vert.	78.097	QP	48.60	6.37	6.97	33.07	0.00	28.87	40.0	11.1	100	244	-
Vert.	97.135	QP	50.00	9.64	6.89	33.08	0.00	33.45	43.5	10.0	100	133	-
Vert.	118.071	QP	45.90	12.89	6.64	33.07	0.00	32.36	43.5	11.1	100	86	-
Vert.	125.008	QP	47.50	13.58	6.70	33.06	0.00	34.72	43.5	8.7	100	260	-
Vert.	721.134	QP	35.40	20.13	8.43	31.46	0.00	32.50	46.0	13.5	108	351	-
Vert.	2390.000	PK	45.68	27.62	-24.00	-	2.37	51.67	73.9	22.2	141	255	-
Vert.	4804.000	PK	45.18	31.57	-31.48	-	2.37	47.64	73.9	26.2	187	110	-
Vert.	7206.000	PK	43.94	36.04	-30.83	-	2.37	51.52	73.9	22.3	150	0	-
Vert.	8407.000	PK	44.04	36.86	-30.39	-	2.37	52.88	73.9	21.0	248	75	-
Vert.	9608.000	PK	44.55	37.74	-30.16	-	2.37	54.50	73.9	19.4	150	0	-
Vert.	7206.000	AV	32.62	36.04	-30.83	-	2.37	40.20	53.9	13.7	150	0	Floor Noise
Vert.	9608.000	AV	33.54	37.74	-30.16	-	2.37	43.49	53.9	10.4	150	0	Floor Noise

1 GHz to 18 GHz : Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Distance factor

Other bands : Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	34.14	27.62	-24.00	-	1.37	2.37	41.50	53.9	12.4	*1)
Hori.	4804.000	AV	34.14	31.57	-31.48	-	1.37	2.37	37.97	53.9	15.9	-
Hori.	8407.000	AV	33.19	36.86	-30.39	-	1.37	2.37	43.40	53.9	10.5	*2)
Vert.	2390.000	AV	34.50	27.62	-24.00	-	1.37	2.37	41.86	53.9	12.0	*1)
Vert.	4804.000	AV	34.19	31.57	-31.48	-	1.37	2.37	38.02	53.9	15.8	-
Vert.	8407.000	AV	33.28	36.86	-30.39	-	1.37	2.37	43.49	53.9	10.4	*2)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Duty factor refer to "Burst data confirmation" sheet.

*1) Not out of band emission (Leakage Power)

*2) Duty was the same as carrier.

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

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]	Remark
Hori.	2402.000	PK	90.23	27.63	-24.00	-	2.37	96.23	-	-	Carrier
Hori.	2400.000	PK	37.25	27.63	-24.00	-	2.37	43.25	76.2	32.9	-
Vert.	2402.000	PK	89.25	27.63	-24.00	-	2.37	95.25	-	-	Carrier
Vert.	2400.000	PK	36.76	27.63	-24.00	-	2.37	42.76	75.2	32.4	-

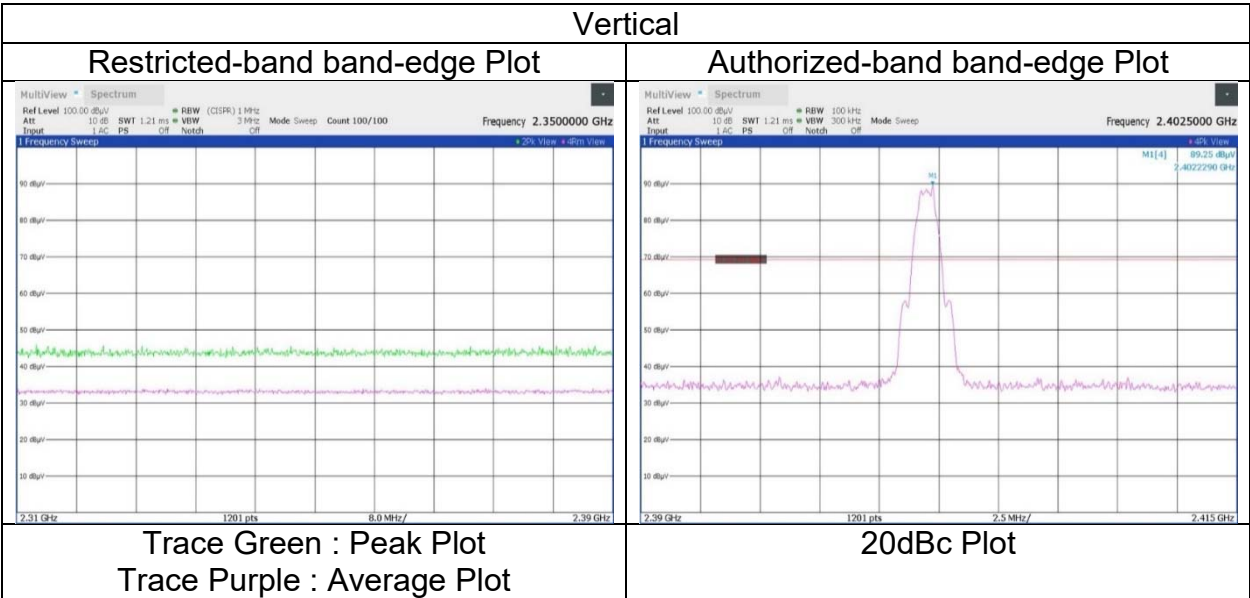
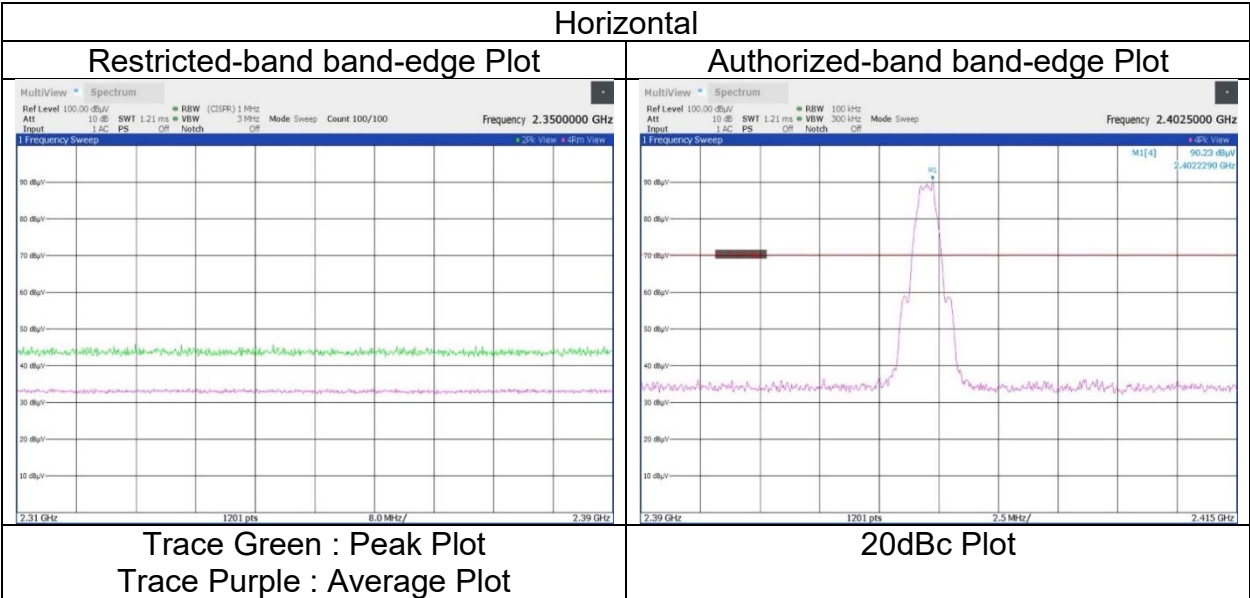
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Radiated Spurious Emission

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	September 28, 2023
Temperature / Humidity	25 deg.C, 54 %RH
Engineer	Shiro Kobayashi
	(1 GHz -2.8 GHz)
Mode	Tx BT LE 1M-PHY 2402 MHz, Ant 1



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber September 28, 2023 September 26, 2023 September 25, 2023 September 23, 2023
Date 25 deg.C, 54 %RH 24 deg.C, 54 %RH 25 deg.C, 53 %RH 24 deg.C, 55 %RH
Temperature / Humidity Shiro Kobayashi Yusuke Tanikawara Makoto Hosaka Makoto Hosaka
Engineer September 28, 2023 September 26, 2023 September 25, 2023 September 23, 2023
(1 GHz -2.8 GHz) (2.8 GHz -10 GHz) (10 GHz -18 GHz) (18 GHz -26.5 GHz)
Mode Tx BT LE 1M-PHY 2440 MHz, Ant 1

(* 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.	4880.000	PK	45.90	31.87	-31.42	-	2.37	48.72	73.9	25.1	186	205	-
Hori.	7320.000	PK	43.68	36.30	-30.79	-	2.37	51.56	73.9	22.3	150	0	-
Hori.	8540.000	PK	45.01	37.02	-30.33	-	2.37	54.07	73.9	19.8	120	192	-
Hori.	9760.000	PK	44.75	37.71	-30.03	-	2.37	54.80	73.9	19.1	150	0	-
Hori.	7320.000	AV	32.60	36.30	-30.79	-	2.37	40.48	53.9	13.4	150	0	Floor Noise
Hori.	9760.000	AV	33.49	37.71	-30.03	-	2.37	43.54	53.9	10.3	150	0	Floor Noise
Vert.	4880.000	PK	46.55	31.87	-31.42	-	2.37	49.37	73.9	24.5	172	106	-
Vert.	7320.000	PK	43.78	36.30	-30.79	-	2.37	51.66	73.9	22.2	150	0	-
Vert.	8540.000	PK	44.82	37.02	-30.33	-	2.37	53.88	73.9	20.0	251	86	-
Vert.	9760.000	PK	44.72	37.71	-30.03	-	2.37	54.77	73.9	19.1	150	0	-
Vert.	7320.000	AV	32.65	36.30	-30.79	-	2.37	40.53	53.9	13.3	150	0	Floor Noise
Vert.	9760.000	AV	33.47	37.71	-30.03	-	2.37	43.52	53.9	10.3	150	0	Floor Noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4880.000	AV	36.02	31.87	-31.42	-	1.37	2.37	40.21	53.9	13.6	-
Hori.	8540.000	AV	33.84	37.02	-30.33	-	1.37	2.37	44.27	53.9	9.6	*1)
Vert.	4880.000	AV	36.55	31.87	-31.42	-	1.37	2.37	40.74	53.9	13.1	-
Vert.	8540.000	AV	33.65	37.02	-30.33	-	1.37	2.37	44.08	53.9	9.8	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Duty factor refer to "Burst rate confirmation" sheet.

*1) 3.5 th harmonic (Not Leakage Power)

Radiated Spurious Emission

Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	September 28, 2023	September 26, 2023	September 25, 2023	September 23, 2023
Date	25 deg.C, 54 %RH	24 deg.C, 54 %RH	25 deg.C, 53 %RH	24 deg.C, 55 %RH
Temperature / Humidity	Shiro Kobayashi	Yusuke Tanikawara	Makoto Hosaka	Makoto Hosaka
Engineer	September 28, 2023	September 26, 2023	September 25, 2023	September 23, 2023
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -18 GHz)	(18 GHz -26.5 GHz)
Mode	Tx BT LE 1M-PHY 2480 MHz, Ant 1			

(* 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.	2483.500	PK	46.07	27.64	-23.93	-	2.37	52.15	73.9	21.7	163	251	-
Hori.	4960.000	PK	49.36	32.11	-31.36	-	2.37	52.48	73.9	21.4	183	201	-
Hori.	7440.000	PK	43.78	36.46	-30.75	-	2.37	51.86	73.9	22.0	150	0	-
Hori.	8680.000	PK	45.12	37.10	-30.31	-	2.37	54.28	73.9	19.6	122	195	-
Hori.	9920.000	PK	44.75	37.72	-29.90	-	2.37	54.94	73.9	18.9	150	0	-
Hori.	7440.000	AV	32.74	36.46	-30.75	-	2.37	40.82	53.9	13.0	150	0	Floor Noise
Hori.	9920.000	AV	33.62	37.72	-29.90	-	2.37	43.81	53.9	10.0	150	0	Floor Noise
Vert.	2483.500	PK	45.76	27.64	-23.93	-	2.37	51.84	73.9	22.0	112	9	-
Vert.	4960.000	PK	49.64	32.11	-31.36	-	2.37	52.76	73.9	21.1	176	111	-
Vert.	7440.000	PK	44.00	36.46	-30.75	-	2.37	52.08	73.9	21.8	150	0	-
Vert.	8680.000	PK	45.02	37.10	-30.31	-	2.37	54.18	73.9	19.7	245	79	-
Vert.	9920.000	PK	44.45	37.72	-29.90	-	2.37	54.64	73.9	19.2	150	0	-
Vert.	7440.000	AV	32.68	36.46	-30.75	-	2.37	40.76	53.9	13.1	150	0	Floor Noise
Vert.	9920.000	AV	33.69	37.72	-29.90	-	2.37	43.88	53.9	10.0	150	0	Floor Noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	34.38	27.64	-23.93	-	1.37	2.37	41.83	53.9	12.0	*1)
Hori.	4960.000	AV	40.88	32.11	-31.36	-	1.37	2.37	45.37	53.9	8.5	-
Hori.	8680.000	AV	33.84	37.10	-30.31	-	1.37	2.37	44.37	53.9	9.5	*2)
Vert.	2483.500	AV	34.22	27.64	-23.93	-	1.37	2.37	41.67	53.9	12.2	*1)
Vert.	4960.000	AV	41.36	32.11	-31.36	-	1.37	2.37	45.85	53.9	8.0	-
Vert.	8680.000	AV	34.09	37.10	-30.31	-	1.37	2.37	44.62	53.9	9.2	*2)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

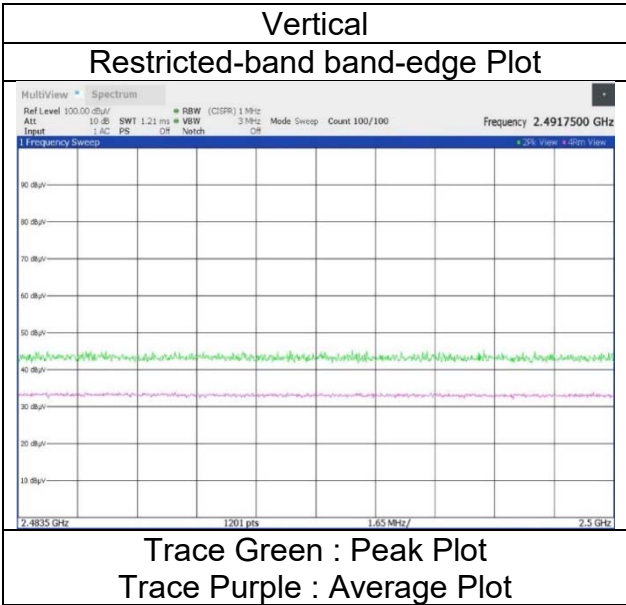
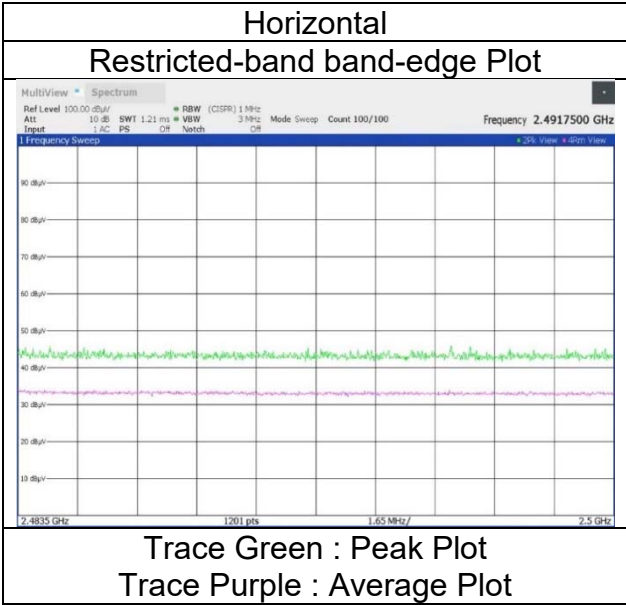
Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

*2) 3.5 th harmonic (Not Leakage Power)

Radiated Spurious Emission

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	September 28, 2023
Temperature / Humidity	25 deg.C, 54 %RH
Engineer	Shiro Kobayashi
	(1 GHz -2.8 GHz)
Mode	Tx BT LE 1M-PHY 2480 MHz, Ant 1



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

Radiated Spurious Emission

Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	WAC2	WAC2	WAC2	WAC2
Date	September 28, 2023	September 26, 2023	September 25, 2023	September 23, 2023
Temperature / Humidity	25 deg.C, 54 %RH	24 deg.C, 54 %RH	25 deg.C, 53 %RH	24 deg.C, 55 %RH
Engineer	Shiro Kobayashi	Yusuke Tanikawara	Makoto Hosaka	Makoto Hosaka
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -18 GHz)	(18 GHz -26.5 GHz)
Mode	Tx BT LE 2M-PHY 2402 MHz, Ant 1			

(* 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.	2390.000	PK	46.60	27.62	-24.00	-	2.37	52.59	73.9	21.3	106	252	-
Hori.	4804.000	PK	45.12	31.57	-31.48	-	2.37	47.58	73.9	26.3	183	199	-
Hori.	7206.000	PK	43.61	36.04	-30.83	-	2.37	51.19	73.9	22.7	150	0	-
Hori.	8407.000	PK	43.87	36.86	-30.39	-	2.37	52.71	73.9	21.1	126	183	-
Hori.	9608.000	PK	44.95	37.74	-30.16	-	2.37	54.90	73.9	19.0	150	0	-
Hori.	7206.000	AV	32.63	36.04	-30.83	-	2.37	40.21	53.9	13.6	150	0	Floor Noise
Hori.	9608.000	AV	33.48	37.74	-30.16	-	2.37	43.43	53.9	10.4	150	0	Floor Noise
Vert.	2390.000	PK	46.44	27.62	-24.00	-	2.37	52.43	73.9	21.4	100	233	-
Vert.	4804.000	PK	44.76	31.57	-31.48	-	2.37	47.22	73.9	26.6	186	112	-
Vert.	7206.000	PK	43.77	36.04	-30.83	-	2.37	51.35	73.9	22.5	150	0	-
Vert.	8407.000	PK	43.94	36.86	-30.39	-	2.37	52.78	73.9	21.1	247	75	-
Vert.	9608.000	PK	44.78	37.74	-30.16	-	2.37	54.73	73.9	19.1	150	0	-
Vert.	7206.000	AV	32.57	36.04	-30.83	-	2.37	40.15	53.9	13.7	150	0	Floor Noise
Vert.	9608.000	AV	33.54	37.74	-30.16	-	2.37	43.49	53.9	10.4	150	0	Floor Noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	34.32	27.62	-24.00	-	4.84	2.37	45.15	53.9	8.7	*1)
Hori.	4804.000	AV	33.42	31.57	-31.48	-	4.84	2.37	40.72	53.9	13.1	-
Hori.	8407.000	AV	33.13	36.86	-30.39	-	4.84	2.37	46.81	53.9	7.0	*2)
Vert.	2390.000	AV	34.45	27.62	-24.00	-	4.84	2.37	45.28	53.9	8.6	*1)
Vert.	4804.000	AV	33.43	31.57	-31.48	-	4.84	2.37	40.73	53.9	13.1	-
Vert.	8407.000	AV	33.15	36.86	-30.39	-	4.84	2.37	46.83	53.9	7.0	*2)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

*2) 3.5 th harmonic (Not Leakage Power)

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

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]	Remark
Hori.	2402.000	PK	89.39	27.63	-24.00	-	2.37	95.39	-	-	Carrier
Hori.	2400.000	PK	57.81	27.63	-24.00	-	2.37	63.81	75.3	11.4	-
Vert.	2402.000	PK	88.25	27.63	-24.00	-	2.37	94.25	-	-	Carrier
Vert.	2400.000	PK	56.81	27.63	-24.00	-	2.37	62.81	74.2	11.3	-

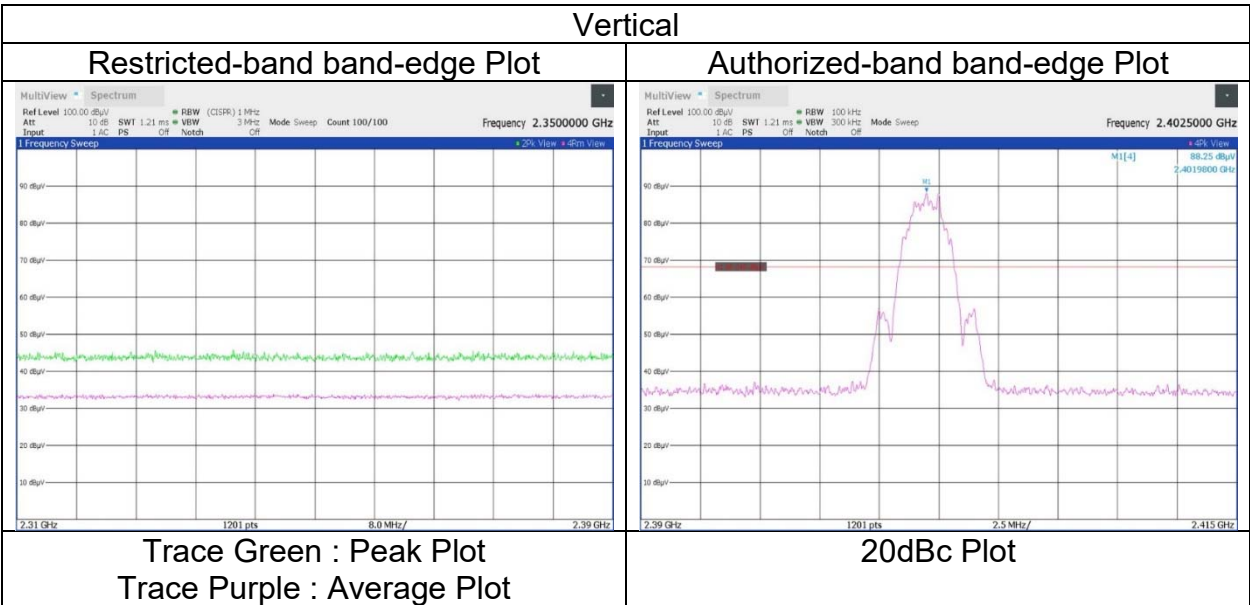
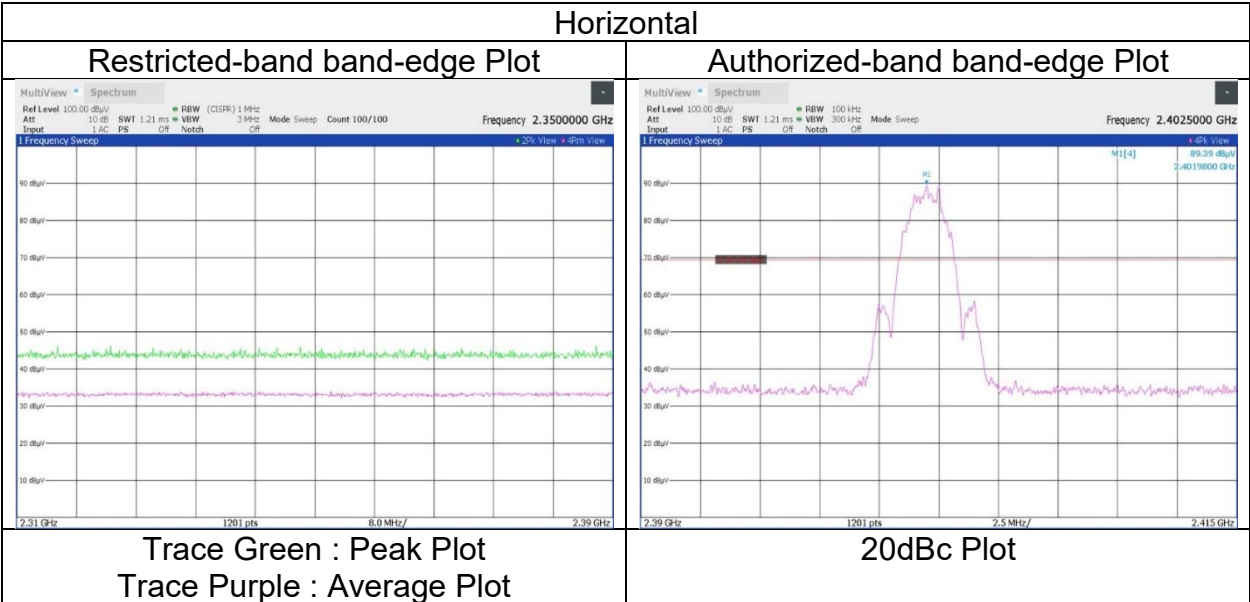
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Radiated Spurious Emission

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	September 28, 2023
Temperature / Humidity	25 deg.C, 54 %RH
Engineer	Shiro Kobayashi (1 GHz -2.8 GHz)
Mode	Tx BT LE 2M-PHY 2402 MHz, Ant 1



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2 WAC2 WAC2 WAC2
Date September 28, 2023 September 26, 2023 September 25, 2023 September 23, 2023
Temperature / Humidity 25 deg.C, 54 %RH 24 deg.C, 54 %RH 25 deg.C, 53 %RH 24 deg.C, 55 %RH
Engineer Shiro Kobayashi Yusuke Tanikawara Makoto Hosaka Makoto Hosaka
(1 GHz -2.8 GHz) (2.8 GHz -10 GHz) (10 GHz -18 GHz) (18 GHz -26.5 GHz)
Mode Tx BT LE 2M-PHY 2440 MHz, Ant 1

(* 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.	4880.000	PK	45.64	31.87	-31.42	-	2.37	48.46	73.9	25.4	188	199	-
Hori.	7320.000	PK	43.81	36.30	-30.79	-	2.37	51.69	73.9	22.2	150	0	-
Hori.	8540.000	PK	44.78	37.02	-30.33	-	2.37	53.84	73.9	20.0	126	189	-
Hori.	9760.000	PK	44.71	37.71	-30.03	-	2.37	54.76	73.9	19.1	150	0	-
Hori.	7320.000	AV	32.71	36.30	-30.79	-	2.37	40.59	53.9	13.3	150	0	Floor Noise
Hori.	9760.000	AV	33.36	37.71	-30.03	-	2.37	43.41	53.9	10.4	150	0	Floor Noise
Vert.	4880.000	PK	45.45	31.87	-31.42	-	2.37	48.27	73.9	25.6	168	105	-
Vert.	7320.000	PK	43.87	36.30	-30.79	-	2.37	51.75	73.9	22.1	150	0	-
Vert.	8540.000	PK	44.92	37.02	-30.33	-	2.37	53.98	73.9	19.9	245	81	-
Vert.	9760.000	PK	44.76	37.71	-30.03	-	2.37	54.81	73.9	19.0	150	0	-
Vert.	7320.000	AV	32.62	36.30	-30.79	-	2.37	40.50	53.9	13.4	150	0	Floor Noise
Vert.	9760.000	AV	33.42	37.71	-30.03	-	2.37	43.47	53.9	10.4	150	0	Floor Noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4880.000	AV	34.47	31.87	-31.42	-	4.84	2.37	42.13	53.9	11.7	-
Hori.	8540.000	AV	33.34	37.02	-30.33	-	4.84	2.37	47.24	53.9	6.6	*1)
Vert.	4880.000	AV	34.55	31.87	-31.42	-	4.84	2.37	42.21	53.9	11.6	-
Vert.	8540.000	AV	33.49	37.02	-30.33	-	4.84	2.37	47.39	53.9	6.5	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Duty factor refer to "Burst rate confirmation" sheet.

*1) 3.5 th harmonic (Not Leakage Power)

Radiated Spurious Emission

Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	WAC2	WAC2	WAC2	WAC2
Date	September 28, 2023	September 26, 2023	September 25, 2023	September 23, 2023
Temperature / Humidity	25 deg.C, 54 %RH	24 deg.C, 54 %RH	25 deg.C, 53 %RH	24 deg.C, 55 %RH
Engineer	Shiro Kobayashi	Yusuke Tanikawara	Makoto Hosaka	Makoto Hosaka
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -18 GHz)	(18 GHz -26.5 GHz)
Mode	Tx BT LE 2M-PHY 2480 MHz, Ant 1			

(* 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.	2483.500	PK	46.97	27.64	-23.93	-	2.37	53.05	73.9	20.8	100	157	-
Hori.	4960.000	PK	48.34	32.11	-31.36	-	2.37	51.46	73.9	22.4	184	203	-
Hori.	7440.000	PK	43.96	36.46	-30.75	-	2.37	52.04	73.9	21.8	150	0	-
Hori.	8680.000	PK	44.54	37.10	-30.31	-	2.37	53.70	73.9	20.2	132	191	-
Hori.	9920.000	PK	44.78	37.72	-29.90	-	2.37	54.97	73.9	18.9	150	0	-
Hori.	7440.000	AV	32.69	36.46	-30.75	-	2.37	40.77	53.9	13.1	150	0	Floor Noise
Hori.	9920.000	AV	33.55	37.72	-29.90	-	2.37	43.74	53.9	10.1	150	0	Floor Noise
Vert.	2483.500	PK	46.57	27.64	-23.93	-	2.37	52.65	73.9	21.2	110	266	-
Vert.	4960.000	PK	48.60	32.11	-31.36	-	2.37	51.72	73.9	22.1	175	111	-
Vert.	7440.000	PK	44.02	36.46	-30.75	-	2.37	52.10	73.9	21.8	150	0	-
Vert.	8680.000	PK	44.68	37.10	-30.31	-	2.37	53.84	73.9	20.0	250	88	-
Vert.	9920.000	PK	44.86	37.72	-29.90	-	2.37	55.05	73.9	18.8	150	0	-
Vert.	7440.000	AV	32.72	36.46	-30.75	-	2.37	40.80	53.9	13.1	150	0	Floor Noise
Vert.	9920.000	AV	33.56	37.72	-29.90	-	2.37	43.75	53.9	10.1	150	0	Floor Noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	34.71	27.64	-23.93	-	4.84	2.37	45.63	53.9	8.2	*1)
Hori.	4960.000	AV	37.65	32.11	-31.36	-	4.84	2.37	45.61	53.9	8.2	-
Hori.	8680.000	AV	33.54	37.10	-30.31	-	4.84	2.37	47.54	53.9	6.3	*2)
Vert.	2483.500	AV	34.68	27.64	-23.93	-	4.84	2.37	45.60	53.9	8.3	*1)
Vert.	4960.000	AV	38.28	32.11	-31.36	-	4.84	2.37	46.24	53.9	7.6	-
Vert.	8680.000	AV	33.66	37.10	-30.31	-	4.84	2.37	47.66	53.9	6.2	*2)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.94 m / 3.0 m) = 2.37 dB

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

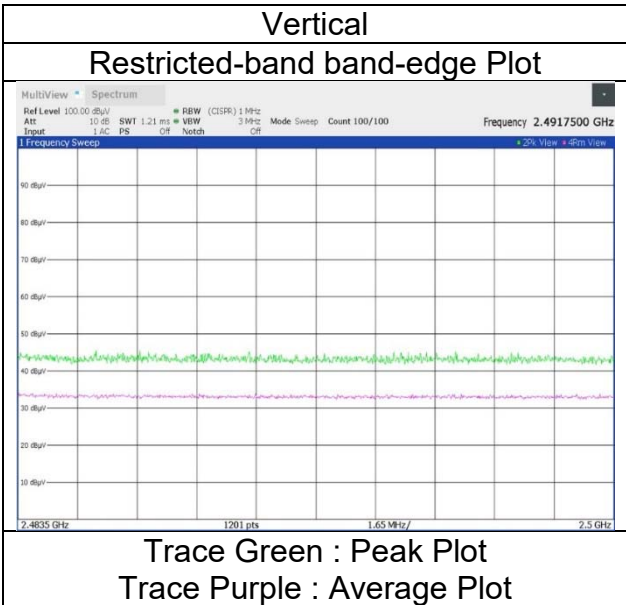
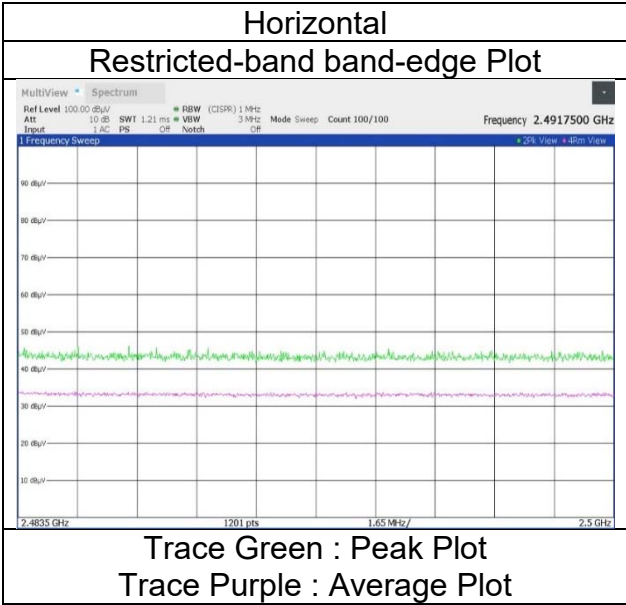
Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

*2) 3.5 th harmonic (Not Leakage Power)

Radiated Spurious Emission

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	September 28, 2023
Temperature / Humidity	25 deg.C, 54 %RH
Engineer	Shiro Kobayashi
	(1 GHz -2.8 GHz)
Mode	Tx BT LE 2M-PHY 2480 MHz, Ant 1



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2 WAC2 WAC2
Date May 30, 2024 April 16, 2024 April 17, 2024
Temperature / Humidity 24 deg.C, 56 %RH 23 deg.C, 47 %RH 24 deg.C, 50 %RH
Engineer Yusuke Tanikawara Yosuke Murakami Makoto Hosaka
(1 GHz -10 GHz) (10 GHz -18 GHz) (18 GHz -26.5 GHz)
Mode Tx BT LE 2M-PHY 2480 MHz With WLAN Tx 11ax-20(SDM) 5180 MHz, Ant 0

(* 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.	2483.500	PK	50.75	27.80	-27.42	-	2.37	53.50	73.9	20.4	314	131	-
Hori.	4960.000	PK	47.83	32.23	-24.87	-	2.37	57.56	73.9	16.3	236	155	-
Hori.	7440.000	PK	47.54	36.81	-32.71	-	2.37	54.01	73.9	19.8	150	0	Floor noise
Hori.	8680.000	PK	46.96	37.75	-31.20	-	2.37	55.88	73.9	18.0	150	0	Floor noise
Hori.	9920.000	PK	45.55	38.04	-29.52	-	2.37	56.44	73.9	17.4	150	0	Floor noise
Hori.	7440.000	AV	35.82	36.81	-32.71	-	2.37	42.29	53.9	11.6	150	0	Floor noise
Hori.	8680.000	AV	35.06	37.75	-31.20	-	2.37	43.98	53.9	9.9	150	0	Floor noise
Hori.	9920.000	AV	34.19	38.04	-29.52	-	2.37	45.08	53.9	8.8	150	0	Floor noise
Vert.	2483.500	PK	47.95	27.80	-27.42	-	2.37	50.70	73.9	23.2	100	61	-
Vert.	4960.000	PK	47.78	32.23	-24.87	-	2.37	57.51	73.9	16.3	386	98	-
Vert.	7440.000	PK	47.42	36.81	-32.71	-	2.37	53.89	73.9	20.0	150	0	Floor noise
Vert.	8680.000	PK	46.83	37.75	-31.20	-	2.37	55.75	73.9	18.1	150	0	Floor noise
Vert.	9920.000	PK	45.54	38.04	-29.52	-	2.37	56.43	73.9	17.4	150	0	Floor noise
Vert.	7440.000	AV	35.91	36.81	-32.71	-	2.37	42.38	53.9	11.5	150	0	Floor noise
Vert.	8680.000	AV	35.16	37.75	-31.20	-	2.37	44.08	53.9	9.8	150	0	Floor noise
Vert.	9920.000	AV	34.26	38.04	-29.52	-	2.37	45.15	53.9	8.7	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	36.81	27.80	-27.42	-	4.84	2.37	44.40	53.9	9.5	*1)
Hori.	4960.000	AV	36.19	32.23	-24.87	-	4.84	2.37	50.76	53.9	3.1	-
Vert.	2483.500	AV	35.99	27.80	-27.42	-	4.84	2.37	43.58	53.9	10.3	*1)
Vert.	4960.000	AV	36.08	32.23	-24.87	-	4.84	2.37	50.65	53.9	3.2	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier)) + Duty factor + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

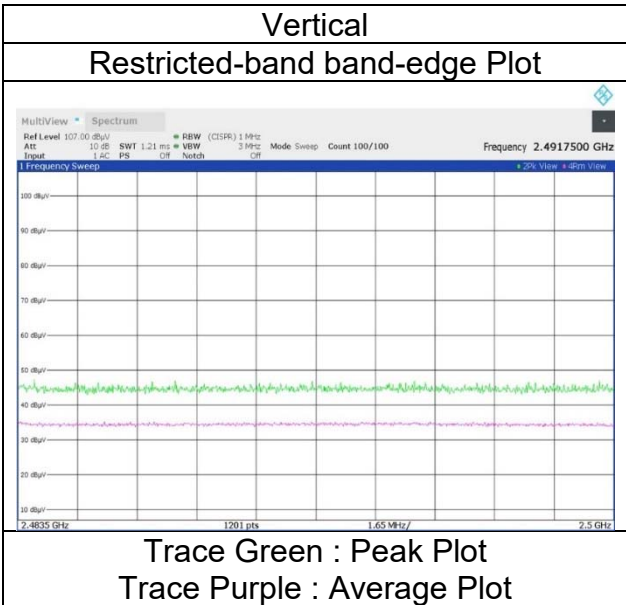
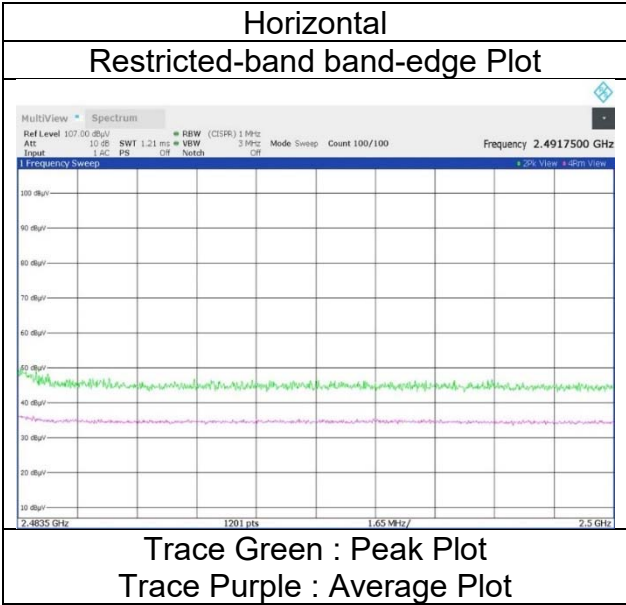
10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

Duty factor refer to "Burst rate confirmation" sheet.

*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	May 30, 2024
Temperature / Humidity	24 deg.C, 56 %RH
Engineer	Yusuke Tanikawara (1 GHz -2.8 GHz)
Mode	Tx BT LE 2M-PHY 2480 MHz With WLAN Tx 11ax-20(SDM) 5180 MHz, Ant 0



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber WAC2
Date April 22, 2024
Temperature / Humidity 22 deg.C, 55 %RH
Engineer Kouki Yamada
(Below 1 GHz)
Mode Tx BT LE coded S-8 2402 MHz WLAN Tx 11ax-20(SDM) 5180 MHz, Ant 0

(* 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.	83.885	QP	44.00	8.95	6.82	33.07	0.00	26.70	40.0	13.3	400	120	-
Hori.	480.020	QP	42.10	17.19	7.92	32.30	0.00	34.91	46.0	11.0	182	64	-
Vert.	35.160	QP	44.80	12.46	6.26	32.67	0.00	30.85	40.0	9.1	100	211	-
Vert.	55.559	QP	44.60	9.72	6.39	32.96	0.00	27.75	40.0	12.2	100	228	-
Vert.	67.348	QP	45.60	9.35	6.40	33.04	0.00	28.31	40.0	11.6	100	110	-
Vert.	70.229	QP	46.50	9.26	6.45	33.05	0.00	29.16	40.0	10.8	100	83	-
Vert.	86.649	QP	39.70	9.03	6.87	33.08	0.00	22.52	40.0	17.4	100	251	-
Vert.	102.276	QP	47.30	9.59	6.90	33.08	0.00	30.71	43.5	12.7	100	77	-
Vert.	216.000	QP	42.70	11.20	7.21	32.92	0.00	28.19	43.5	15.3	100	183	-
Vert.	480.014	QP	41.30	17.19	7.92	32.30	0.00	34.11	46.0	11.8	100	169	-

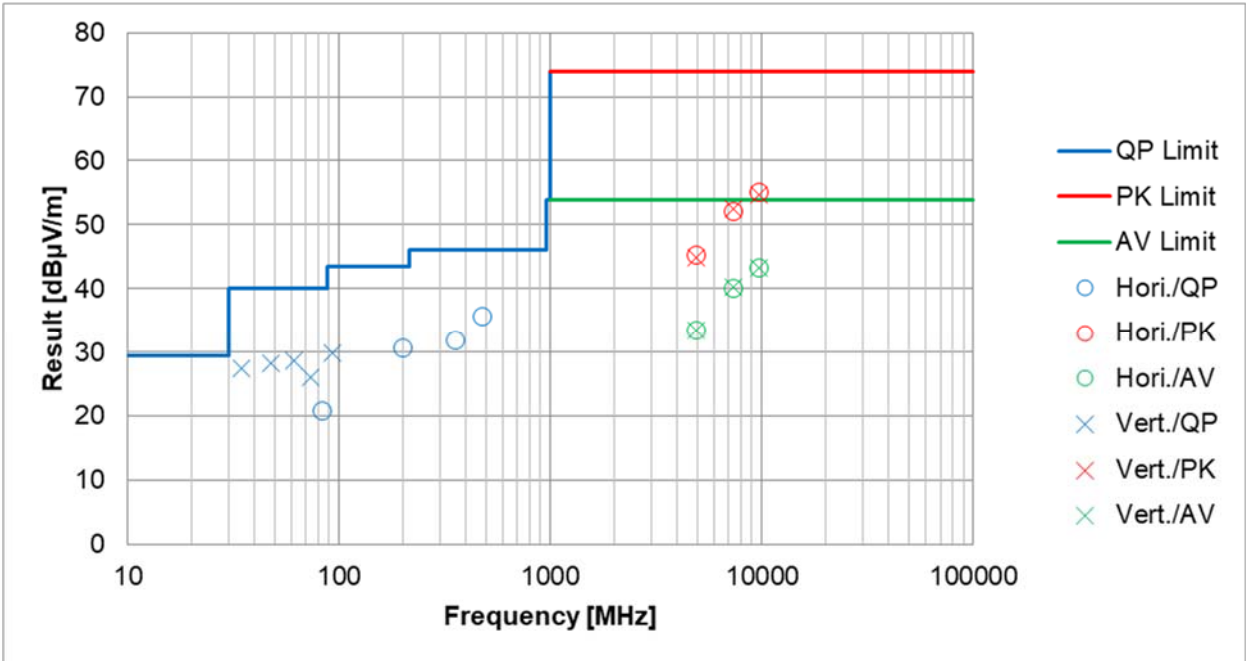
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.37\text{ dB}$

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

Radiated Spurious Emission
(Plot data (For WLAN), Worst case mode for Power Density)

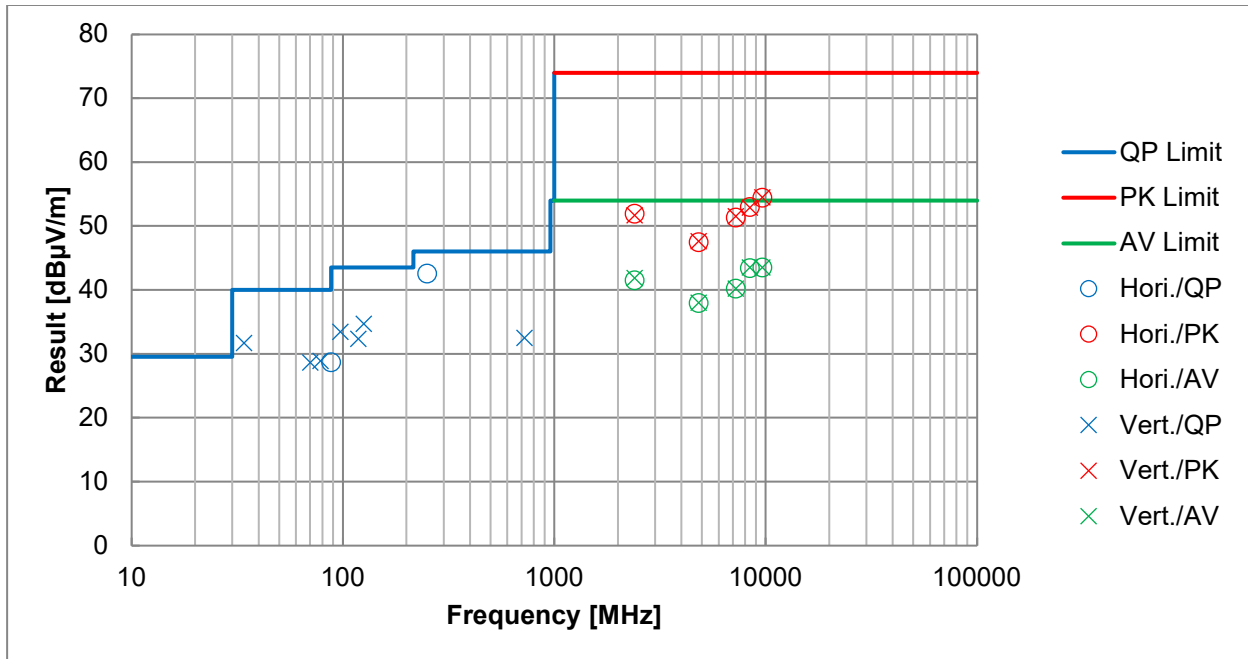
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC2
Date	May 4, 2024
Temperature / Humidity	23 deg.C, 49 %RH
Engineer	Miku Ikudome
	(30 MHz -26.5 GHz)
Mode	Tx 11ax-20(OFDMA)(SISO) 26-tone RU 2437 MHz, Ant 2



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

Radiated Spurious Emission (Plot data (For BT LE), Worst case mode for Maximum Peak Output Power)

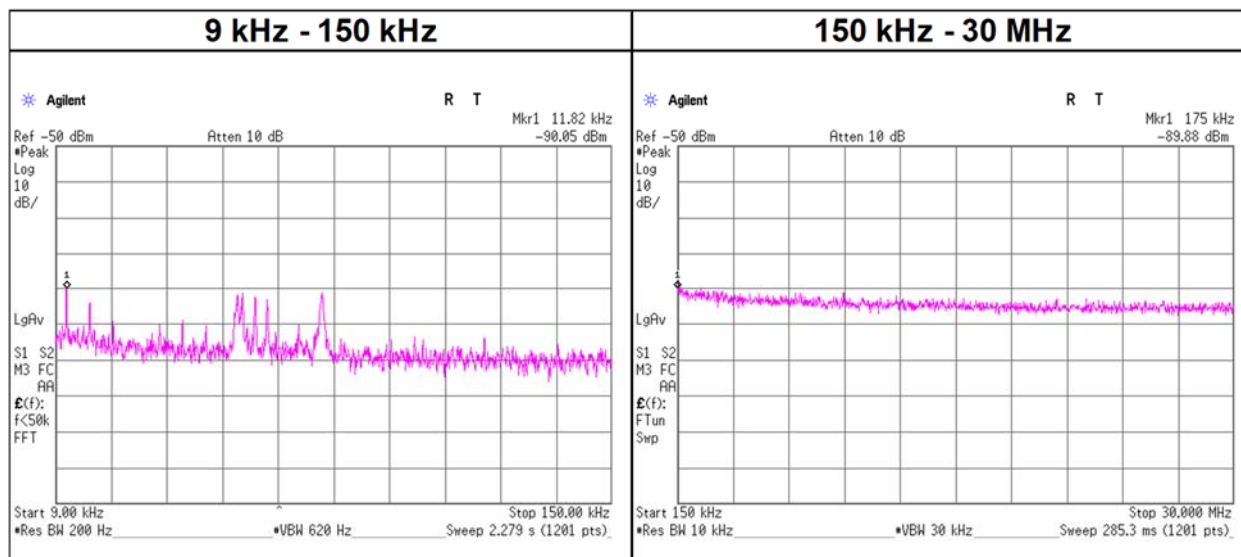
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	WAC2	WAC2	WAC2	WAC2	WAC2
Date	September 28, 2023	September 28, 2023	September 26, 2023	September 25, 2023	September 23, 2023
Temperature / Humidity	27 deg.C, 46 %RH	25 deg.C, 54 %RH	24 deg.C, 54 %RH	25 deg.C, 53 %RH	24 deg.C, 55 %RH
Engineer	Kouki Yamada	Shiro Kobayashi	Yusuke Tanikawara	Makoto Hosaka	Makoto Hosaka
	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -18 GHz)	(18 GHz -26.5 GHz)
Mode	Tx BT LE 1M-PHY 2402 MHz, Ant 1				



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

Conducted Spurious Emission

Test place Shonan EMC Lab. No.1 Measurement Room
Date April 30, 2024
Temperature / Humidity 24 deg. C / 57 % RH
Engineer Kazuya Noda
Mode Tx 11ax-20 (OFDM)(SISO), 2412 MHz, Ant 0



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain * [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
11.82	-90.1	0.0	9.9	2.0	1.0	-78.1	300	6.0	-16.9	46.1	63.0	-
175.00	-89.9	0.0	9.9	2.0	1.0	-78.0	300	6.0	-16.7	22.7	39.4	-

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

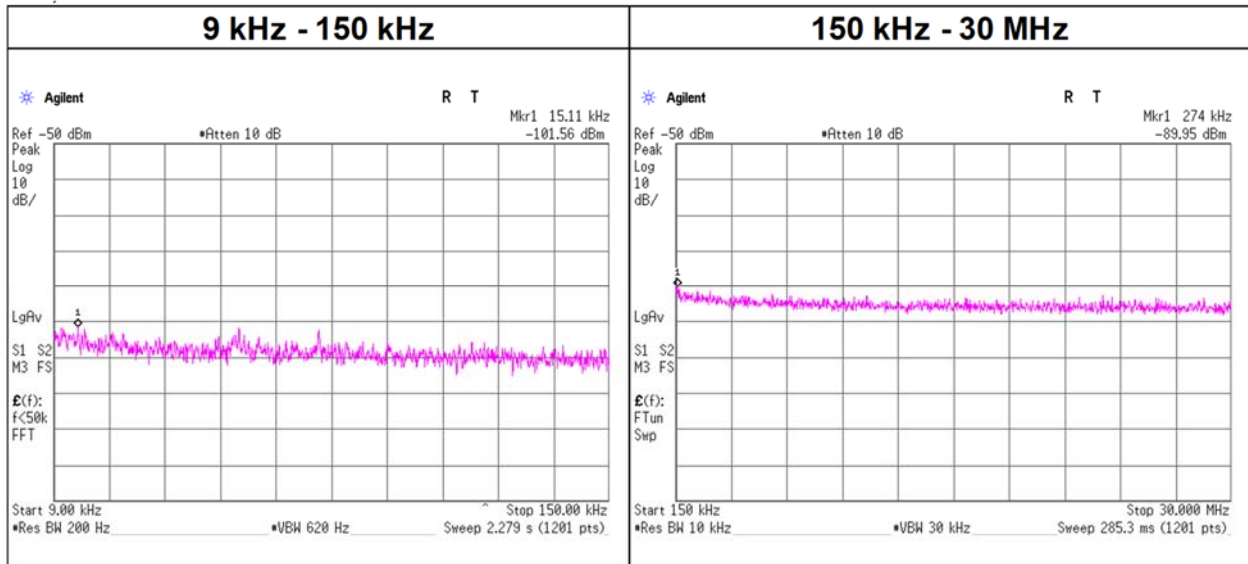
$EIRP [dBm] = Reading [dBm] + Cable\ loss [dB] + Attenuator\ Loss [dB] + Antenna\ gain [dBi] + 10 * \log (N)$

N: Number of output

*2.0 dBi was applied to the test result based on ANSI C63.10 since antenna gain was less than 2.0 dBi.

Conducted Spurious Emission

Test place Shonan EMC Lab. No.1 Measurement Room
Date September 27, 2023
Temperature / Humidity 24 deg. C / 51 % RH
Engineer Kazuya Noda
Mode Tx BT LE, coded S-8, 2402 MHz, Ant 0



Frequency	Reading	Cable Loss	Attenuator Loss	Antenna Gain *	N (Number of Output)	EIRP	Distance	Ground bounce	E (field strength)	Limit	Margin	Remark
[kHz]	[dBm]	[dB]	[dB]	[dBi]		[dBm]	[m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
15.11	-101.6	0.0	9.9	2.0	1.0	-89.6	300	6.0	-28.4	44.0	72.4	-
274.00	-90.0	0.0	9.9	2.0	1.0	-78.0	300	6.0	-16.8	18.8	35.6	-

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

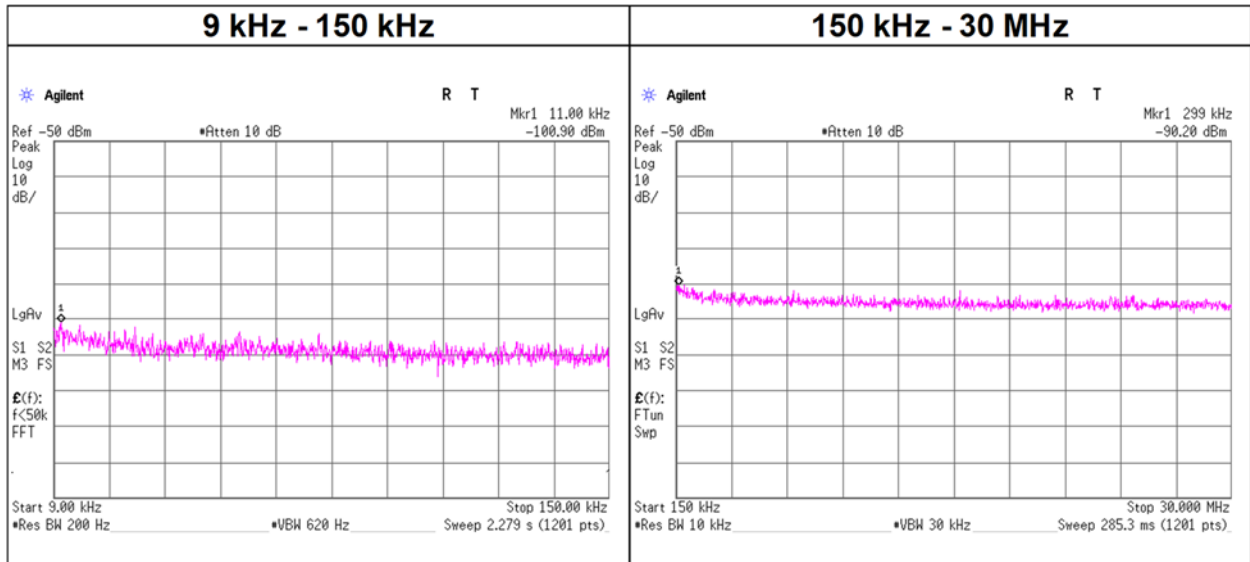
$$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log (N)$$

N: Number of output

*2.0 dBi was applied to the test result based on ANSI C63.10 since antenna gain was less than 2.0 dBi.

Conducted Spurious Emission

Test place Shonan EMC Lab. No.1 Measurement Room
Date September 27, 2023
Temperature / Humidity 24 deg. C / 51 % RH
Engineer Kazuya Noda
Mode Tx BT LE, coded S-8, 2440 MHz, Ant 0



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain * [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
11.00	-100.9	0.0	9.9	2.0	1.0	-89.0	300	6.0	-27.7	46.7	74.4	-
299.00	-90.2	0.0	9.9	2.0	1.0	-78.3	300	6.0	-17.0	18.0	35.0	-

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

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

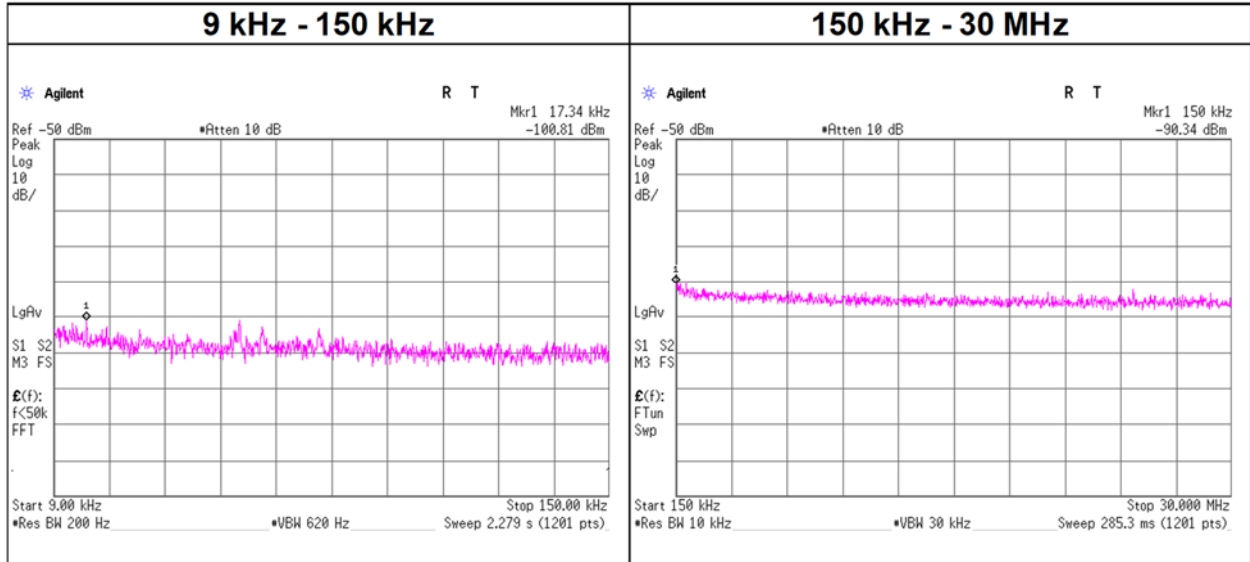
N: Number of output

*2.0 dBi was applied to the test result based on ANSI C63.10 since antenna gain was less than 2.0 dBi.

Conducted Spurious Emission

Test place
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab. No.1 Measurement Room
September 27, 2023
24 deg. C / 51 % RH
Kazuya Noda
Tx BT LE, coded S-8, 2480 MHz, Ant 0



Frequency	Reading	Cable	Attenuator	Antenna	N	EIRP	Distance	Ground	E	Limit	Margin	Remark
[kHz]	[dBm]	Loss	Loss	Gain *	(Number	[dBm]	[m]	bounce	(field strength)	[dBuV/m]	[dB]	
		[dB]	[dB]	[dBi]	of Output)			[dB]	[dBuV/m]			
17.34	-100.8	0.0	9.9	2.0	1.0	-88.9	300	6.0	-27.6	42.8	70.4	-
150.00	-90.3	0.0	9.9	2.0	1.0	-78.4	300	6.0	-17.2	24.0	41.2	-

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

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

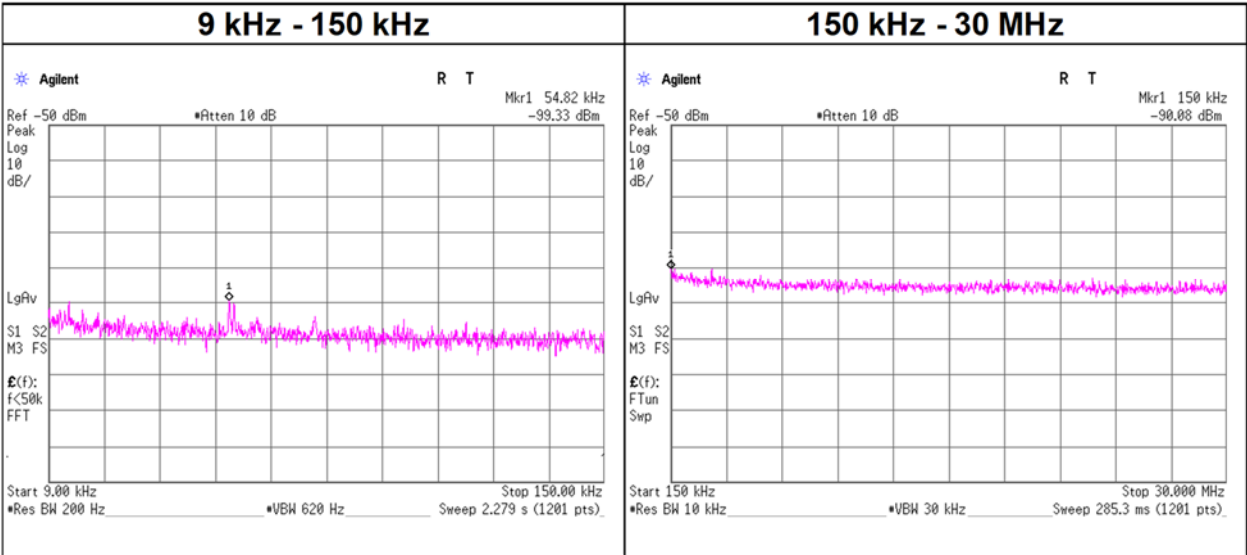
N: Number of output

*2.0 dBi was applied to the test result based on ANSI C63.10 since antenna gain was less than 2.0 dBi.

Conducted Spurious Emission

Test place
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab. No.1 Measurement Room
September 27, 2023
24 deg. C / 51 % RH
Kazuya Noda
Tx BT LE, 2M-PHY, 2402 MHz, Ant 0

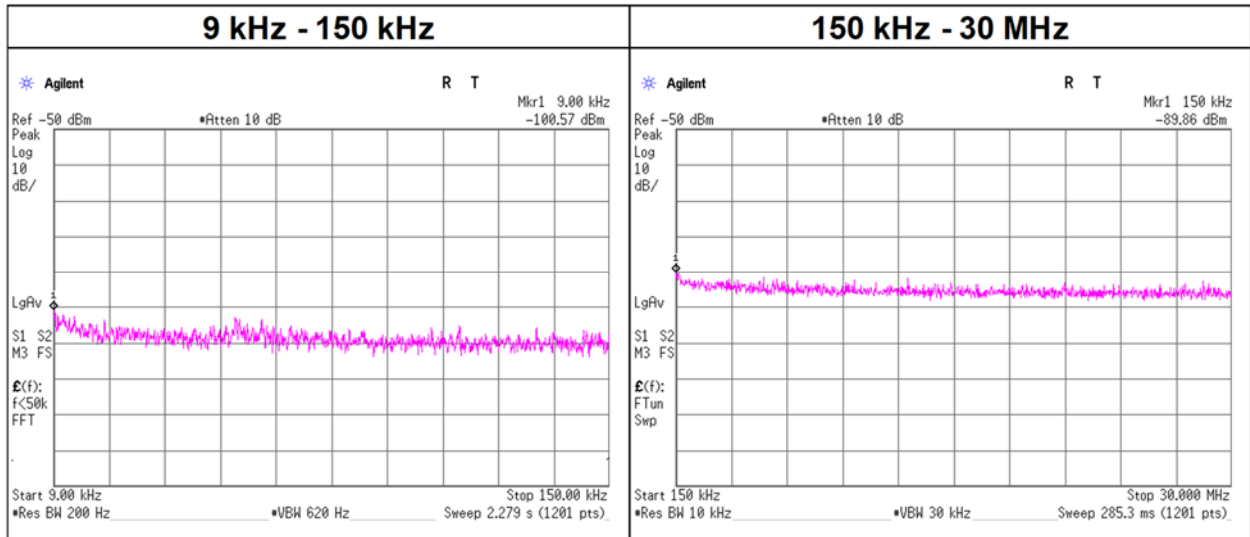


Frequency	Reading	Cable Loss	Attenuator Loss	Antenna Gain *	N (Number of Output)	EIRP	Distance	Ground bounce	E (field strength)	Limit	Margin	Remark
[kHz]	[dBm]	[dB]	[dB]	[dBi]		[dBm]	[m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
54.82	-99.3	0.0	9.9	2.0	1.0	-87.4	300	6.0	-26.2	32.8	59.0	-
150.00	-90.1	0.0	9.9	2.0	1.0	-78.2	300	6.0	-16.9	24.0	40.9	-

$E \text{ [dBuV/m]} = \text{EIRP [dBm]} - 20 \log (\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$
 $\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log (N)$
N: Number of output
*2.0 dBi was applied to the test result based on ANSI C63.10 since antenna gain was less than 2.0 dBi.

Conducted Spurious Emission

Test place Shonan EMC Lab. No.1 Measurement Room
Date September 27, 2023
Temperature / Humidity 24 deg. C / 51 % RH
Engineer Kazuya Noda
Mode Tx BT LE, 2M-PHY, 2440 MHz, Ant 0



Frequency	Reading	Cable Loss	Attenuator Loss	Antenna Gain *	N (Number of Output)	EIRP	Distance	Ground bounce	E (field strength)	Limit	Margin	Remark
[kHz]	[dBm]	[dB]	[dB]	[dBi]		[dBm]	[m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
9.00	-100.6	0.0	9.9	2.0	1.0	-88.7	300	6.0	-27.4	48.5	75.9	-
150.00	-89.9	0.0	9.9	2.0	1.0	-77.9	300	6.0	-16.7	24.0	40.7	-

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

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

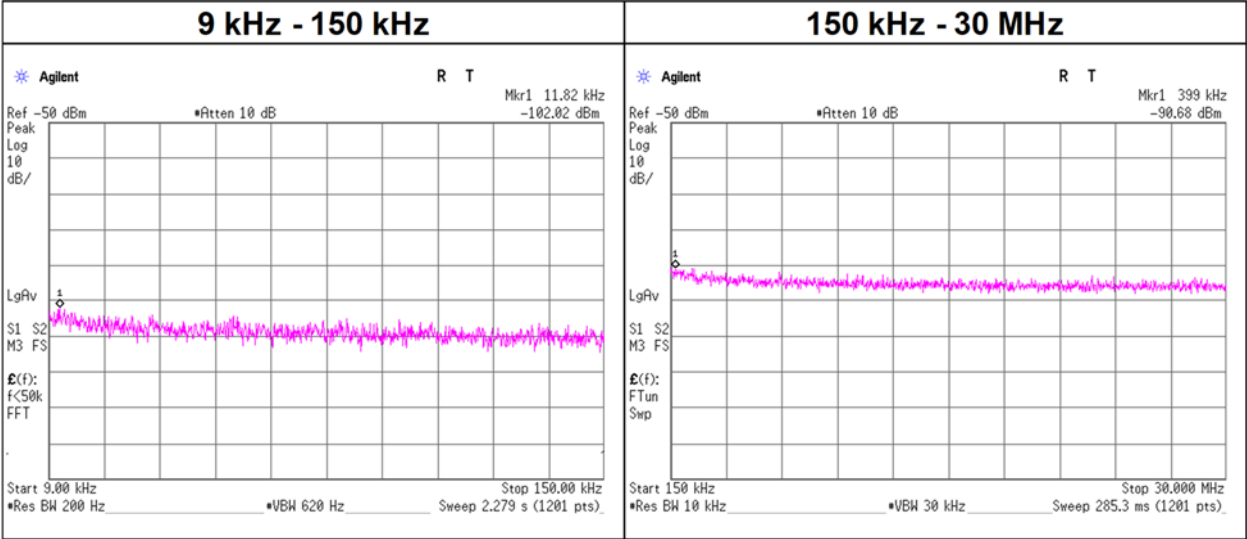
N: Number of output

*2.0 dBi was applied to the test result based on ANSI C63.10 since antenna gain was less than 2.0 dBi.

Conducted Spurious Emission

Test place
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab. No.1 Measurement Room
September 27, 2023
24 deg. C / 51 % RH
Kazuya Noda
Tx BT LE, 2M-PHY, 2480 MHz, Ant 0



Frequency	Reading	Cable Loss	Attenuator Loss	Antenna Gain *	N (Number of Output)	EIRP	Distance	Ground bounce	E (field strength)	Limit	Margin	Remark
[kHz]	[dBm]	[dB]	[dB]	[dBi]		[dBm]	[m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
11.82	-102.0	0.0	9.9	2.0	1.0	-90.1	300	6.0	-28.8	46.1	74.9	-
399.00	-90.7	0.0	9.9	2.0	1.0	-78.8	300	6.0	-17.5	15.5	33.0	-

$E\text{ [dBuV/m]} = EIRP\text{ [dBm]} - 20\log(\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8\text{ [dBuV/m]}$
 $EIRP\text{ [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$
N: Number of output
*2.0 dBi was applied to the test result based on ANSI C63.10 since antenna gain was less than 2.0 dBi.

Power Density

Test place	Shonan EMC Lab. No.1 Measurement Room
Date	September 27, 2023
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Yusuke Tanikawara
Mode	Tx

11b Antenna: Ant 0

Frequency [MHz]	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm/3 kHz]	Limit [dBm/3 kHz]	Margin [dB]
2412	-21.22	1.64	9.98	-9.60	8.00	17.60
2437	-21.20	1.65	9.98	-9.57	8.00	17.57
2462	-21.32	1.65	9.98	-9.69	8.00	17.69
2467	-30.58	1.65	9.98	-18.95	8.00	26.95
2472	-30.42	1.65	9.98	-18.79	8.00	26.79

11g Antenna: Ant 0

Frequency [MHz]	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm/3 kHz]	Limit [dBm/3 kHz]	Margin [dB]
2412	-23.91	1.64	9.98	-12.29	8.00	20.29
2437	-24.69	1.65	9.98	-13.06	8.00	21.06
2462	-24.47	1.65	9.98	-12.84	8.00	20.84
2467	-33.08	1.65	9.98	-21.45	8.00	29.45
2472	-33.00	1.65	9.98	-21.37	8.00	29.37

11n-20 (SISO) Antenna: Ant 0

Frequency [MHz]	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm/3 kHz]	Limit [dBm/3 kHz]	Margin [dB]
2412	-23.39	1.64	9.98	-11.77	8.00	19.77
2437	-24.64	1.65	9.98	-13.01	8.00	21.01
2462	-23.05	1.65	9.98	-11.42	8.00	19.42
2467	-33.24	1.65	9.98	-21.61	8.00	29.61
2472	-32.63	1.65	9.98	-21.00	8.00	29.00

Sample Calculation:

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

Power Density

Test place Shonan EMC Lab. No.1 Measurement Room
Date April 12, 2024
Temperature / Humidity 24 deg. C / 31 % RH
Engineer Kazuya Noda
Mode Tx

11ax-20(OFDM)(SISO) Antenna : Ant 0

Frequency [MHz]	Reading [dBm / 3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm / 3 kHz]	Limit [dBm / 3 kHz]	Margin [dB]
2412	-24.15	1.63	9.98	-12.54	8.00	20.54
2437	-25.19	1.63	9.98	-13.58	8.00	21.58
2462	-24.98	1.64	9.98	-13.36	8.00	21.36
2467	-33.21	1.64	9.98	-21.59	8.00	29.59
2472	-33.01	1.64	9.98	-21.39	8.00	29.39

11ax-20(OFDMA)(SISO) RU Type: 26-tone RU Antenna : Ant 0

Frequency [MHz]	RU Index	Reading [dBm / 3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm / 3 kHz]	Limit [dBm / 3 kHz]	Margin [dB]
2412	0	-20.31	1.63	9.98	-8.70	8.00	16.70
	4	-19.41	1.63	9.98	-7.80	8.00	15.80
	8	-19.44	1.63	9.98	-7.83	8.00	15.83
2437	0	-20.21	1.63	9.98	-8.60	8.00	16.60
	4	-19.16	1.63	9.98	-7.55	8.00	15.55
	8	-18.63	1.63	9.98	-7.02	8.00	15.02
2462	0	-20.60	1.64	9.98	-8.98	8.00	16.98
	4	-19.57	1.64	9.98	-7.95	8.00	15.95
	8	-19.20	1.64	9.98	-7.58	8.00	15.58
2467	0	-25.61	1.64	9.98	-13.99	8.00	21.99
	4	-26.56	1.64	9.98	-14.94	8.00	22.94
	8	-25.84	1.64	9.98	-14.22	8.00	22.22
2472	0	-25.34	1.64	9.98	-13.72	8.00	21.72
	4	-26.16	1.64	9.98	-14.54	8.00	22.54
	8	-26.03	1.64	9.98	-14.41	8.00	22.41

Sample Calculation:

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

Power Density

Test place Shonan EMC Lab. No.1 Measurement Room
Date April 15, 2024
Temperature / Humidity 24 deg. C / 37 % RH
Engineer Kazuya Noda
Mode Tx

11ax-20(OFDMA)(SISO) RU Type: 52-tone RU Antenna : Ant 0

Frequency [MHz]	RU Index	Reading [dBm / 3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm / 3 kHz]	Limit [dBm / 3 kHz]	Margin [dB]
2412	37	-19.93	1.63	9.98	-8.32	8.00	16.32
	38	-19.95	1.63	9.98	-8.34	8.00	16.34
	40	-19.56	1.63	9.98	-7.95	8.00	15.95
2437	37	-19.11	1.63	9.98	-7.50	8.00	15.50
	38	-19.77	1.63	9.98	-8.16	8.00	16.16
	40	-20.03	1.63	9.98	-8.42	8.00	16.42
2462	37	-20.45	1.64	9.98	-8.83	8.00	16.83
	38	-20.17	1.64	9.98	-8.55	8.00	16.55
	40	-19.55	1.64	9.98	-7.93	8.00	15.93
2467	37	-27.88	1.64	9.98	-16.26	8.00	24.26
	38	-27.72	1.64	9.98	-16.10	8.00	24.10
	40	-28.62	1.64	9.98	-17.00	8.00	25.00
2472	37	-28.75	1.64	9.98	-17.13	8.00	25.13
	38	-29.47	1.64	9.98	-17.85	8.00	25.85
	40	-28.07	1.64	9.98	-16.45	8.00	24.45

11ax-20(OFDMA)(SISO) RU Type: 106-tone RU Antenna : Ant 0

Frequency [MHz]	RU Index	Reading [dBm / 3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm / 3 kHz]	Limit [dBm / 3 kHz]	Margin [dB]
2412	53	-22.19	1.63	9.98	-10.58	8.00	18.58
	54	-22.25	1.63	9.98	-10.64	8.00	18.64
2437	53	-22.71	1.63	9.98	-11.10	8.00	19.10
	54	-21.66	1.63	9.98	-10.05	8.00	18.05
2462	53	-22.46	1.64	9.98	-10.84	8.00	18.84
	54	-22.03	1.64	9.98	-10.41	8.00	18.41
2467	53	-31.81	1.64	9.98	-20.19	8.00	28.19
	54	-31.27	1.64	9.98	-19.65	8.00	27.65
2472	53	-31.93	1.64	9.98	-20.31	8.00	28.31
	54	-31.20	1.64	9.98	-19.58	8.00	27.58

11ax-20(OFDMA)(SISO) RU Type: 242-tone RU Antenna : Ant 0

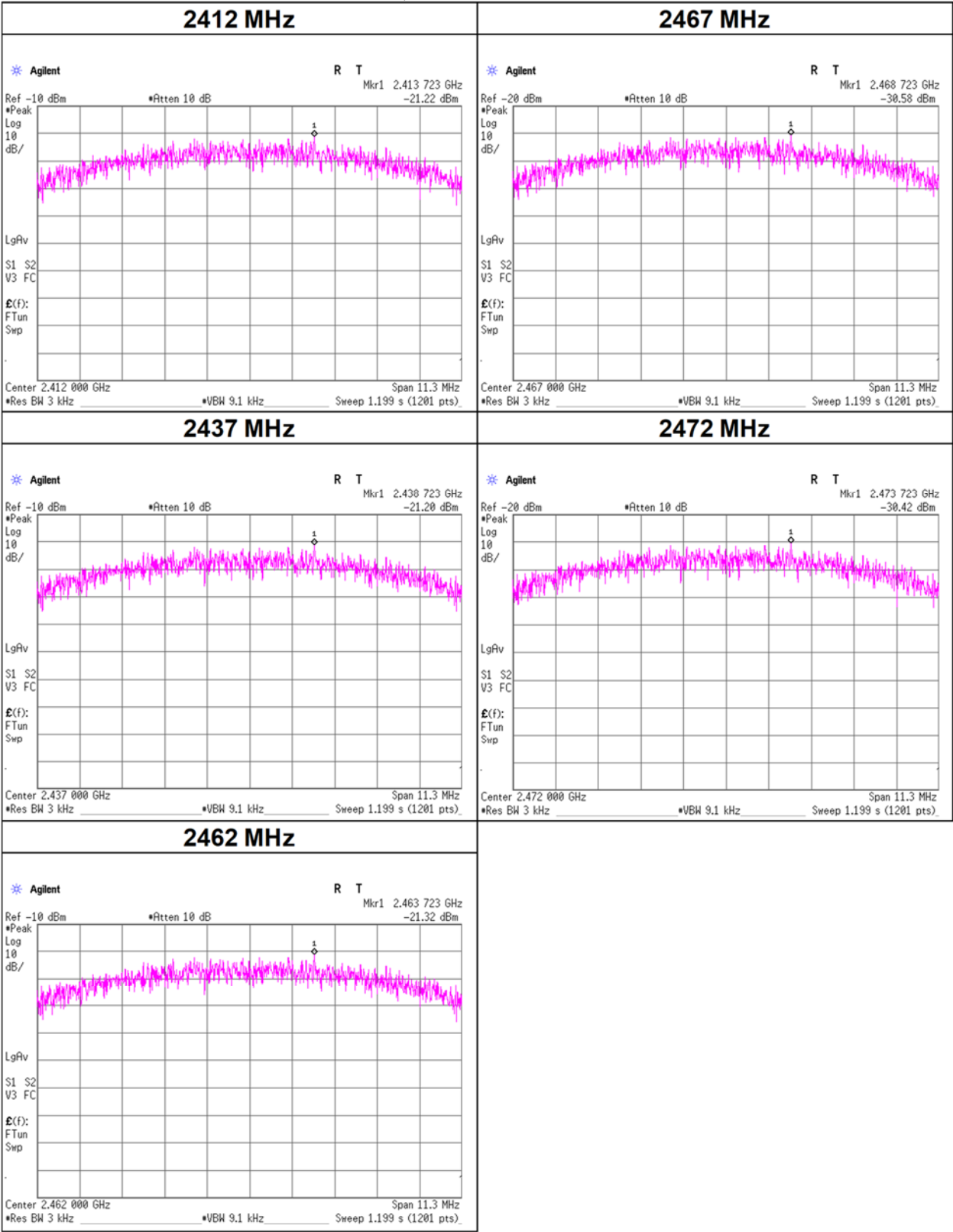
Frequency [MHz]	RU Index	Reading [dBm / 3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm / 3 kHz]	Limit [dBm / 3 kHz]	Margin [dB]
2412	61	-22.86	1.63	9.98	-11.25	8.00	19.25
2437	61	-21.97	1.63	9.98	-10.36	8.00	18.36
2462	61	-23.81	1.64	9.98	-12.19	8.00	20.19
2467	61	-31.30	1.64	9.98	-19.68	8.00	27.68
2472	61	-32.47	1.64	9.98	-20.85	8.00	28.85

Sample Calculation:

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

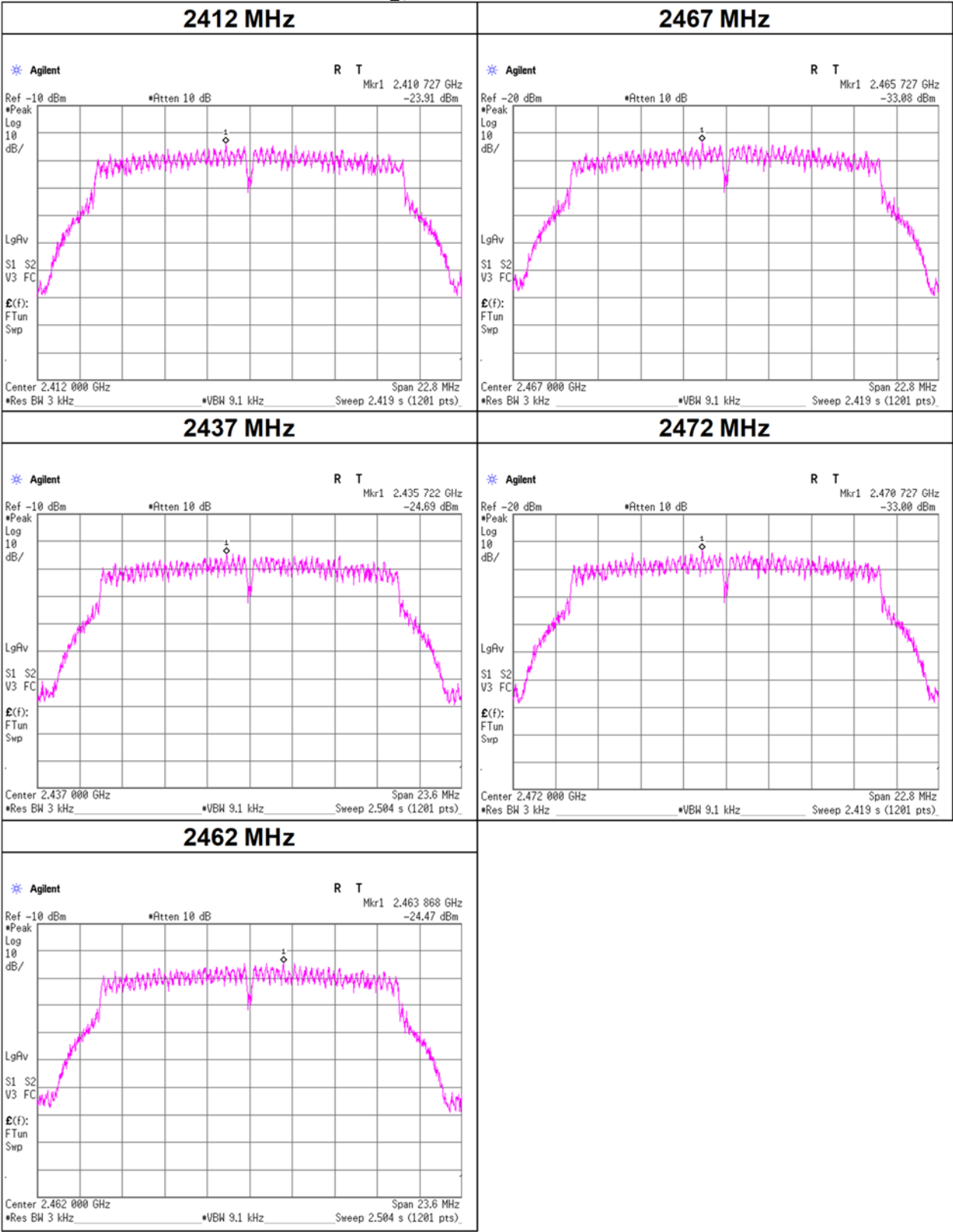
Power Density

11b, Antenna : Ant 0



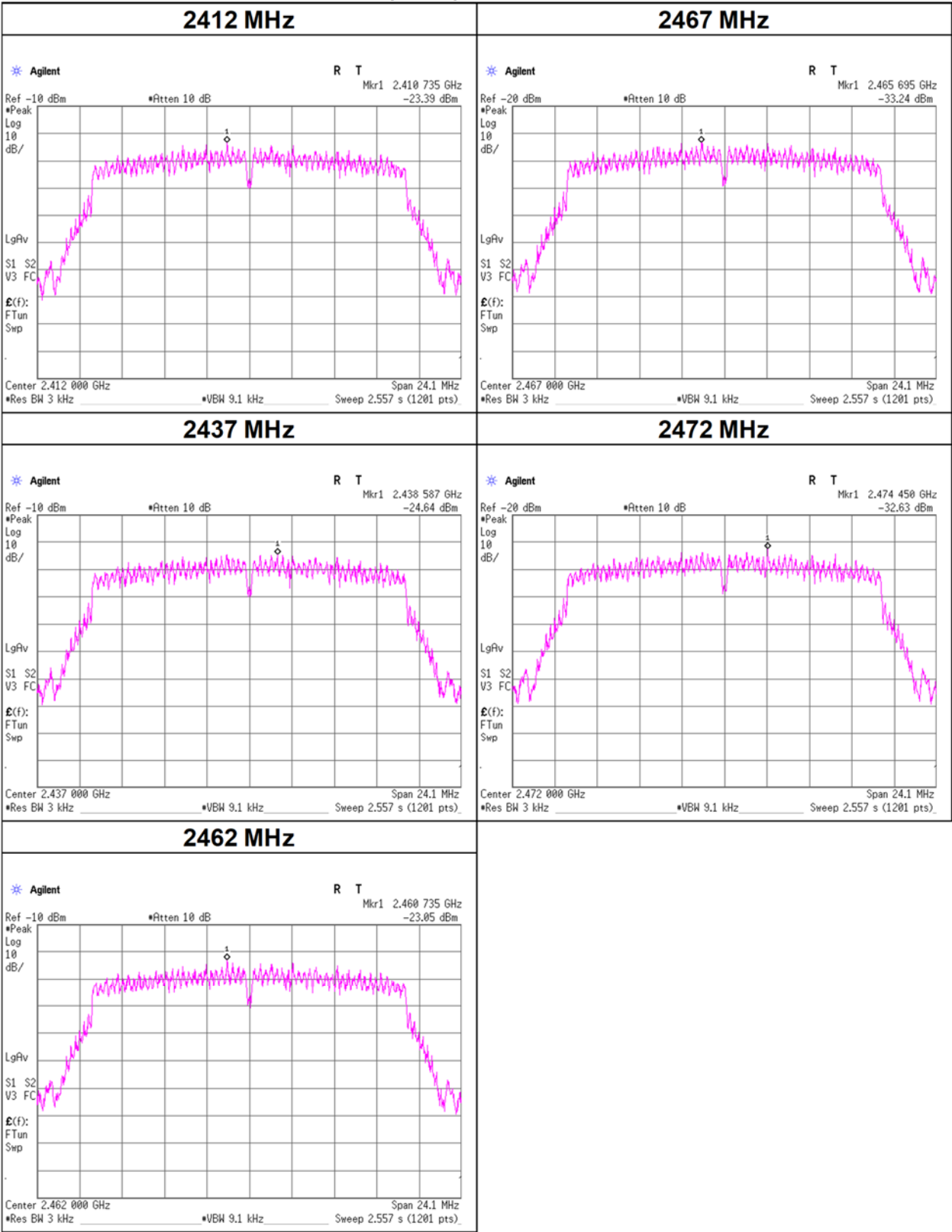
Power Density

11g, Antenna : Ant 0



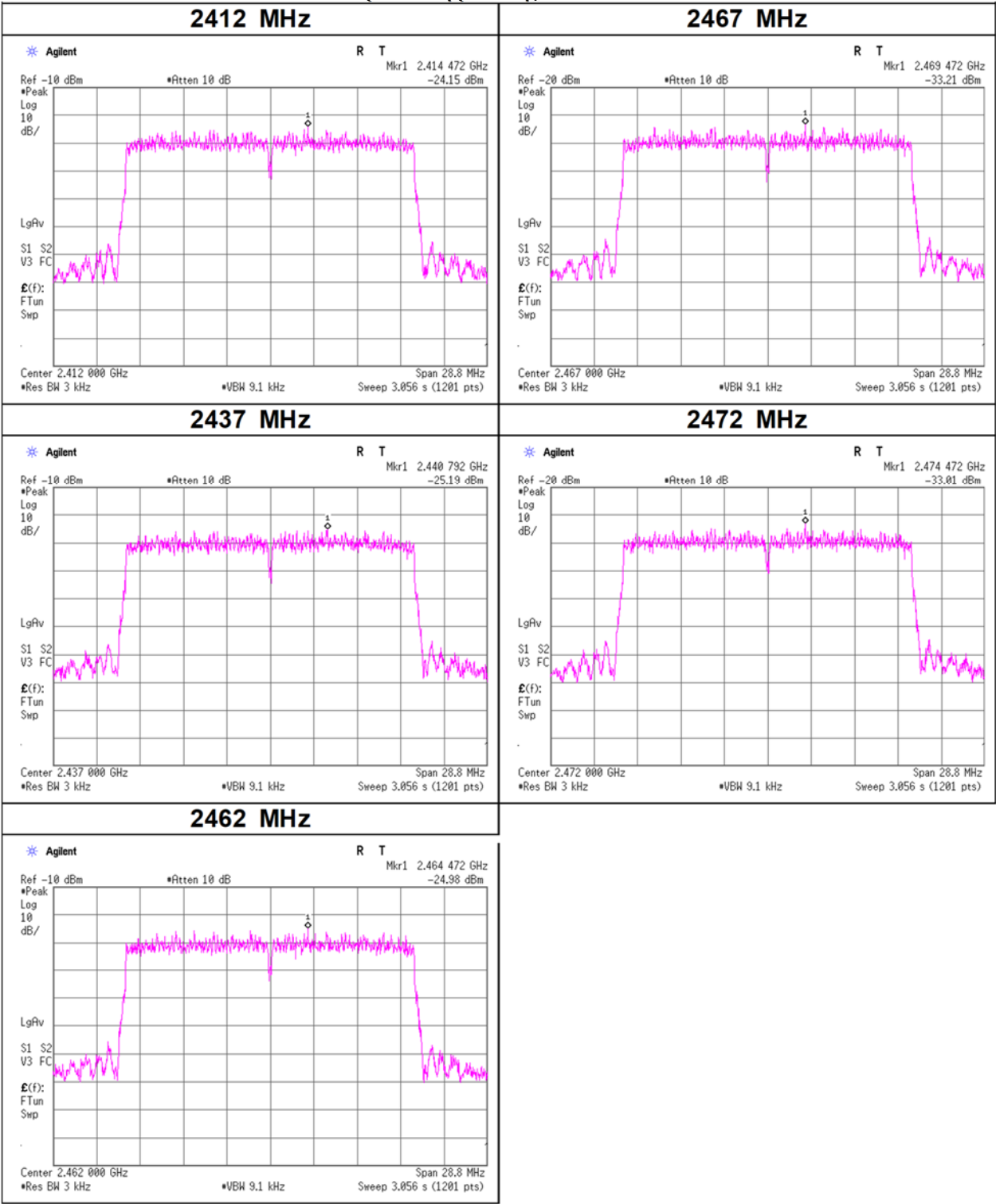
Power Density

11n-20 (SISO), Antenna : Ant 0



Power Density

11ax-20 (OFDM)(SISO), Antenna : Ant 0



Power Density

11ax-20(OFDMA)(SISO), 26-tone RU, Antenna : Ant 0

