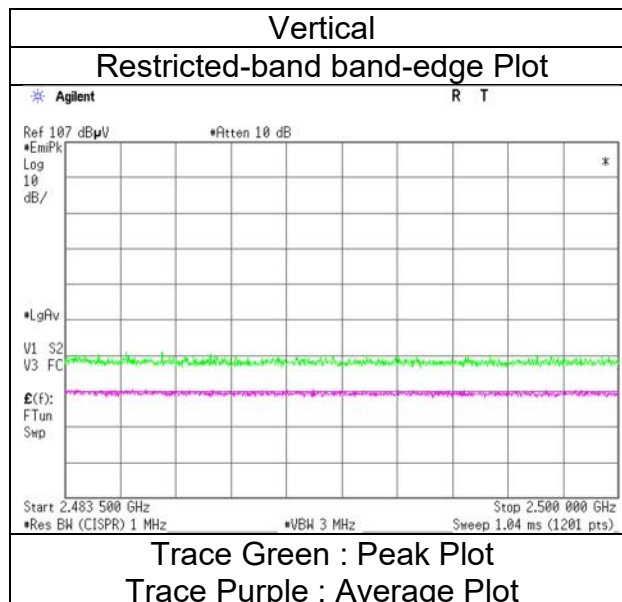
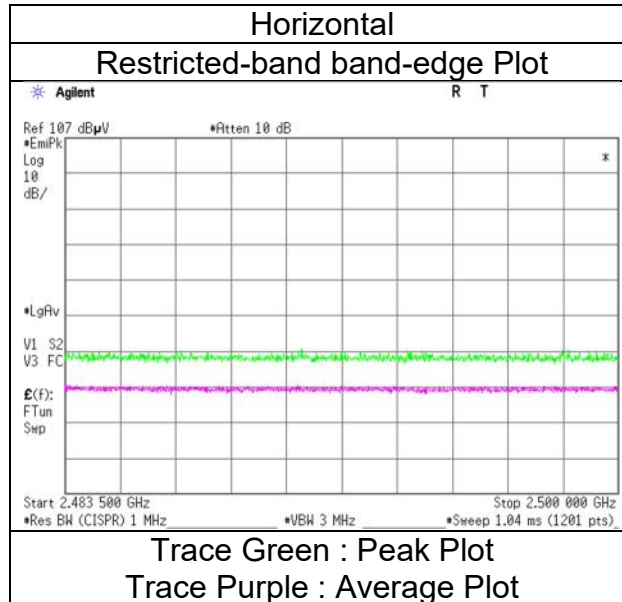


Radiated Spurious Emission **(Reference Plot for band-edge)**

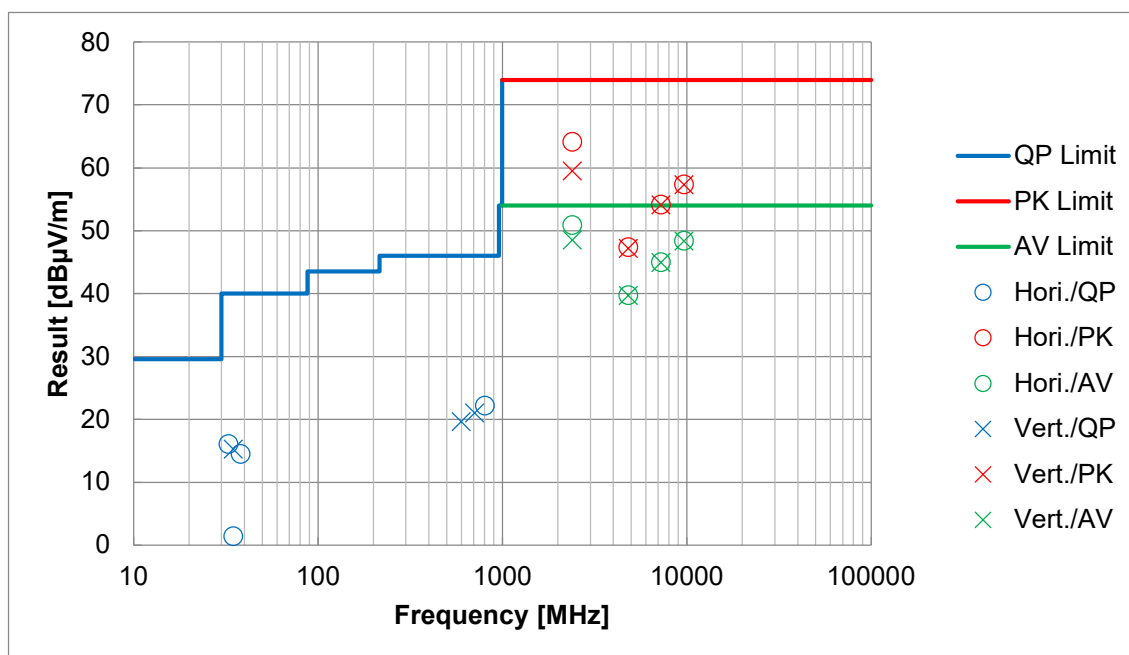
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	July 13, 2023
Temperature / Humidity	22 deg.C, 57 %RH
Engineer	Hiromasa Sato
Mode	Tx BT LE 2M-PHY, 2480 MHz



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

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

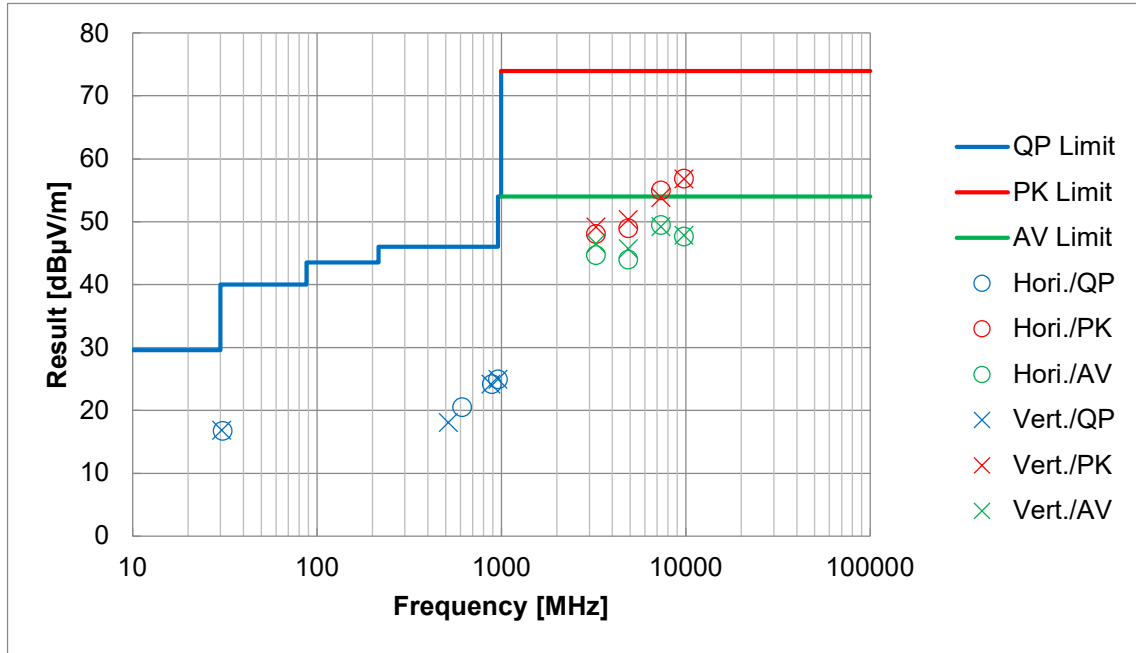
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	October 20, 2023	June 10, 2023	June 30, 2023
Temperature / Humidity	23 deg.C, 44 %RH	23 deg.C, 51 %RH	21 deg.C, 52 %RH
Engineer	Hiromasa Sato	Kenichi Adachi	Hiromasa Sato
	(30 MHz -1 GHz)	(1 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDM) 2412 MHz		



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

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

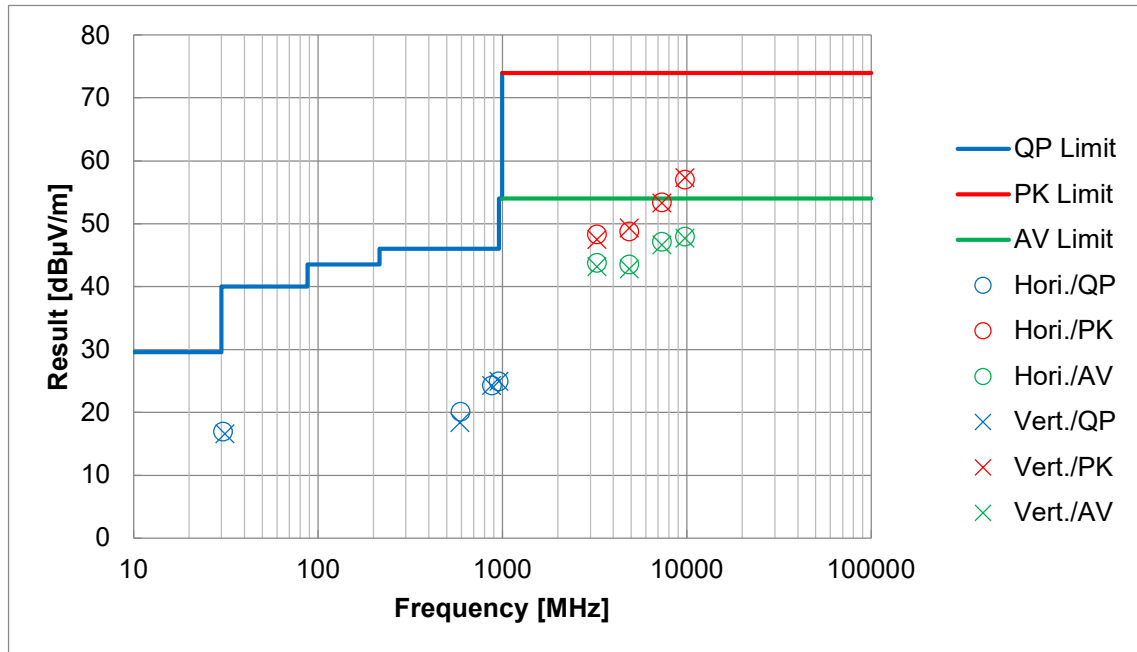
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3
Date	January 31, 2024	June 23, 2023	June 27, 2023	June 29, 2023
Temperature / Humidity	21 deg.C, 23 %RH	24 deg.C, 47 %RH	23 deg.C, 40 %RH	20 deg.C, 54 %RH
Engineer	Takayuki Kobayashi	Ken Fujita	Yasumasa Owaki	Yasumasa Owaki
	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx BT LE 1M-PHY, 2440 MHz			



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

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

Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	SAC 3	SAC 3
Date	January 31, 2024	July 13, 2023
Temperature / Humidity	21 deg.C, 23 %RH	22 deg.C, 57 %RH
Engineer	Takayuki Kobayashi	Hiromasa Sato
	(30 MHz -1 GHz)	(1 GHz -26.5 GHz)
Mode	Tx BT LE 2M-PHY, 2440 MHz	



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date December 02, 2023
Temperature / Humidity 20 deg.C, 39 %RH
Engineer Takahiro Suzuki
(1 GHz -2.8 GHz)
Mode 1M-PHY BT LE 2402 MHz With Tx 11ax-40 (OFDM), 5510 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.	2390.000	PK	46.65	27.98	14.41	41.61	2.49	49.92	73.9	23.9	130	28	-
Vert.	2390.000	PK	46.76	27.98	14.41	41.61	2.49	50.03	73.9	23.8	114	155	-

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

Distance factor : 1 GHz - 10 GHz: 20log (3.995 m / 3.0 m) = 2.49 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	37.92	27.98	14.41	41.61	3.92	2.49	45.11	53.9	8.7	*1)
Vert.	2390.000	AV	37.69	27.98	14.41	41.61	3.92	2.49	44.88	53.9	9.0	*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 (3.995 m / 3.0 m) = 2.49 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.	2402.000	PK	99.06	27.97	14.42	41.61	2.49	102.33	-	-	Carrier
Hori.	2400.000	PK	40.72	27.97	14.41	41.61	2.49	43.98	82.3	38.3	-
Vert.	2402.000	PK	98.16	27.97	14.42	41.61	2.49	101.43	-	-	Carrier
Vert.	2400.000	PK	41.45	27.97	14.41	41.61	2.49	44.71	81.4	36.6	-

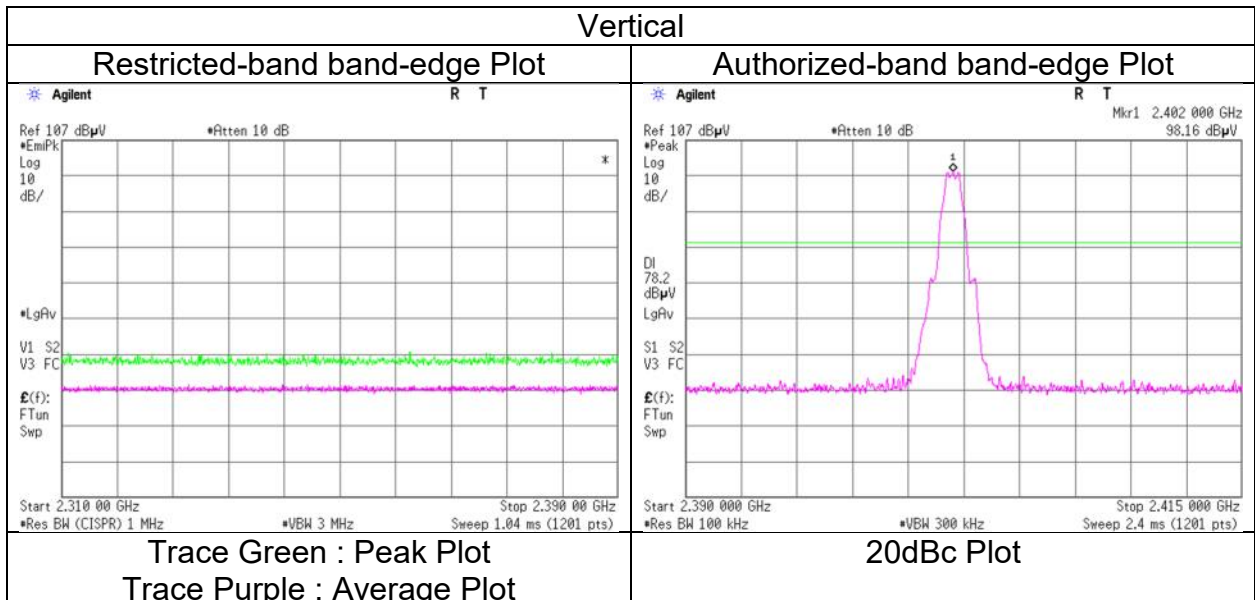
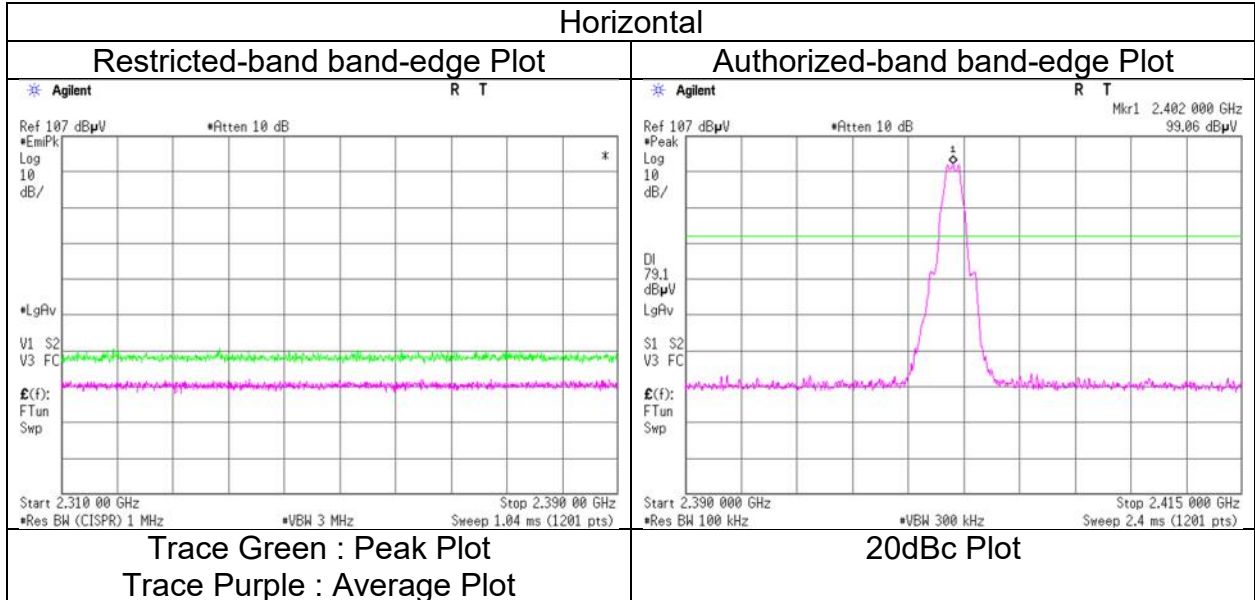
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz: 20log (3.995 m / 3.0 m) = 2.49 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	SAC 3
Date	December 2, 2023
Temperature / Humidity	20 deg.C, 39 %RH
Engineer	Takahiro Suzuki
Mode	1M-PHY BT LE 2402 MHz With Tx 11ax-40 (OFDM), 5510 MHz



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

Radiated Spurious Emission

Test place	Shonan EMC Lab.					
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3	SAC 3	SAC 3
Date	January 24, 2024	December 2, 2023	January 18, 2024	January 10, 2024	January 23, 2024	
Temperature / Humidity	21 deg.C, 24 %RH	20 deg.C, 39 %RH	23 deg.C, 27 %RH	23 deg.C, 24 %RH	23 deg.C, 30 %RH	
Engineer	Yosuke Murakami	Takahiro Suzuki	Yosuke Murakami	Takayuki Kobayashi	Kouki Yamada	
	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -18 GHz)	(18 GHz -26.5 GHz)	
Mode	1M-PHY BT LE 2440 MHz With Tx 11ax-40 (OFDM), 5510 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.	31.318	QP	22.50	18.53	6.51	32.20	0.00	15.34	40.0	24.6	100	0	-
Hori.	805.702	QP	21.10	20.83	10.65	31.63	0.00	20.95	46.0	25.0	100	0	-
Hori.	879.704	QP	20.80	22.01	10.90	31.18	0.00	22.53	46.0	23.4	100	0	-
Hori.	898.904	QP	20.70	21.97	10.96	31.07	0.00	22.56	46.0	23.4	100	0	-
Hori.	964.000	QP	20.50	21.96	11.17	30.58	0.00	23.05	53.9	30.8	100	0	-
Hori.	3253.333	PK	51.28	28.68	6.23	41.96	2.49	46.72	73.9	27.1	108	356	-
Hori.	4880.000	PK	49.47	31.51	7.02	42.88	2.49	47.61	73.9	26.2	214	175	-
Hori.	7320.000	PK	48.71	37.25	8.55	43.42	2.49	53.58	73.9	20.3	336	248	-
Hori.	9760.000	PK	48.20	39.02	9.76	43.01	2.49	56.46	73.9	17.4	150	0	-
Hori.	9760.000	AV	38.92	39.02	9.76	43.01	2.49	47.18	53.9	6.7	150	0	Floor noise
Vert.	30.469	QP	22.50	18.84	6.49	32.20	0.00	15.63	40.0	24.3	100	0	-
Vert.	927.313	QP	20.40	22.11	11.05	30.88	0.00	22.68	46.0	23.3	100	0	-
Vert.	959.503	QP	20.60	21.97	11.15	30.63	0.00	23.09	46.0	22.9	100	0	-
Vert.	3253.333	PK	52.63	28.68	6.23	41.96	2.49	48.07	71.4	23.3	112	353	-
Vert.	4880.000	PK	50.52	31.51	7.02	42.88	2.49	48.66	71.4	22.7	378	292	-
Vert.	7320.000	PK	49.97	37.25	8.55	43.42	2.49	54.84	71.4	16.5	211	295	-
Vert.	9760.000	PK	48.76	39.02	9.76	43.01	2.49	57.02	71.4	14.3	150	0	-
Vert.	9760.000	AV	38.76	39.02	9.76	43.01	2.49	47.02	51.4	4.3	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 (3.995 m / 3.0 m) = 2.49 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.	3253.333	AV	43.06	28.68	6.23	41.96	3.92	2.49	42.42	53.9	11.4	-
Hori.	4880.000	AV	40.02	31.51	7.02	42.88	3.92	2.49	42.08	53.9	11.8	-
Hori.	7320.000	AV	39.57	37.25	8.55	43.42	3.92	2.49	48.36	53.9	5.5	-
Vert.	3253.333	AV	45.56	28.68	6.23	41.96	3.92	2.49	44.92	53.9	8.9	-
Vert.	4880.000	AV	41.09	31.51	7.02	42.88	3.92	2.49	43.15	53.9	10.7	-
Vert.	7320.000	AV	39.86	37.25	8.55	43.42	3.92	2.49	48.65	53.9	5.2	-

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 (3.995 m / 3.0 m) = 2.49 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 SAC 3
Date December 2, 2023
Temperature / Humidity 20 deg.C, 39 %RH
Engineer Takahiro Suzuki
(1 GHz -2.8 GHz)
Mode 1M-PHY BT LE 2480 MHz With Tx 11ax-40 (OFDM), 5510 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	47.16	27.89	14.51	41.64	2.49	50.41	73.9	23.4	134	147	-
Vert.	2483.500	PK	46.52	27.89	14.51	41.64	2.49	49.77	73.9	24.1	131	157	-

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

Distance factor : 1 GHz - 10 GHz: 20log (3.995 m / 3.0 m) = 2.49 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	37.84	27.89	14.51	41.64	3.92	2.49	45.01	53.9	8.8	*1)
Vert.	2483.500	AV	36.41	27.89	14.51	41.64	3.92	2.49	43.58	53.9	10.3	*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 (3.995 m / 3.0 m) = 2.49 dB

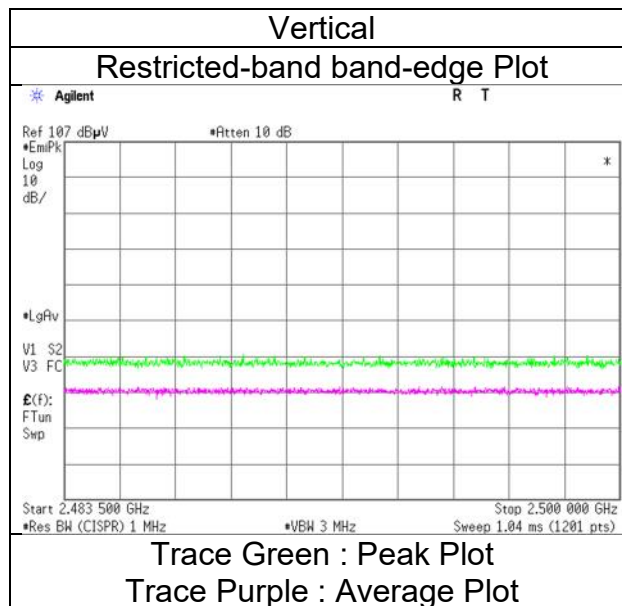
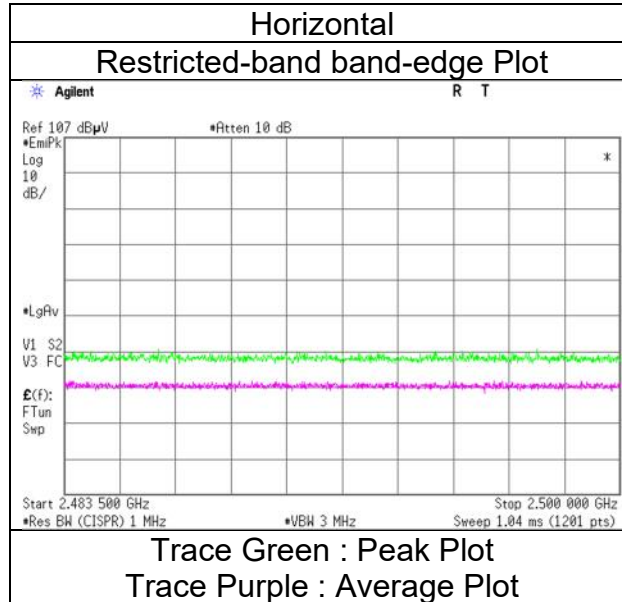
10 GHz - 40 GHz: 20log (1.0 m / 3.0 m) = -9.54 dB

Duty factor refer to "Burst rate confirmation" sheet.

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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date December 2, 2023
Temperature / Humidity 20 deg.C, 39 %RH
Engineer Takahiro Suzuki
Mode 1M-PHY BT LE 2480 MHz With Tx 11ax-40 (OFDM), 5510 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.

Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date December 2, 2023
Temperature / Humidity 20 deg.C, 39 %RH
Engineer Takahiro Suzuki
(1 GHz -2.8 GHz)
Mode 2M-PHY BT LE 2402 MHz With Tx 11ax-40 (OFDM), 5510 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.	2390.000	PK	46.32	27.98	14.41	41.61	2.49	49.59	73.9	24.3	131	26	-
Vert.	2390.000	PK	47.28	27.98	14.41	41.61	2.49	50.55	73.9	23.3	112	157	-

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

Distance factor : 1 GHz - 10 GHz: 20log (3.995 m / 3.0 m) = 2.49 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	37.98	27.98	14.41	41.61	1.84	2.49	43.09	53.9	10.8	*1)
Vert.	2390.000	AV	38.04	27.98	14.41	41.61	1.84	2.49	43.15	53.9	10.7	*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: 20log (3.995 m / 3.0 m) = 2.49 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.	2402.000	PK	98.47	27.97	14.42	41.61	2.49	101.74	-	-	Carrier
Hori.	2400.000	PK	62.26	27.97	14.41	41.61	2.49	65.52	81.7	16.1	-
Vert.	2402.000	PK	97.35	27.97	14.42	41.61	2.49	100.62	-	-	Carrier
Vert.	2400.000	PK	61.31	27.97	14.41	41.61	2.49	64.57	80.6	16.0	-

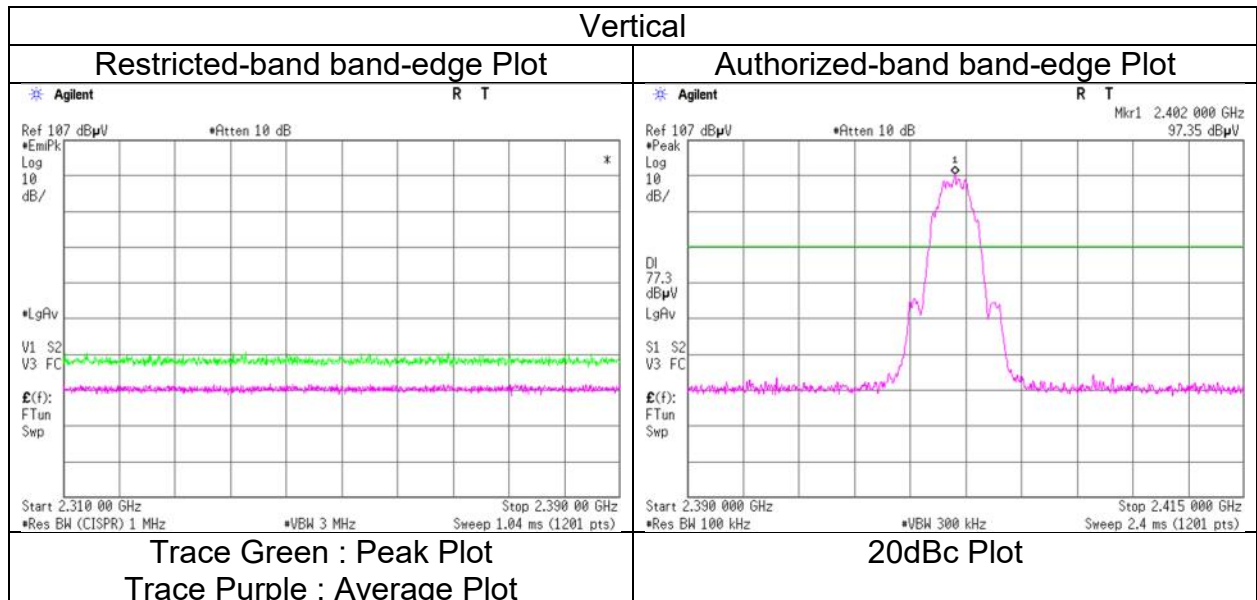
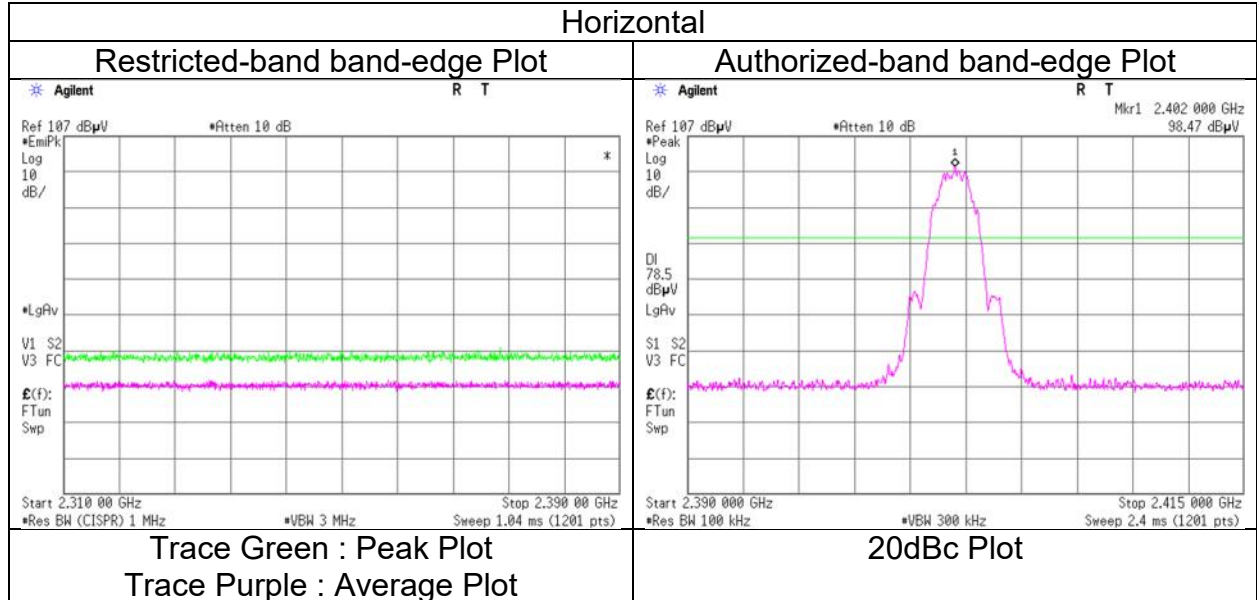
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz: 20log (3.995 m / 3.0 m) = 2.49 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	SAC 3
Date	December 2, 2023
Temperature / Humidity	20 deg.C, 39 %RH
Engineer	Takahiro Suzuki
Mode	2M-PHY BT LE 2402 MHz With Tx 11ax-40 (OFDM), 5510 MHz



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date January 24, 2024 SAC 3
Temperature / Humidity 21 deg.C, 24 %RH December 2, 2023 SAC 3
Engineer Yosuke Murakami Takahiro Suzuki January 18, 2024 SAC 3
Yosuke Murakami (30 MHz -1 GHz) (1 GHz -2.8 GHz) (2.8 GHz -10 GHz)
Takayuki Kobayashi (10 GHz -18 GHz)
Kouki Yamada (18 GHz -26.5 GHz)
Mode 2M-PHY BT LE 2440 MHz With Tx 11ax-40 (OFDM), 5510 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.	30.678	QP	22.60	18.77	6.50	32.20	0.00	15.67	40.0	24.3	100	0	-
Hori.	778.200	QP	21.30	20.43	10.56	31.70	0.00	20.59	46.0	25.4	100	0	-
Hori.	868.700	QP	21.10	21.98	10.86	31.25	0.00	22.69	46.0	23.3	100	0	-
Hori.	955.760	QP	20.60	21.97	11.14	30.67	0.00	23.04	46.0	22.9	100	0	-
Hori.	3253.333	PK	51.41	28.68	6.23	41.96	2.49	46.85	73.9	27.0	124	359	-
Hori.	4880.000	PK	49.14	31.51	7.02	42.88	2.49	47.28	73.9	26.6	196	184	-
Hori.	7320.000	PK	49.07	37.25	8.55	43.42	2.49	53.94	73.9	19.9	345	258	-
Hori.	9760.000	PK	48.21	39.02	9.76	43.01	2.49	56.47	73.9	17.4	150	0	-
Hori.	9760.000	AV	39.01	39.02	9.76	43.01	2.49	47.27	53.9	6.6	150	0	Floor noise
Vert.	30.277	QP	22.60	18.91	6.48	32.20	0.00	15.79	40.0	24.2	100	0	-
Vert.	856.204	QP	21.00	21.76	10.82	31.32	0.00	22.26	46.0	23.7	100	0	-
Vert.	904.031	QP	20.60	21.98	10.97	31.03	0.00	22.52	46.0	23.4	100	0	-
Vert.	937.270	QP	20.50	22.07	11.08	30.81	0.00	22.84	46.0	23.1	100	0	-
Vert.	3253.333	PK	52.16	28.68	6.23	41.96	2.49	47.60	73.9	26.3	112	350	-
Vert.	4880.000	PK	50.39	31.51	7.02	42.88	2.49	48.53	73.9	25.3	380	293	-
Vert.	7320.000	PK	49.46	37.25	8.55	43.42	2.49	54.33	73.9	19.5	194	287	-
Vert.	9760.000	PK	47.87	39.02	9.76	43.01	2.49	56.13	73.9	17.7	150	0	-
Vert.	9760.000	AV	38.83	39.02	9.76	43.01	2.49	47.09	53.9	6.8	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 (3.995 m / 3.0 m) = 2.49 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.	3253.333	AV	44.03	28.68	6.23	41.96	1.84	2.49	41.31	53.9	12.5	-
Hori.	4880.000	AV	39.81	31.51	7.02	42.88	1.84	2.49	39.79	53.9	14.1	-
Hori.	7320.000	AV	38.72	37.25	8.55	43.42	1.84	2.49	45.43	53.9	8.4	-
Vert.	3253.333	AV	46.24	28.68	6.23	41.96	1.84	2.49	43.52	53.9	10.3	-
Vert.	4880.000	AV	41.22	31.51	7.02	42.88	1.84	2.49	41.20	53.9	12.7	-
Vert.	7320.000	AV	40.17	37.25	8.55	43.42	1.84	2.49	46.88	53.9	7.0	-

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 (3.995 m / 3.0 m) = 2.49 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 SAC 3
Date December 2, 2023
Temperature / Humidity 20 deg.C, 39 %RH
Engineer Takahiro Suzuki
(1 GHz -2.8 GHz)
Mode 2M-PHY BT LE 2480 MHz With Tx 11ax-40 (OFDM), 5510 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	47.92	27.89	14.51	41.64	2.49	51.17	73.9	22.7	134	148	-
Vert.	2483.500	PK	46.56	27.89	14.51	41.64	2.49	49.81	73.9	24.0	132	157	-

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

Distance factor : 1 GHz - 10 GHz: $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

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	38.31	27.89	14.51	41.64	1.84	2.49	43.40	53.9	10.5	*1)
Vert.	2483.500	AV	38.15	27.89	14.51	41.64	1.84	2.49	43.24	53.9	10.6	*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: $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

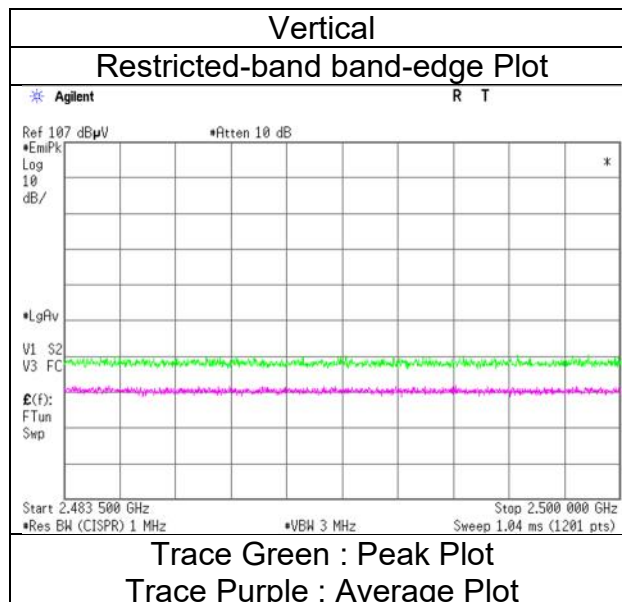
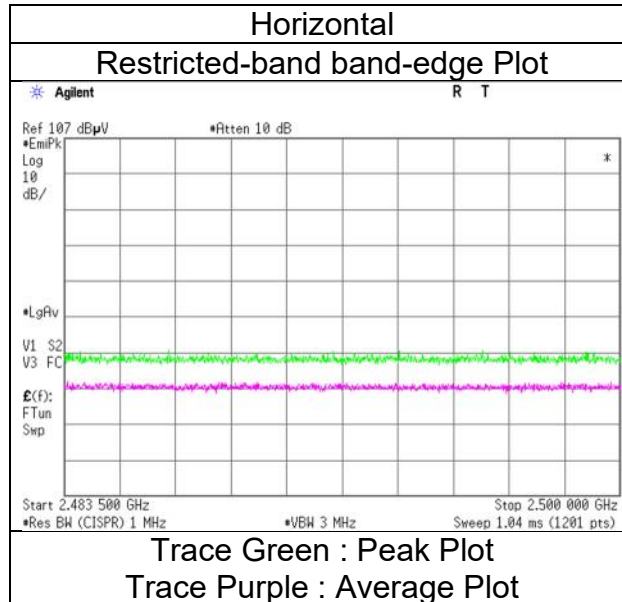
10 GHz - 40 GHz: $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

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	SAC 3
Date	December 2, 2023
Temperature / Humidity	20 deg.C, 39 %RH
Engineer	Takahiro Suzuki
Mode	2M-PHY BT LE 2480 MHz With Tx 11ax-40 (OFDM), 5510 MHz



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date January 17, 2024
Temperature / Humidity 24 deg.C, 30 %RH
Engineer Takayuki Kobayashi
(1 GHz -2.8 GHz)
Mode 1M-PHY BT LE 2402 MHz With Tx 11ax-40 (OFDM), 6445 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.	2390.000	PK	47.09	27.98	14.32	41.61	2.49	50.27	73.9	23.6	153	243	-
Vert.	2390.000	PK	48.54	27.98	14.32	41.61	2.49	51.72	73.9	22.1	187	234	-

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

Distance factor : 1 GHz - 10 GHz: 20log (3.995 m / 3.0 m) = 2.49 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	36.57	27.98	14.32	41.61	3.92	2.49	43.67	53.9	10.2	*1)
Vert.	2390.000	AV	36.09	27.98	14.32	41.61	3.92	2.49	43.19	53.9	10.7	*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: 20log (3.995 m / 3.0 m) = 2.49 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.	2402.000	PK	100.59	27.97	14.34	41.61	2.49	103.78	-	-	Carrier
Hori.	2400.000	PK	41.81	27.97	14.33	41.61	2.49	44.99	83.7	38.7	-
Vert.	2402.000	PK	100.78	27.97	14.34	41.61	2.49	103.97	-	-	Carrier
Vert.	2400.000	PK	42.66	27.97	14.33	41.61	2.49	45.84	83.9	38.0	-

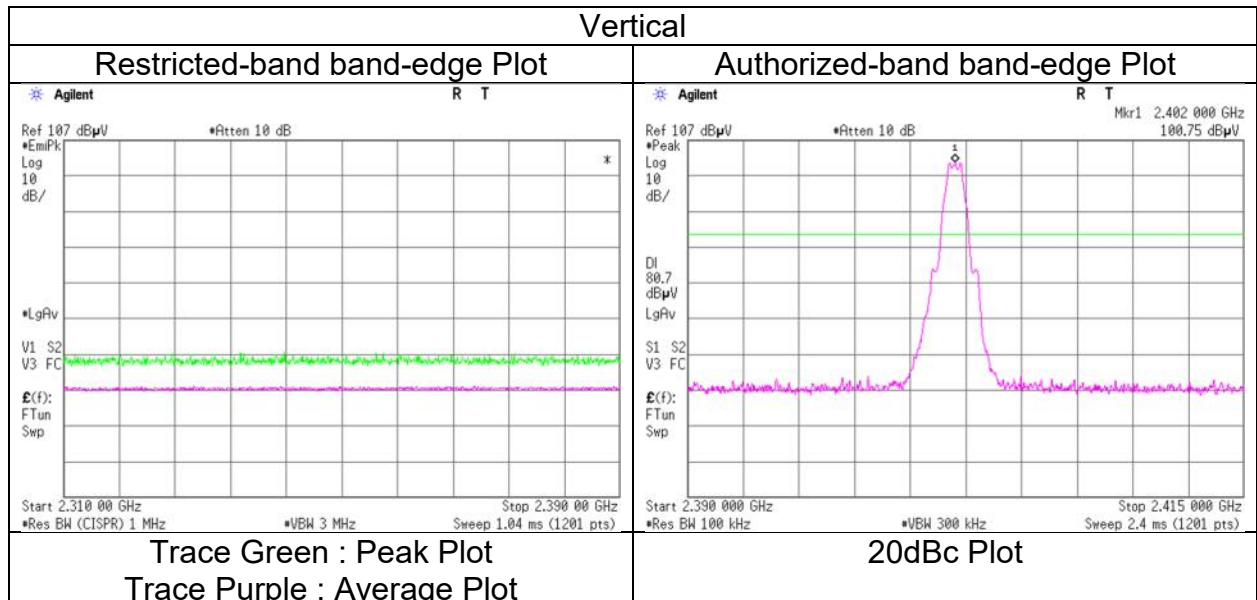
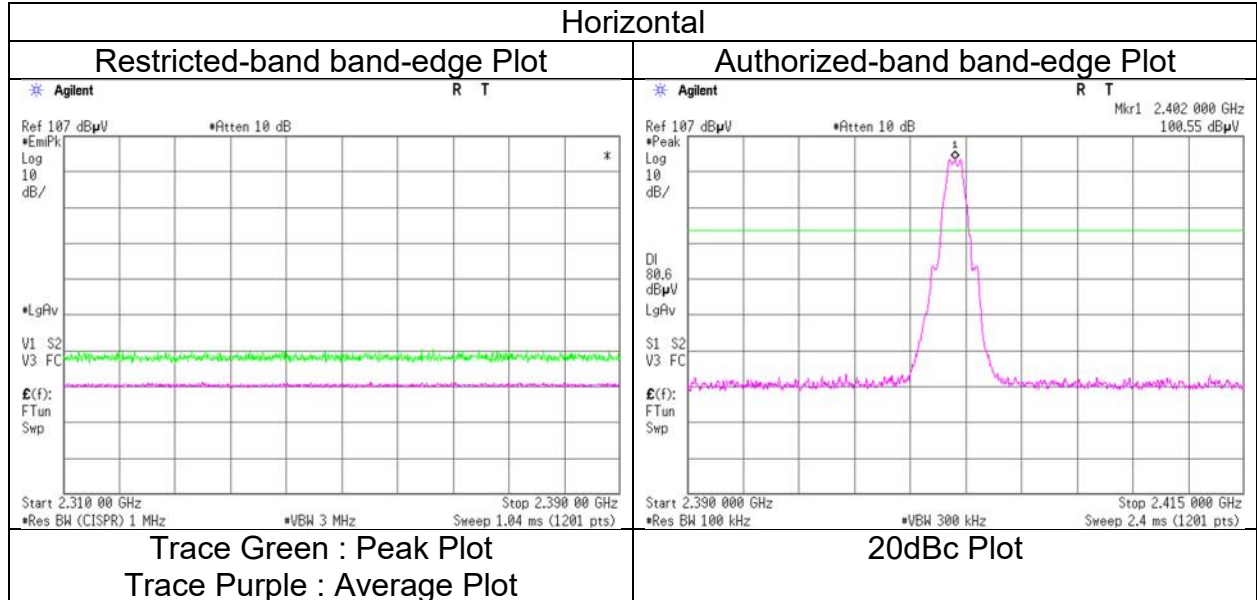
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz: 20log (3.995 m / 3.0 m) = 2.49 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	SAC 3
Date	January 17, 2024
Temperature / Humidity	24 deg.C, 30 %RH
Engineer	Takayuki Kobayashi
Mode	1M-PHY BT LE 2402 MHz With Tx 11ax-40 (OFDM), 6445 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	SAC 3	SAC 3	SAC 3	SAC 3
Date	January 24, 2024	January 17, 2024	January 18, 2024	January 23, 2024
Temperature / Humidity	21 deg.C, 24 %RH	24 deg.C, 30 %RH	23 deg.C, 27 %RH	23 deg.C, 30 %RH
Engineer	Yosuke Murakami	Takayuki Kobayashi	Yosuke Murakami	Kouki Yamada
	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	1M-PHY BT LE 2440 MHz With Tx 11ax-40 (OFDM), 6445 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.	30.447	QP	22.60	18.85	6.49	32.20	0.00	15.74	40.0	24.2	100	0	-
Hori.	830.901	QP	21.10	20.91	10.74	31.47	0.00	21.28	46.0	24.7	100	0	-
Hori.	891.003	QP	20.70	21.99	10.93	31.11	0.00	22.51	46.0	23.4	100	0	-
Hori.	937.908	QP	20.50	22.06	11.08	30.81	0.00	22.83	46.0	23.1	100	0	-
Hori.	948.702	QP	20.30	22.00	11.12	30.74	0.00	22.68	46.0	23.3	100	0	-
Hori.	3253.333	PK	51.44	28.68	6.23	41.96	2.49	46.88	73.9	27.0	123	359	-
Hori.	4880.000	PK	50.09	31.51	7.02	42.88	2.49	48.23	73.9	25.6	197	184	-
Hori.	7320.000	PK	48.49	37.25	8.55	43.42	2.49	53.36	73.9	20.5	338	240	-
Hori.	9760.000	PK	47.36	39.02	9.76	43.01	2.49	55.62	73.9	18.2	150	0	-
Hori.	9760.000	AV	38.78	39.02	9.76	43.01	2.49	47.04	53.9	6.8	150	0	Floor noise
Vert.	31.826	QP	22.30	18.34	6.51	32.20	0.00	14.95	40.0	25.0	100	0	-
Vert.	898.327	QP	20.60	21.97	10.95	31.07	0.00	22.45	46.0	23.5	100	0	-
Vert.	940.697	QP	20.60	22.04	11.09	30.79	0.00	22.94	46.0	23.0	100	0	-
Vert.	3253.333	PK	52.41	28.68	5.17	41.96	2.49	46.79	73.9	27.1	151	349	-
Vert.	4880.000	PK	50.42	31.51	6.32	42.88	2.49	47.86	73.9	26.0	377	294	-
Vert.	7320.000	PK	49.76	37.25	7.76	43.42	2.49	53.84	73.9	20.0	245	294	-
Vert.	9760.000	PK	47.81	39.02	8.99	43.01	2.49	55.30	73.9	18.6	150	0	-
Vert.	9760.000	AV	39.22	39.02	8.99	43.01	2.49	46.71	53.9	7.1	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 (3.995 m / 3.0 m) = 2.49 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.	3253.333	AV	43.27	28.68	6.23	41.96	3.92	2.49	42.63	53.9	11.2	-
Hori.	4880.000	AV	40.40	31.51	7.02	42.88	3.92	2.49	42.46	53.9	11.4	-
Hori.	7320.000	AV	39.18	37.25	8.55	43.42	3.92	2.49	47.97	53.9	5.9	-
Vert.	3253.333	AV	45.37	28.68	5.17	41.96	3.92	2.49	43.67	53.9	10.2	-
Vert.	4880.000	AV	41.56	31.51	6.32	42.88	3.92	2.49	42.92	53.9	10.9	-
Vert.	7320.000	AV	40.51	37.25	7.76	43.42	3.92	2.49	48.51	53.9	5.3	-

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 (3.995 m / 3.0 m) = 2.49 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 SAC 3
Date January 17, 2024
Temperature / Humidity 24 deg.C, 30 %RH
Engineer Takayuki Kobayashi
(1 GHz -2.8 GHz)
Mode 1M-PHY BT LE 2480 MHz With Tx 11ax-40 (OFDM), 6445 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	48.40	27.89	14.42	41.64	2.49	51.56	73.9	22.3	333	358	-
Vert.	2483.500	PK	47.62	27.89	14.42	41.64	2.49	50.78	73.9	23.1	147	235	-

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

Distance factor : 1 GHz - 10 GHz: $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

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	36.98	27.89	14.42	41.64	3.92	2.49	44.06	53.9	9.8	*1)
Vert.	2483.500	AV	37.34	27.89	14.42	41.64	3.92	2.49	44.42	53.9	9.4	*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: $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

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

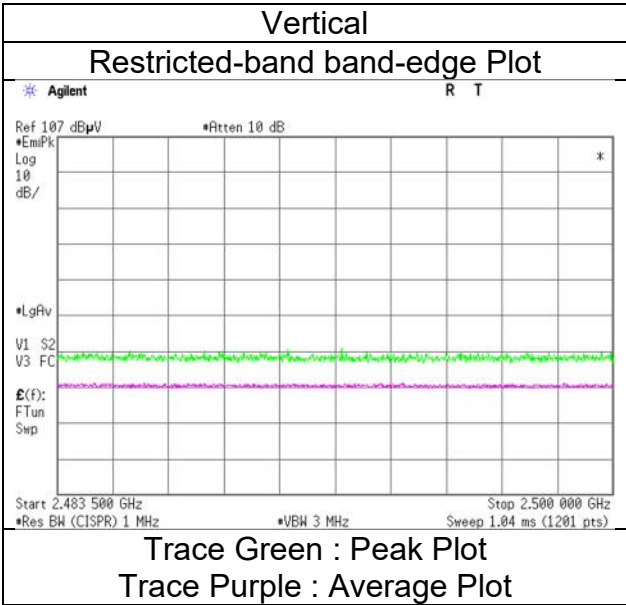
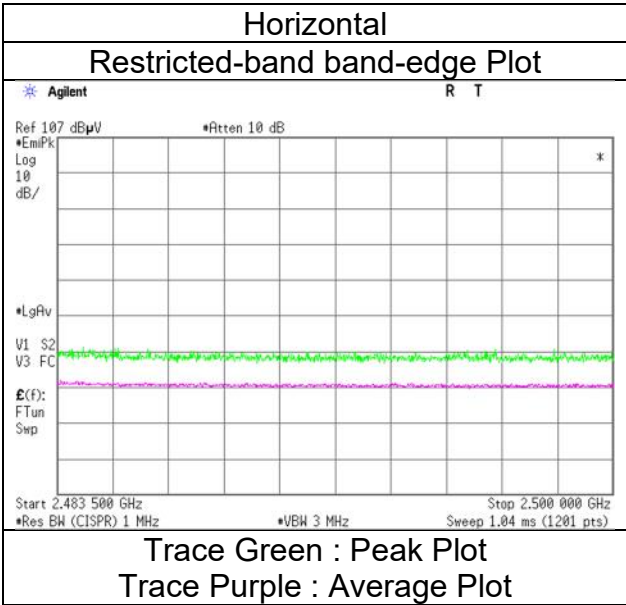
Duty factor refer to "Burst rate confirmation" sheet.

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

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
January 17, 2024
24 deg.C, 30 %RH
Takayuki Kobayashi
1M-PHY BT LE 2480 MHz With Tx 11ax-40 (OFDM), 6445 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 SAC 3
Date January 17, 2024
Temperature / Humidity 24 deg.C, 30 %RH
Engineer Takayuki Kobayashi
(1 GHz -2.8 GHz)
Mode 2M-PHY BT LE 2402 MHz With Tx 11ax-40 (OFDM), 6445 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.	2390.000	PK	47.05	27.98	14.32	41.61	2.49	50.23	73.9	23.6	151	245	-
Vert.	2390.000	PK	47.48	27.98	14.32	41.61	2.49	50.66	73.9	23.2	152	235	-

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

Distance factor : 1 GHz - 10 GHz: 20log (3.995 m / 3.0 m) = 2.49 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	36.64	27.98	14.32	41.61	1.84	2.49	41.66	53.9	12.2	*1)
Vert.	2390.000	AV	35.80	27.98	14.32	41.61	1.84	2.49	40.82	53.9	13.0	*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 (3.995 m / 3.0 m) = 2.49 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.	2402.000	PK	99.82	27.97	14.34	41.61	2.49	103.01	-	-	Carrier
Hori.	2400.000	PK	62.92	27.97	14.33	41.61	2.49	66.10	83.0	16.9	-
Vert.	2402.000	PK	99.85	27.97	14.34	41.61	2.49	103.04	-	-	Carrier
Vert.	2400.000	PK	64.28	27.97	14.33	41.61	2.49	67.46	83.0	15.5	-

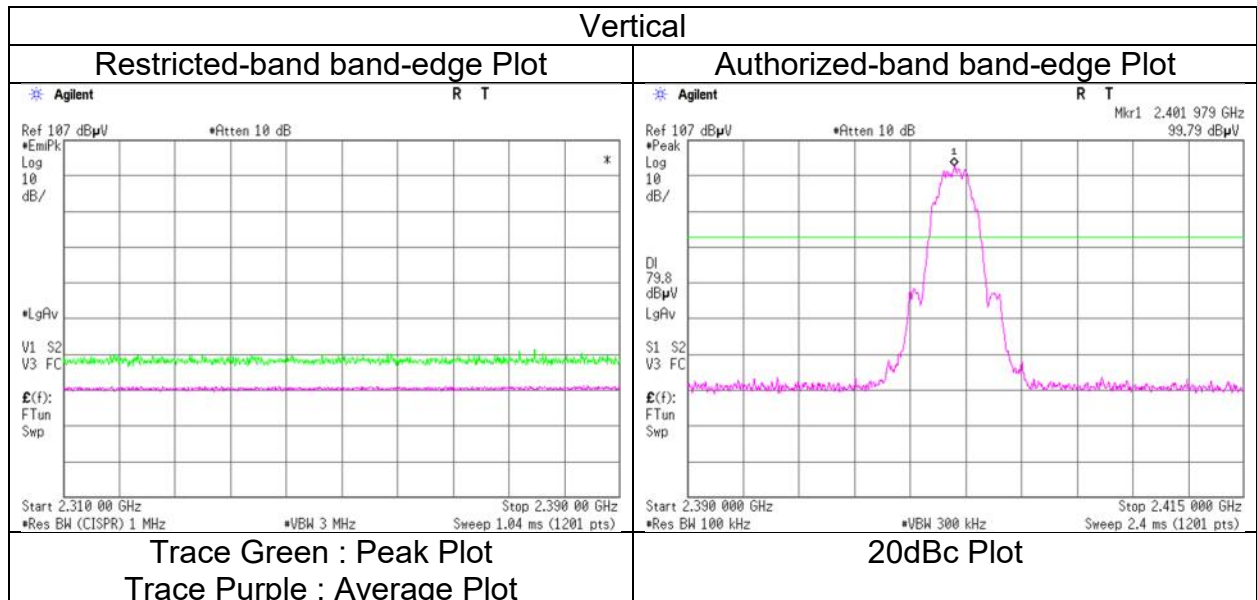
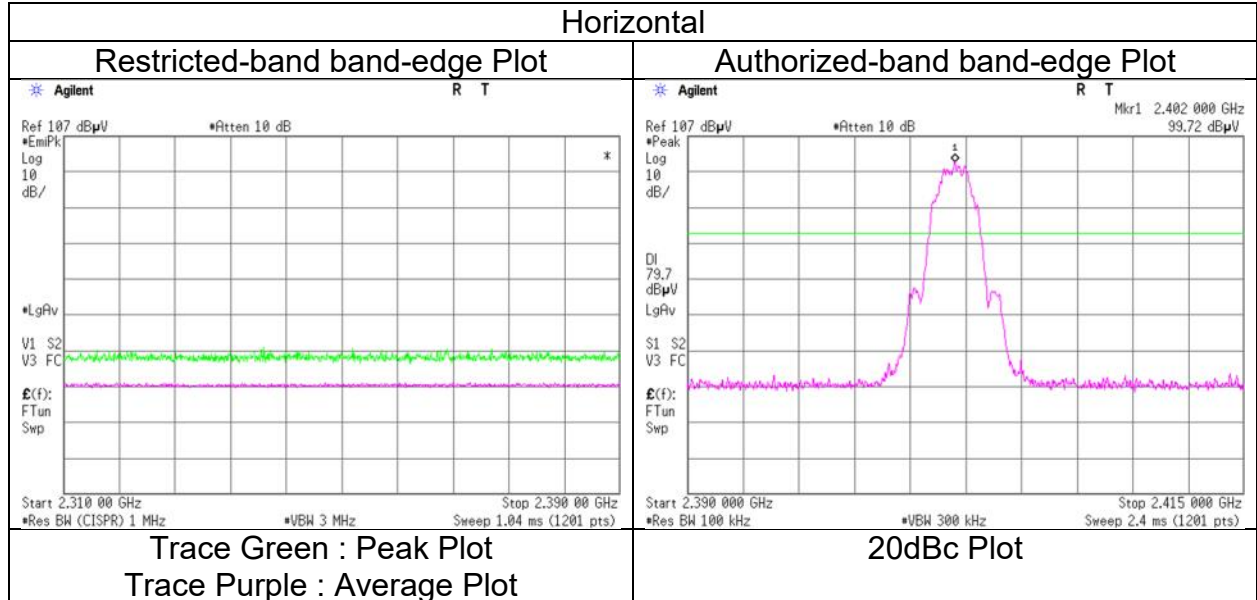
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz: 20log (3.995 m / 3.0 m) = 2.49 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	SAC 3
Date	January 17, 2024
Temperature / Humidity	24 deg.C, 30 %RH
Engineer	Takayuki Kobayashi
Mode	2M-PHY BT LE 2402 MHz With Tx 11ax-40 (OFDM), 6445 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	SAC 3	SAC 3	SAC 3	SAC 3
Date	January 24, 2024	January 17, 2024	January 18, 2024	January 23, 2024
Temperature / Humidity	21 deg.C, 24 %RH	24 deg.C, 30 %RH	23 deg.C, 27 %RH	23 deg.C, 30 %RH
Engineer	Yosuke Murakami	Takayuki Kobayashi	Yosuke Murakami	Kouki Yamada
	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	2M-PHY BT LE 2440 MHz With Tx 11ax-40 (OFDM), 6445 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.	30.425	QP	22.60	18.86	6.48	32.20	0.00	15.74	40.0	24.2	100	0	-
Hori.	31.573	QP	23.20	18.43	6.51	32.20	0.00	15.94	40.0	24.0	100	0	-
Hori.	870.402	QP	21.10	21.99	10.86	31.24	0.00	22.71	46.0	23.2	100	0	-
Hori.	909.802	QP	20.80	21.99	10.99	31.00	0.00	22.78	46.0	23.2	100	0	-
Hori.	957.700	QP	20.70	21.96	11.15	30.65	0.00	23.16	46.0	22.8	100	0	-
Hori.	3253.333	PK	51.41	28.68	6.23	41.96	2.49	46.85	73.9	27.0	134	257	-
Hori.	4880.000	PK	50.33	31.51	7.02	42.88	2.49	48.47	73.9	25.4	197	185	-
Hori.	7320.000	PK	48.75	37.25	8.55	43.42	2.49	53.62	73.9	20.2	345	249	-
Hori.	9760.000	PK	47.82	39.02	9.76	43.01	2.49	56.08	73.9	17.8	150	0	-
Hori.	9760.000	AV	38.86	39.02	9.76	43.01	2.49	47.12	53.9	6.7	150	0	Floor noise
Vert.	30.849	QP	22.50	18.70	6.50	32.20	0.00	15.50	40.0	24.5	100	0	-
Vert.	861.606	QP	20.90	21.87	10.83	31.29	0.00	22.31	46.0	23.6	100	0	-
Vert.	954.910	QP	20.60	21.97	11.14	30.68	0.00	23.03	46.0	22.9	100	0	-
Vert.	3253.333	PK	52.60	28.68	6.23	41.96	2.49	48.04	73.9	25.8	111	352	-
Vert.	4880.000	PK	51.25	31.51	7.02	42.88	2.49	49.39	73.9	24.5	380	293	-
Vert.	7320.000	PK	49.28	37.25	8.55	43.42	2.49	54.15	73.9	19.7	214	292	-
Vert.	9760.000	PK	48.21	39.02	9.76	43.01	2.49	56.47	73.9	17.4	150	0	-
Vert.	9760.000	AV	38.78	39.02	9.76	43.01	2.49	47.04	53.9	6.8	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 (3.995 m / 3.0 m) = 2.49 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.	3253.333	AV	44.06	28.68	6.23	41.96	1.84	2.49	41.34	53.9	12.5	-
Hori.	4880.000	AV	39.97	31.51	7.02	42.88	1.84	2.49	39.95	53.9	13.9	-
Hori.	7320.000	AV	39.62	37.25	8.55	43.42	1.84	2.49	46.33	53.9	7.5	-
Vert.	3253.333	AV	46.34	28.68	6.23	41.96	1.84	2.49	43.62	53.9	10.2	-
Vert.	4880.000	AV	41.05	31.51	7.02	42.88	1.84	2.49	41.03	53.9	12.8	-
Vert.	7320.000	AV	39.78	37.25	8.55	43.42	1.84	2.49	46.49	53.9	7.4	-

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 (3.995 m / 3.0 m) = 2.49 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 SAC 3
Date January 17, 2024
Temperature / Humidity 24 deg.C, 30 %RH
Engineer Takayuki Kobayashi
(1 GHz -2.8 GHz)
Mode 2M-PHY BT LE 2480 MHz With Tx 11ax-40 (OFDM), 6445 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	49.44	27.89	14.42	41.64	2.49	52.60	73.9	21.3	338	359	-
Vert.	2483.500	PK	49.16	27.89	14.42	41.64	2.49	52.32	73.9	21.5	235	262	-

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

Distance factor : 1 GHz - 10 GHz: $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

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	37.22	27.89	14.42	41.64	1.84	2.49	42.22	53.9	11.6	*1)
Vert.	2483.500	AV	37.82	27.89	14.42	41.64	1.84	2.49	42.82	53.9	11.0	*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: $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

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 placeShonan EMC Lab.

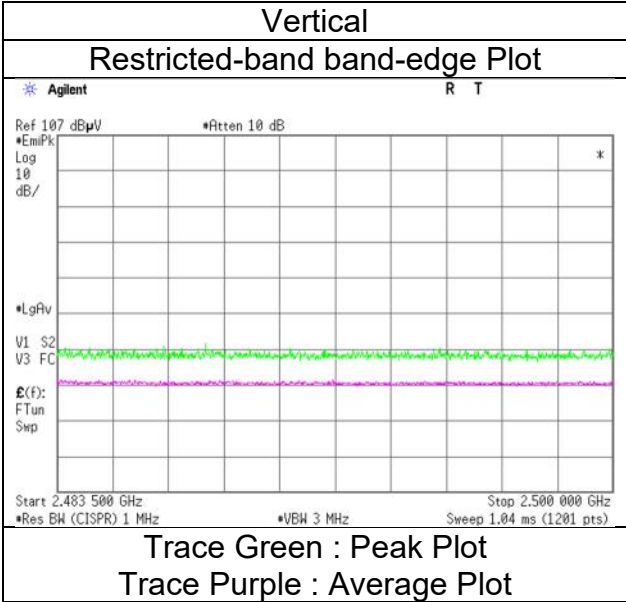
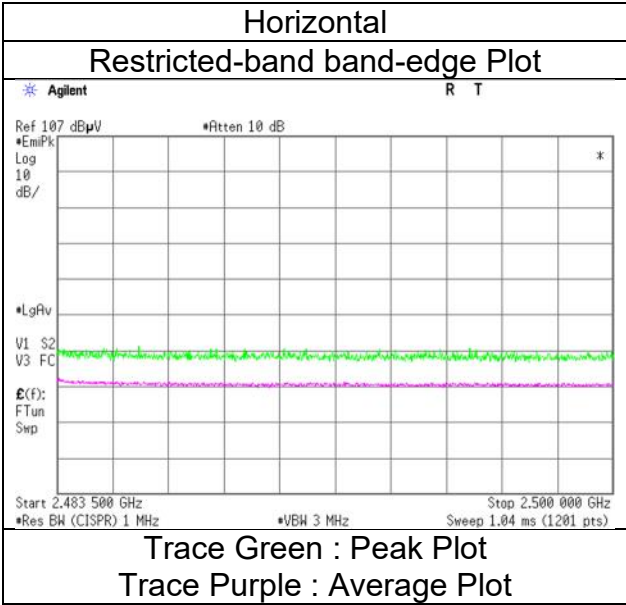
Semi Anechoic ChamberSAC 3

DateJanuary 17, 2024

Temperature / Humidity24 deg.C, 30 %RH

EngineerTakayuki Kobayashi

Mode2M-PHY BT LE 2480 MHz With Tx 11ax-40 (OFDM), 6445 MHz

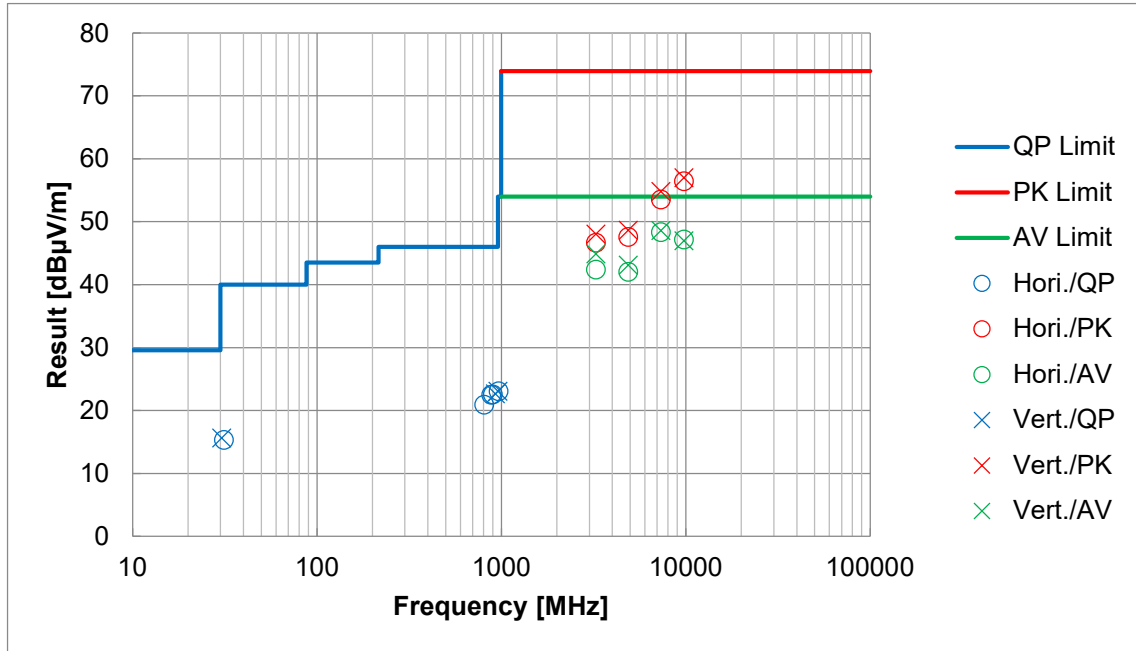


* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

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

Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3	SAC 3
Date	January 24, 2024	December 2, 2023	January 18, 2024	January 10, 2024	January 23, 2024
Temperature / Humidity	21 deg.C, 24 %RH	20 deg.C, 39 %RH	23 deg.C, 27 %RH	23 deg.C, 24 %RH	23 deg.C, 30 %RH
Engineer	Yosuke Murakami	Takahiro Suzuki	Yosuke Murakami	Takayuki Kobayashi	Kouki Yamada
Mode	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -18 GHz)	(18 GHz -26.5 GHz)

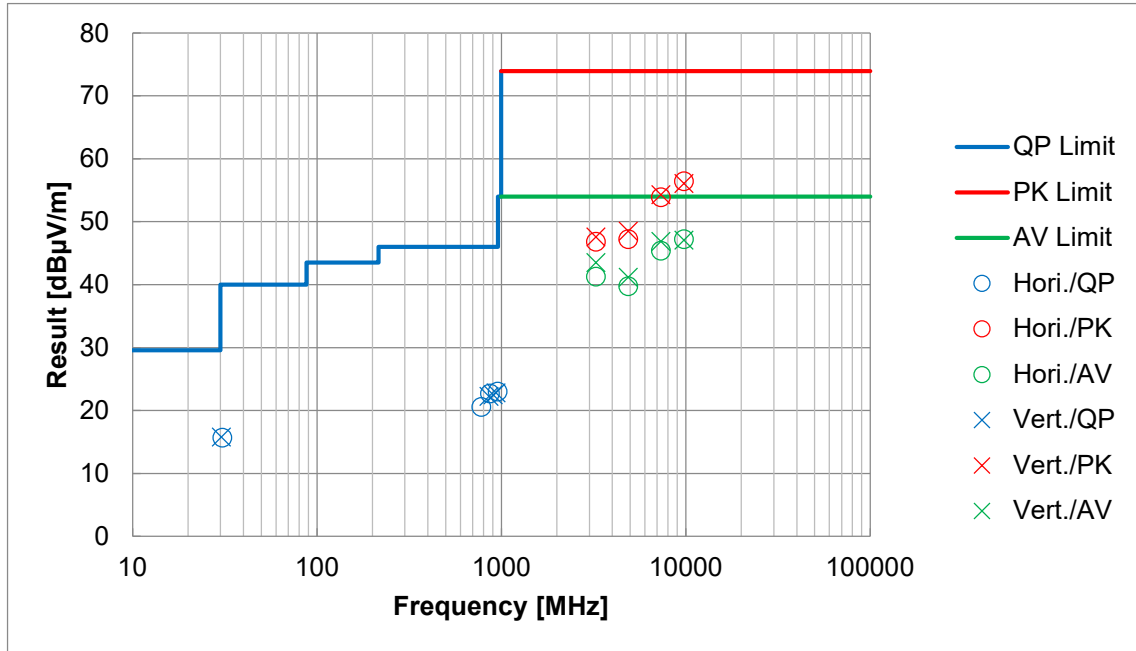
1M-PHY BT LE 2440 MHz With Tx 11ax-40 (OFDM), 5510 MHz



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

Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3	SAC 3
Date	January 24, 2024	December 2, 2023	January 18, 2024	January 10, 2024	January 23, 2024
Temperature / Humidity	21 deg.C, 24 %RH	20 deg.C, 39 %RH	23 deg.C, 27 %RH	23 deg.C, 24 %RH	23 deg.C, 30 %RH
Engineer	Yosuke Murakami	Takahiro Suzuki	Yosuke Murakami	Takayuki Kobayashi	Kouki Yamada
Mode	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -18 GHz)	(18 GHz -26.5 GHz)

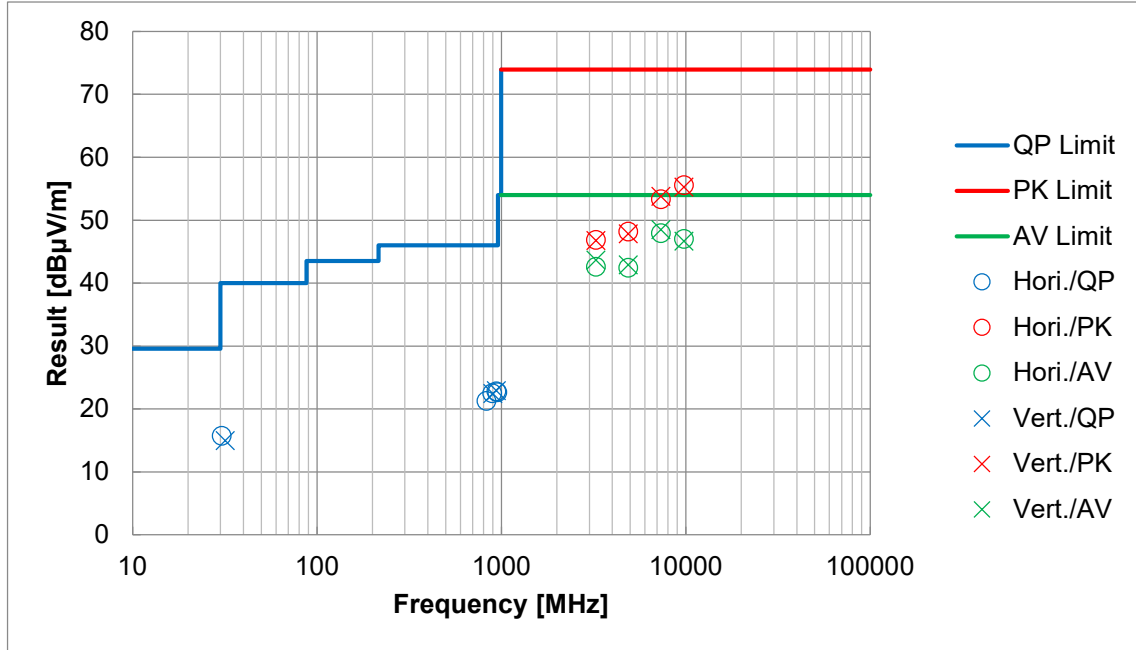
2M-PHY BT LE 2440 MHz With Tx 11ax-40 (OFDM), 5510 MHz



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

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

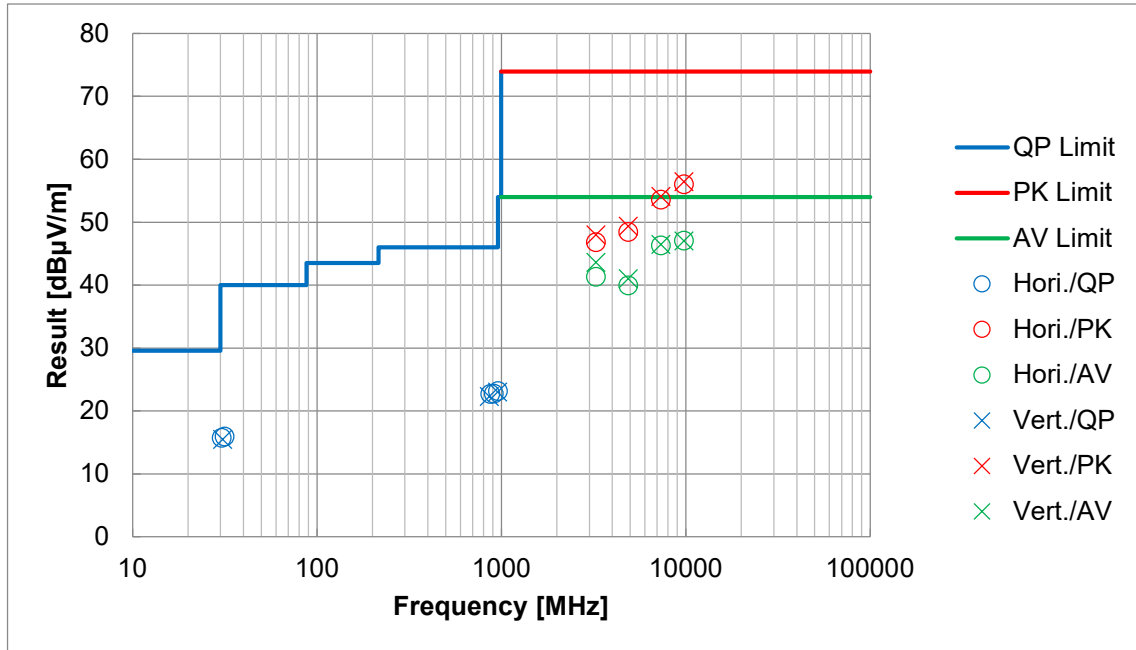
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3
Date	January 24, 2024	January 17, 2024	January 18, 2024	January 23, 2024
Temperature / Humidity	21 deg.C, 24 %RH	24 deg.C, 30 %RH	23 deg.C, 27 %RH	23 deg.C, 30 %RH
Engineer	Yosuke Murakami	Takayuki Kobayashi	Yosuke Murakami	Kouki Yamada
	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	1M-PHY BT LE 2440 MHz With Tx 11ax-40	(OFDM), 6445 MHz		



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

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

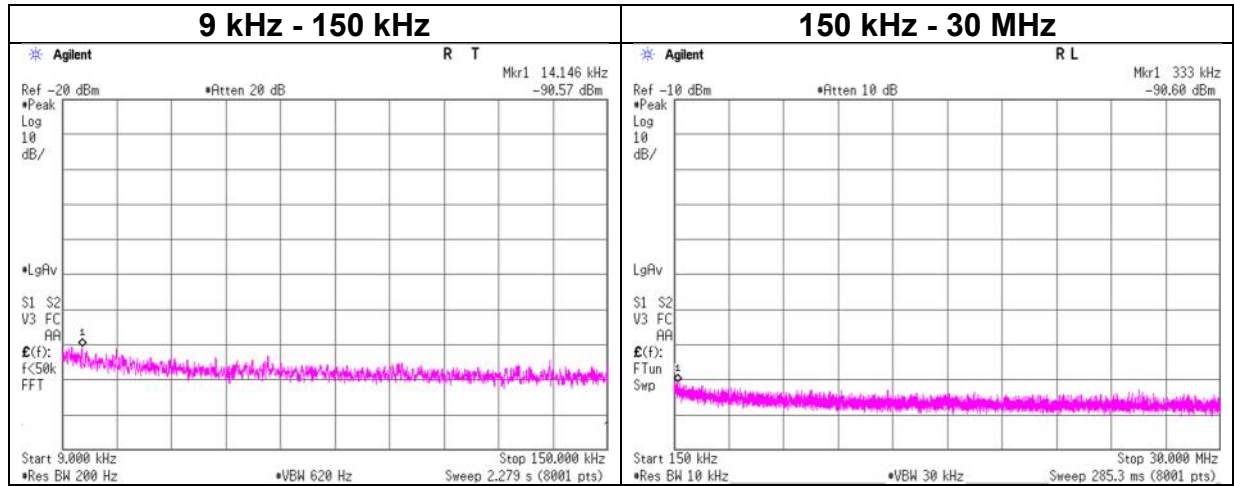
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3
Date	January 24, 2024	January 17, 2024	January 18, 2024	January 23, 2024
Temperature / Humidity	21 deg.C, 24 %RH	24 deg.C, 30 %RH	23 deg.C, 27 %RH	23 deg.C, 30 %RH
Engineer	Yosuke Murakami	Takayuki Kobayashi	Yosuke Murakami	Kouki Yamada
	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	2M-PHY BT LE 2440 MHz With Tx 11ax-40 (OFDM), 6445 MHz			



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

Conducted Spurious Emission

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 5, 2023
Temperature / Humidity 26 deg. C / 42 % RH
Engineer Kenichi Adachi
Mode Tx 11ax-20 (OFDM), 2412 MHz, worst antenna port(ANT1)



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
14.15	-90.57	0.12	9.97	2.67	2	-74.79	300	6.00	-13.5	44.5	58.0	-
333.00	-90.60	0.13	9.97	2.67	2	-74.82	300	6.00	-13.6	17.1	30.7	-

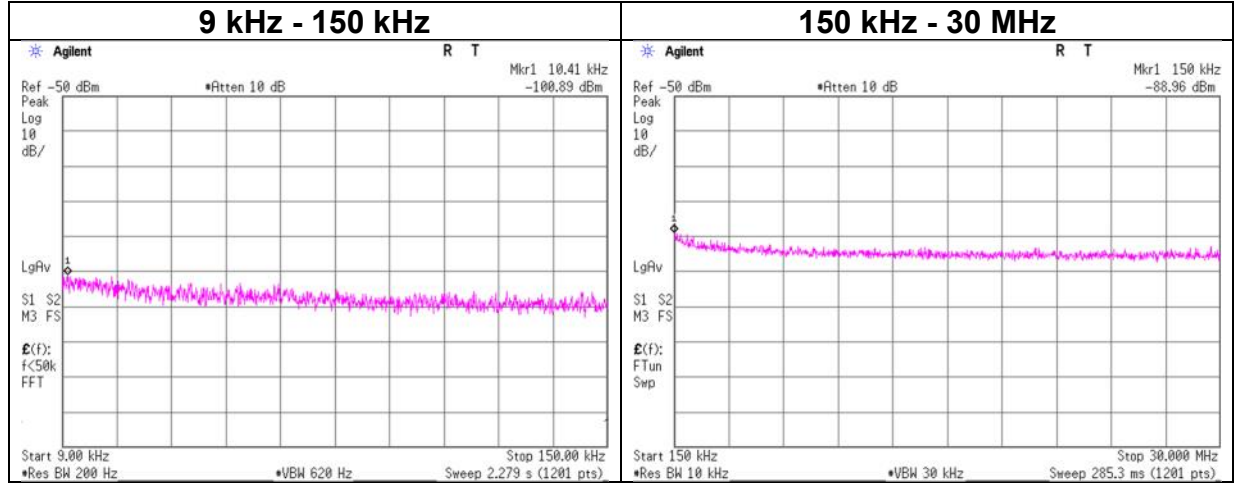
$E [dBuV/m] = EIRP [dBm] - 20 \log (Distance [m]) + Ground\ bounce [dB] + 104.8 [dBuV/m]$

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

N: Number of output

Conducted Spurious Emission

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 5, 2023
Temperature / Humidity 24 deg. C / 42 % RH
Engineer Yusuke Tanikawara
Mode Tx BT LE 1M-PHY, 2440 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain * [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
10.41	-100.89	0.12	9.87	2.67	1	-88.22	300	6.00	-27.0	47.2	74.2	-
150.00	-88.96	0.13	9.87	2.67	1	-76.29	300	6.00	-15.0	24.0	39.0	-

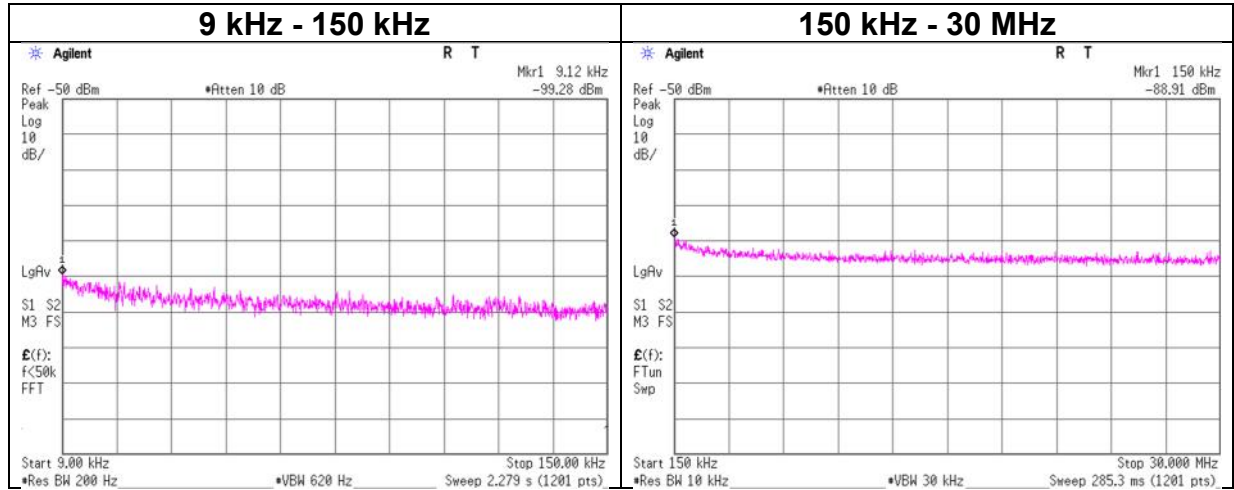
$E \text{ [dBuV/m]} = \text{EIRP [dBm]} - 20 \log (\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$

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

N: Number of output

Conducted Spurious Emission

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 5, 2023
Temperature / Humidity 24 deg. C / 42 % RH
Engineer Yusuke Tanikawara
Mode Tx BT LE 2M-PHY, 2440 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain * [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
9.12	-99.28	0.12	9.87	2.67	1	-86.61	300	6.00	-25.4	48.4	73.8	-
150.00	-88.91	0.13	9.87	2.67	1	-76.24	300	6.00	-15.0	24.0	39.0	-

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

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

N: Number of output

Power Density

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 5, 2023
Temperature / Humidity 26 deg. C / 42 % RH
Engineer Kenichi Adachi
Mode Tx 11b

ANT0 + ANT1

Freq.	ANT0 Result	ANT1 Result	Result		Limit	Margin
[MHz]	[mW / 3 kHz]	[mW / 3 kHz]	[dBm / 3 kHz]	[mW / 3 kHz]	[dBm / 3 kHz]	[dB]
2412	0.0395	0.0412	-10.93	0.0807	8.00	18.93
2437	0.0382	0.0515	-10.47	0.0897	8.00	18.47
2462	0.0355	0.0369	-11.40	0.0724	8.00	19.40

Sample Calculation:

Result = ANT0 Result + ANT1 Result

ANT0

Freq.	Reading	Cable Loss	Atten. Loss	Result	
[MHz]	[dBm / 3 kHz]	[dB]	[dB]	[dBm / 3 kHz]	[mW / 3 kHz]
2412	-26.03	2.06	9.94	-14.03	0.0395
2437	-26.20	2.08	9.94	-14.18	0.0382
2462	-26.53	2.09	9.94	-14.50	0.0355

ANT1

Freq.	Reading	Cable Loss	Atten. Loss	Result	
[MHz]	[dBm / 3 kHz]	[dB]	[dB]	[dBm / 3 kHz]	[mW / 3 kHz]
2412	-25.97	2.08	10.04	-13.85	0.0412
2437	-25.02	2.10	10.04	-12.88	0.0515
2462	-26.48	2.11	10.04	-14.33	0.0369

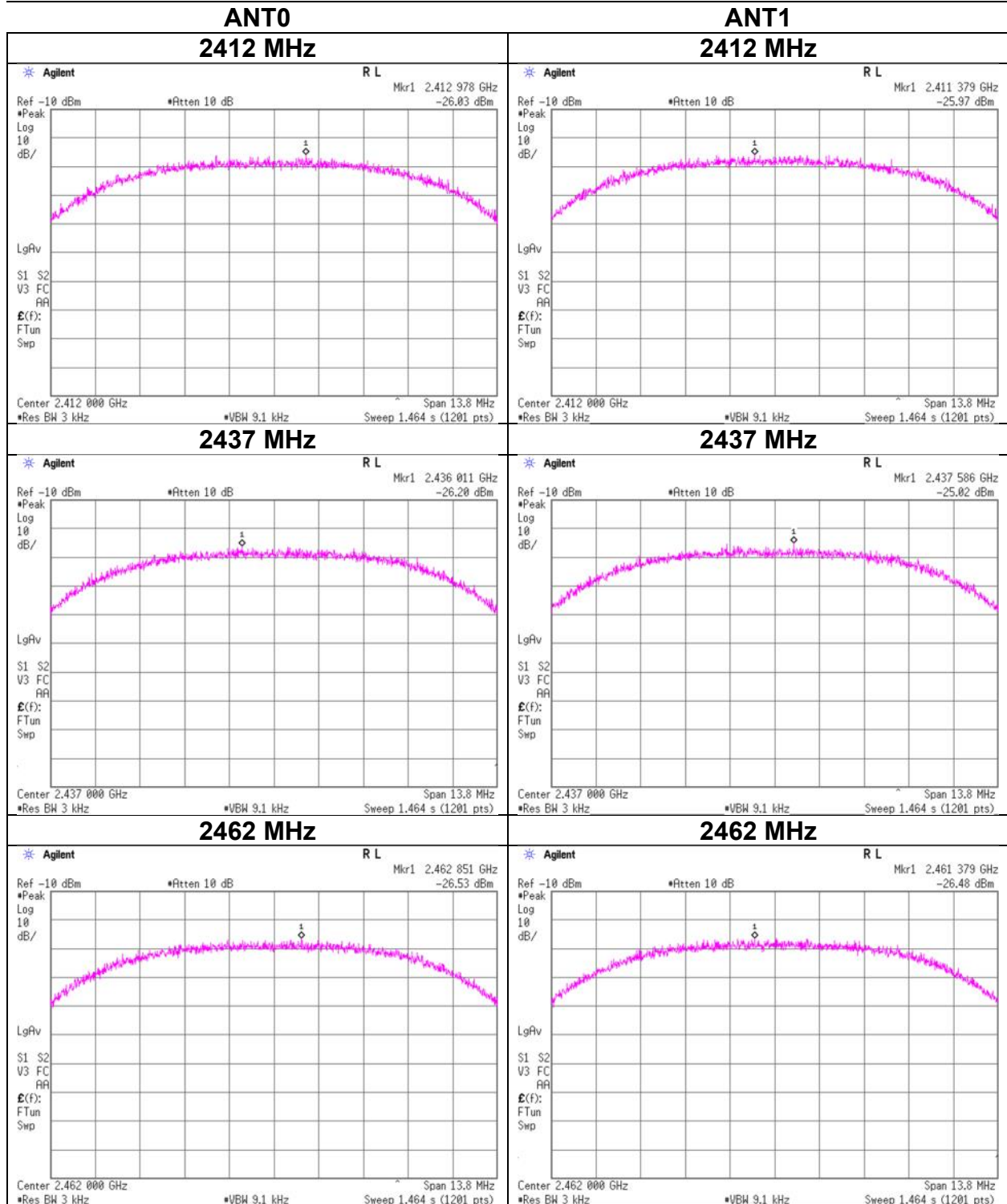
Sample Calculation:

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

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

Power Density

11b



Power Density

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	June 5, 2023
Temperature / Humidity	26 deg. C / 42 % RH
Engineer	Kenichi Adachi
Mode	Tx 11g

ANT0 + ANT1

Freq. [MHz]	ANT0 Result	ANT1 Result	Result		Limit	Margin
	[mW / 3 kHz]	[mW / 3 kHz]	[dBm / 3 kHz]	[mW / 3 kHz]	[dBm / 3 kHz]	[dB]
2412	0.0226	0.0239	-13.32	0.0465	8.00	21.32
2437	0.0222	0.0242	-13.34	0.0463	8.00	21.34
2462	0.0201	0.0222	-13.73	0.0423	8.00	21.73

Sample Calculation:

Result = ANT0 Result + ANT1 Result

ANT0

Freq. [MHz]	Reading	Cable Loss	Atten. Loss	Result	
	[dBm / 3 kHz]	[dB]	[dB]	[dBm / 3 kHz]	[mW / 3 kHz]
2412	-28.45	2.06	9.94	-16.45	0.0226
2437	-28.56	2.08	9.94	-16.54	0.0222
2462	-29.00	2.09	9.94	-16.97	0.0201

ANT1

Freq. [MHz]	Reading	Cable Loss	Atten. Loss	Result	
	[dBm / 3 kHz]	[dB]	[dB]	[dBm / 3 kHz]	[mW / 3 kHz]
2412	-28.34	2.08	10.04	-16.22	0.0239
2437	-28.31	2.10	10.04	-16.17	0.0242
2462	-28.68	2.11	10.04	-16.53	0.0222

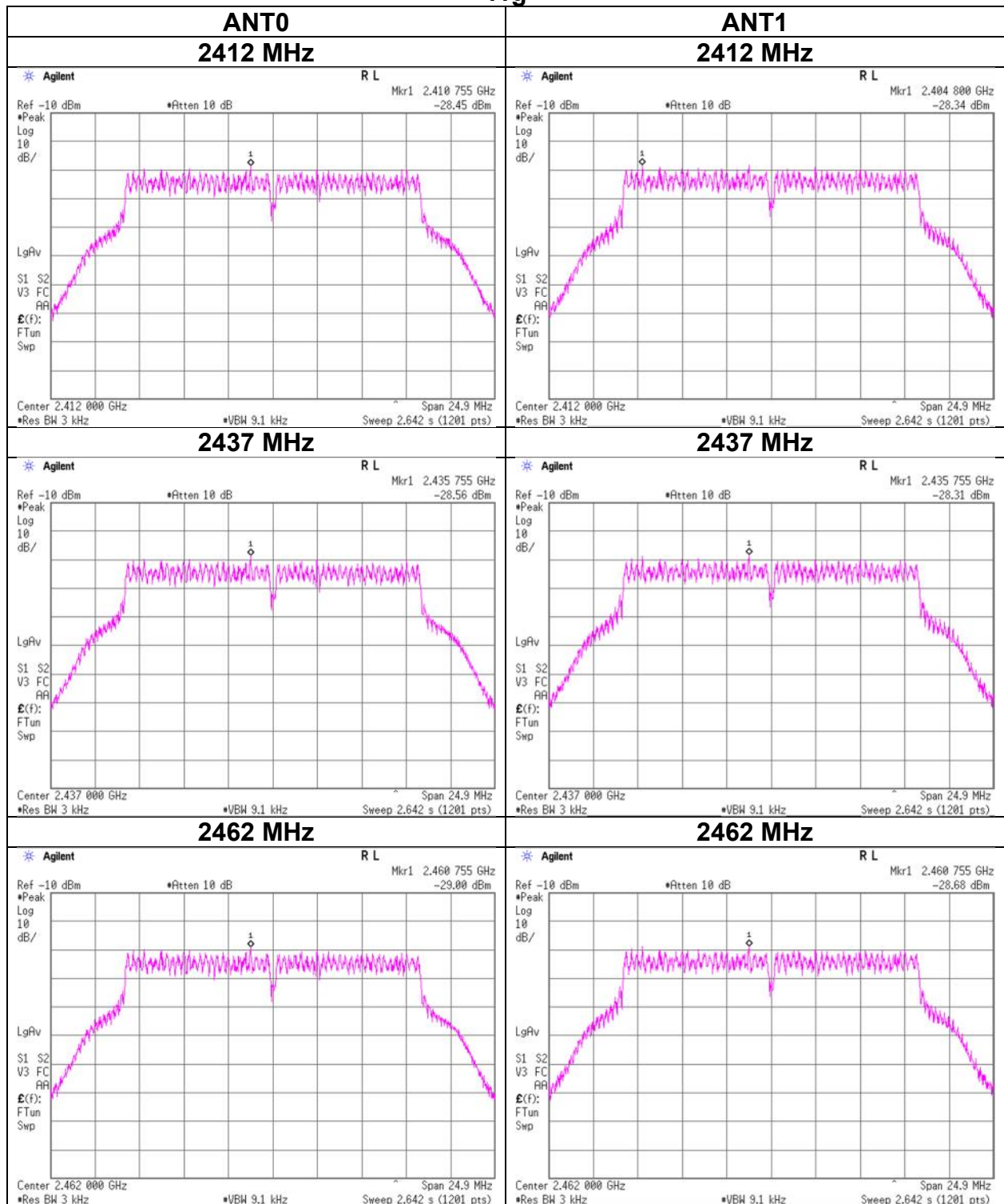
Sample Calculation:

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

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

Power Density

11g



Power Density

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	June 5, 2023
Temperature / Humidity	26 deg. C / 42 % RH
Engineer	Kenichi Adachi
Mode	Tx 11n-20

ANT0 + ANT1

Freq.	ANT0 Result	ANT1 Result	Result		Limit	Margin
[MHz]	[mW / 3 kHz]	[mW / 3 kHz]	[dBm / 3 kHz]	[mW / 3 kHz]	[dBm / 3 kHz]	[dB]
2412	0.0199	0.0225	-13.73	0.0424	8.00	21.73
2437	0.0164	0.0213	-14.24	0.0377	8.00	22.24
2462	0.0167	0.0212	-14.21	0.0379	8.00	22.21

Sample Calculation:

Result = ANT0 Result + ANT1 Result

ANT0

Freq.	Reading	Cable Loss	Atten. Loss	Result	
[MHz]	[dBm / 3 kHz]	[dB]	[dB]	[dBm / 3 kHz]	[mW / 3 kHz]
2412	-29.02	2.06	9.94	-17.02	0.0199
2437	-29.88	2.08	9.94	-17.86	0.0164
2462	-29.81	2.09	9.94	-17.78	0.0167

ANT1

Freq.	Reading	Cable Loss	Atten. Loss	Result	
[MHz]	[dBm / 3 kHz]	[dB]	[dB]	[dBm / 3 kHz]	[mW / 3 kHz]
2412	-28.59	2.08	10.04	-16.47	0.0225
2437	-28.85	2.10	10.04	-16.71	0.0213
2462	-28.88	2.11	10.04	-16.73	0.0212

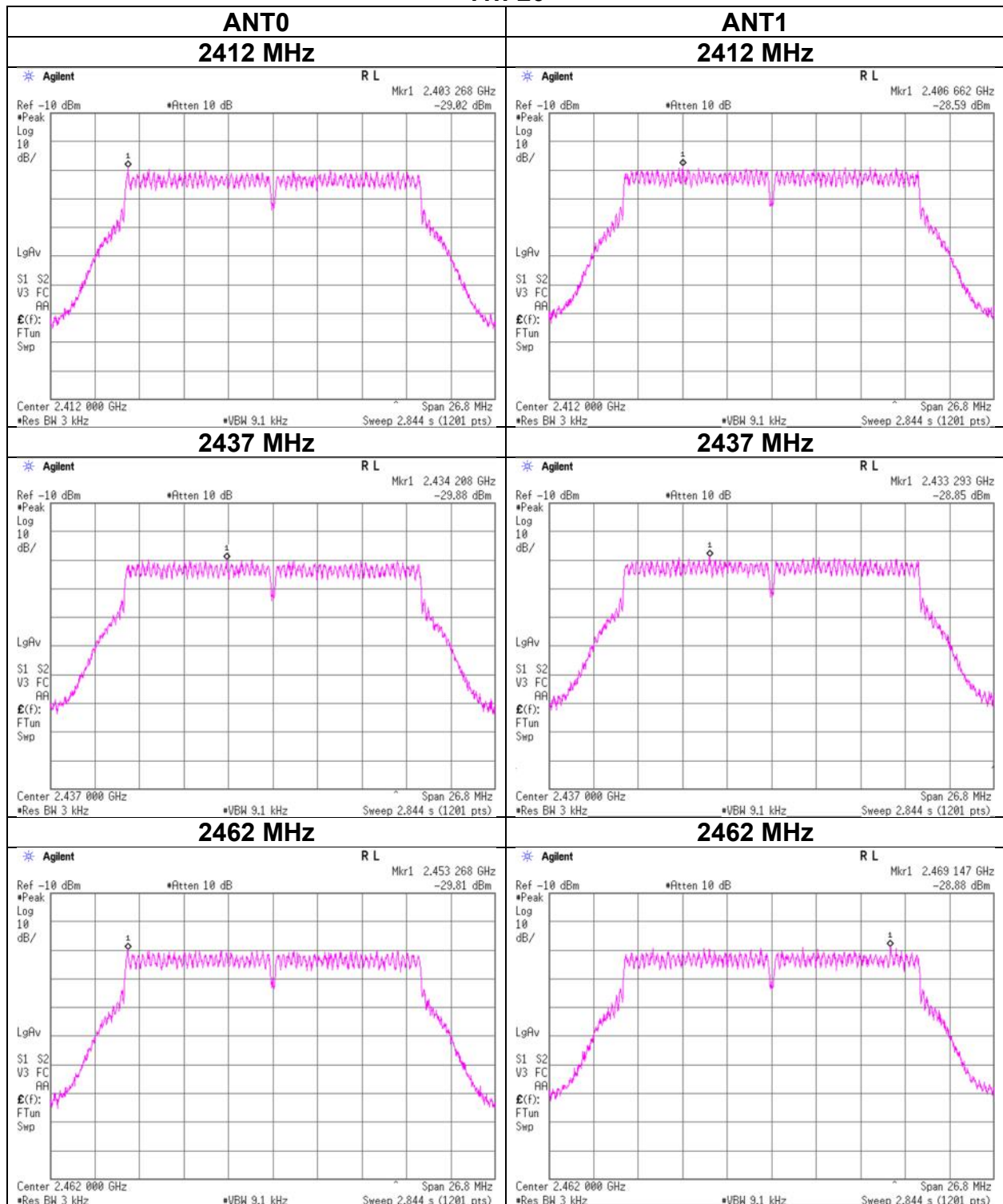
Sample Calculation:

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

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

Power Density

11n-20



Power Density

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 5, 2023
Temperature / Humidity 26 deg. C / 42 % RH
Engineer Kenichi Adachi
Mode Tx 11ax-20 (OFDM)

ANT0 + ANT1

Freq.	ANT0 Result	ANT1 Result	Result		Limit	Margin
[MHz]	[mW / 3 kHz]	[mW / 3 kHz]	[dBm / 3 kHz]	[mW / 3 kHz]	[dBm / 3 kHz]	[dB]
2412	0.0146	0.0178	-14.90	0.0324	8.00	22.90
2437	0.0131	0.0186	-14.99	0.0317	8.00	22.99
2462	0.0149	0.0196	-14.61	0.0346	8.00	22.61

Sample Calculation:

Result = ANT0 Result + ANT1 Result

ANT0

Freq.	Reading	Cable Loss	Atten. Loss	Result	
[MHz]	[dBm / 3 kHz]	[dB]	[dB]	[dBm / 3 kHz]	[mW / 3 kHz]
2412	-30.37	2.06	9.94	-18.37	0.0146
2437	-30.85	2.08	9.94	-18.83	0.0131
2462	-30.29	2.09	9.94	-18.26	0.0149

ANT1

Freq.	Reading	Cable Loss	Atten. Loss	Result	
[MHz]	[dBm / 3 kHz]	[dB]	[dB]	[dBm / 3 kHz]	[mW / 3 kHz]
2412	-29.61	2.08	10.04	-17.49	0.0178
2437	-29.44	2.10	10.04	-17.30	0.0186
2462	-29.22	2.11	10.04	-17.07	0.0196

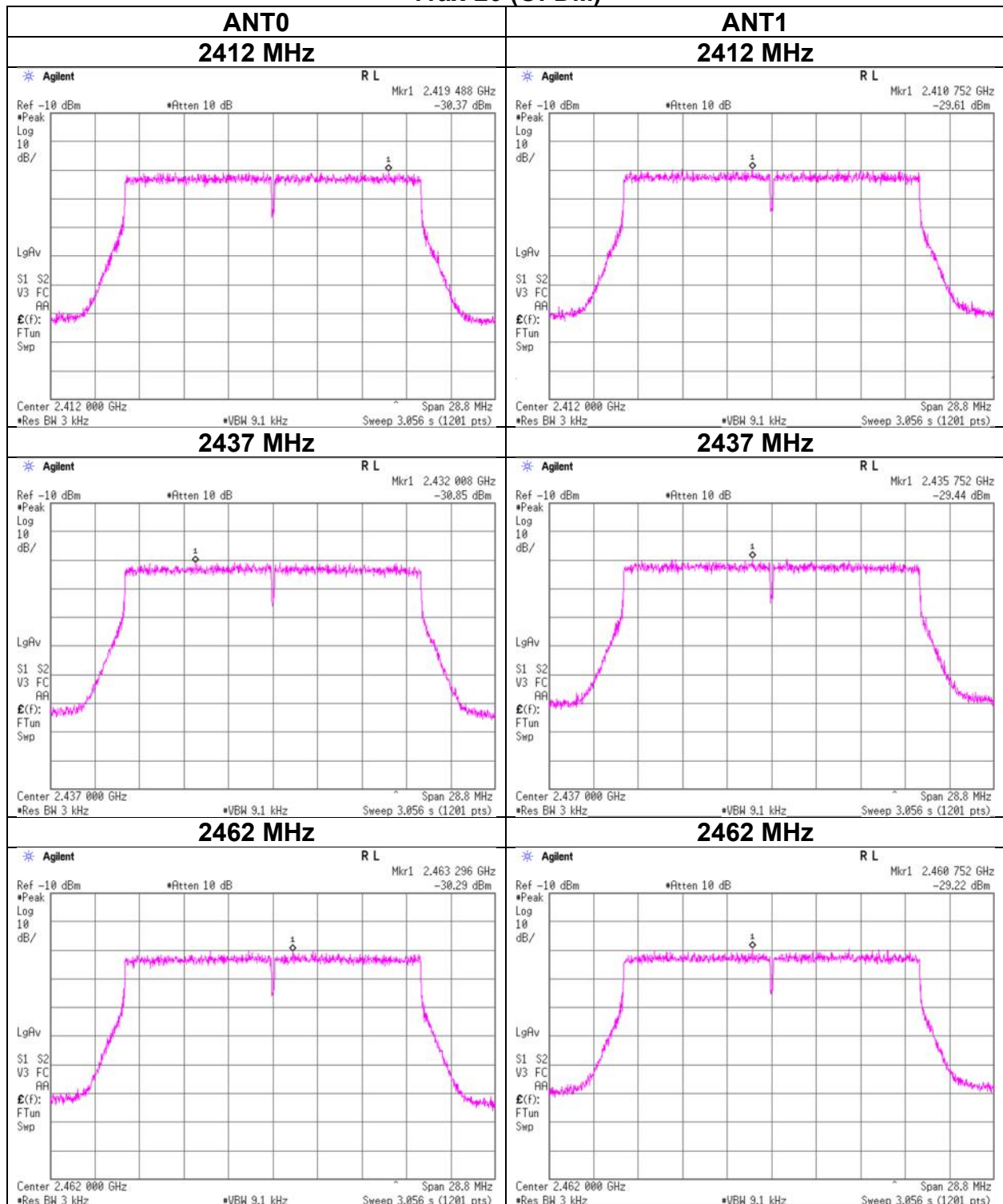
Sample Calculation:

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

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

Power Density

11ax-20 (OFDM)



Power Density

Test place Shonan EMC Lab. No.5 Shielded Room
Date October 30, 2023
Temperature / Humidity 25 deg. C / 34 % RH
Engineer Shiro Kobayashi
Mode Tx 11ax-20 (OFDMA) 26-tone RU

ANT0 + ANT1

RU Type	Freq. [MHz]	RU Index	ANT0 Result [mW]	ANT1 Result [mW]	Result		Limit	Margin
					[dBm / 3 kHz]	[mW / 3 kHz]	[dBm / 3 kHz]	[dB]
26-tone RU	2412	0	0.009	0.009	-17.55	0.018	8.00	25.55
		4	0.010	0.013	-16.33	0.023	8.00	24.33
		8	0.011	0.011	-16.70	0.021	8.00	24.70
	2437	0	0.010	0.009	-17.29	0.019	8.00	25.29
		4	0.009	0.010	-17.31	0.019	8.00	25.31
		8	0.007	0.010	-17.54	0.018	8.00	25.54
	2462	0	0.008	0.011	-17.35	0.018	8.00	25.35
		4	0.008	0.008	-17.71	0.017	8.00	25.71
		8	0.007	0.008	-18.30	0.015	8.00	26.30

Sample Calculation:

Result = ANT0 Result + ANT1 Result

ANT0

RU Type	Freq. [MHz]	RU Index	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm / 3 kHz]	[mW / 3 kHz]
26-tone RU	2412	0	-32.70	2.06	9.94	-20.70	0.009
		4	-32.06	2.06	9.94	-20.06	0.010
		8	-31.70	2.06	9.94	-19.70	0.011
	2437	0	-32.24	2.08	9.94	-20.22	0.010
		4	-32.51	2.08	9.94	-20.49	0.009
		8	-33.38	2.08	9.94	-21.36	0.007
	2462	0	-33.08	2.09	9.94	-21.05	0.008
		4	-32.75	2.09	9.94	-20.72	0.008
		8	-33.90	2.09	9.94	-21.87	0.007

ANT1

RU Type	Freq. [MHz]	RU Index	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm / 3 kHz]	[mW / 3 kHz]
26-tone RU	2412	0	-32.43	2.06	9.94	-20.43	0.009
		4	-30.72	2.06	9.94	-18.72	0.013
		8	-31.72	2.06	9.94	-19.72	0.011
	2437	0	-32.40	2.08	9.94	-20.38	0.009
		4	-32.17	2.08	9.94	-20.15	0.010
		8	-31.89	2.08	9.94	-19.87	0.010
	2462	0	-31.80	2.09	9.94	-19.77	0.011
		4	-32.75	2.09	9.94	-20.72	0.008
		8	-32.85	2.09	9.94	-20.82	0.008

Sample Calculation:

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

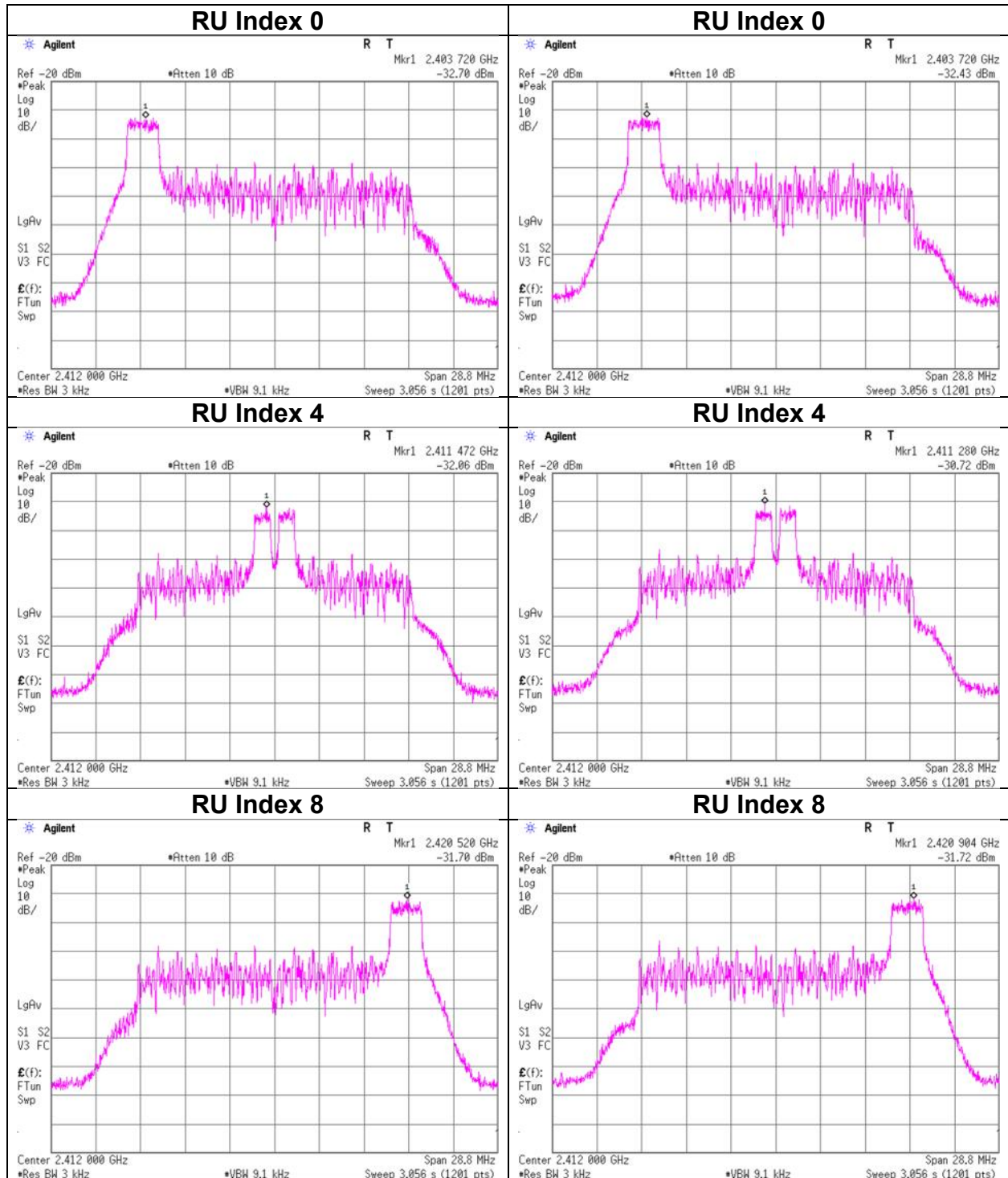
*The equipment and cables were not used for factor 0 dB of the data sheets.

Power Density

11ax-20 (OFDMA) 26-tone RU, 2412 MHz

ANT0

ANT1

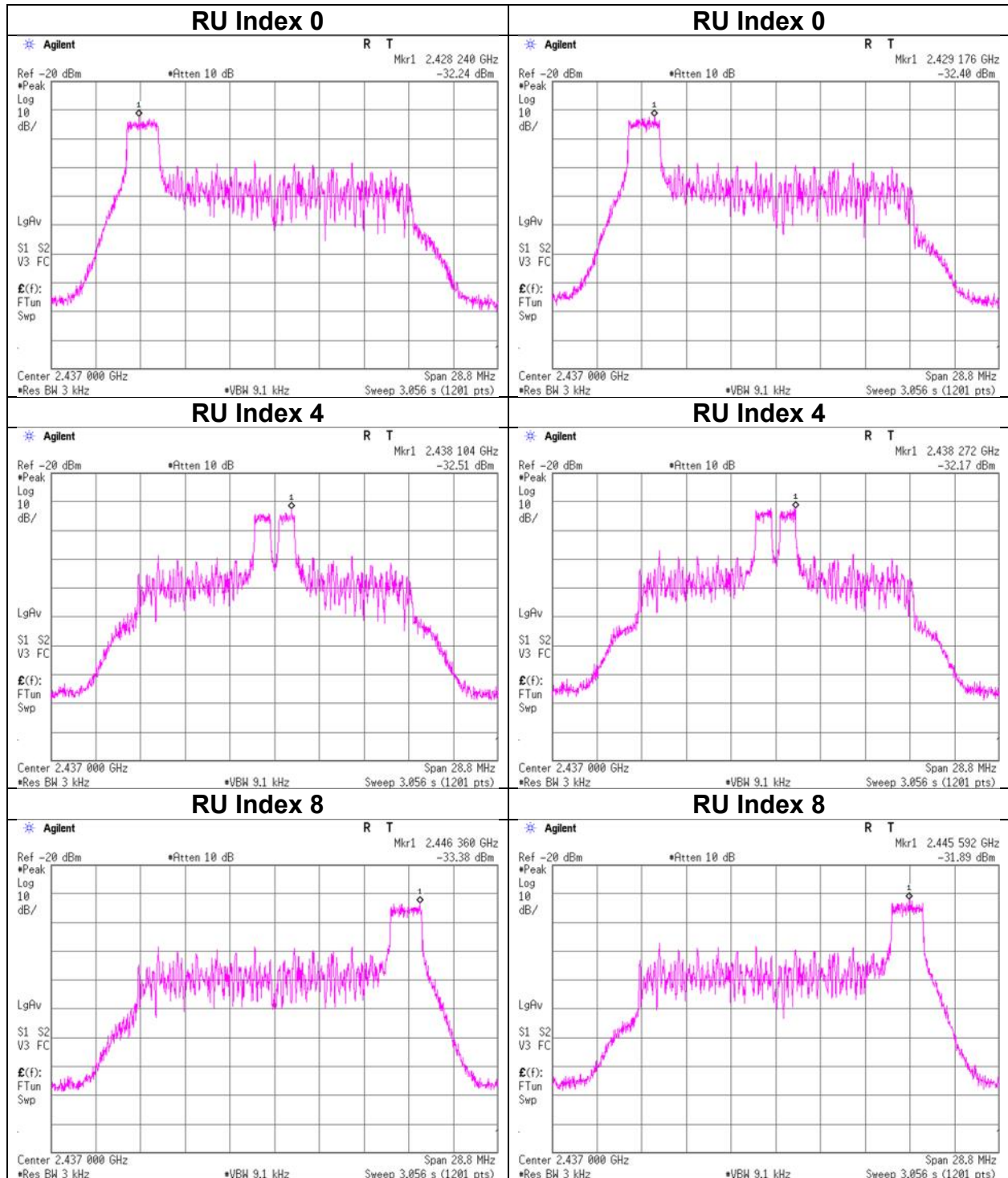


Power Density

11ax-20 (OFDMA) 26-tone RU, 2437 MHz

ANT0

ANT1

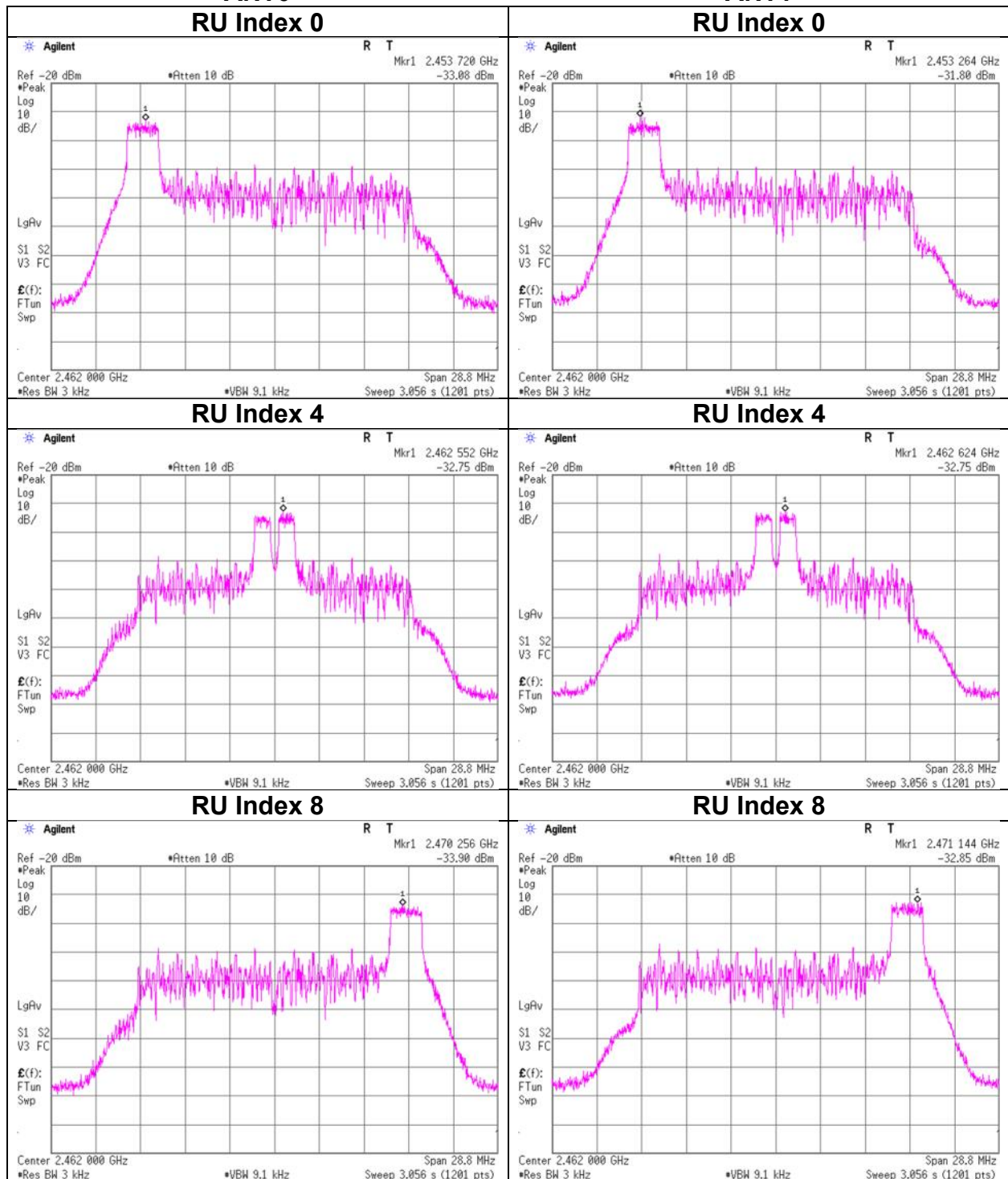


Power Density

11ax-20 (OFDMA) 26-tone RU, 2462 MHz

ANT0

ANT1



Power Density

Test place Shonan EMC Lab. No.5 Shielded Room
Date October 30, 2023
Temperature / Humidity 25 deg. C / 34 % RH
Engineer Shiro Kobayashi
Mode Tx 11ax-20 (OFDMA) 52-tone RU

ANT0 + ANT1

RU Type	Freq. [MHz]	RU Index	ANT0 Result [mW]	ANT1 Result [mW]	Result		Limit	Margin
					[dBm / 3 kHz]	[mW / 3 kHz]	[dBm / 3 kHz]	[dB]
52-tone RU	2412	37	0.012	0.011	-16.45	0.023	8.00	24.45
		38	0.011	0.012	-16.45	0.023	8.00	24.45
		40	0.008	0.012	-16.99	0.020	8.00	24.99
	2437	37	0.011	0.012	-16.45	0.023	8.00	24.45
		38	0.014	0.013	-15.78	0.026	8.00	23.78
		40	0.011	0.013	-16.16	0.024	8.00	24.16
	2462	37	0.010	0.010	-16.97	0.020	8.00	24.97
		38	0.013	0.012	-16.01	0.025	8.00	24.01
		40	0.010	0.010	-16.99	0.020	8.00	24.99

Sample Calculation:
Result = ANT0 Result + ANT1 Result

ANT0

RU Type	Freq. [MHz]	RU Index	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm / 3 kHz]	[mW / 3 kHz]
52-tone RU	2412	37	-31.21	2.06	9.94	-19.21	0.012
		38	-31.62	2.06	9.94	-19.62	0.011
		40	-32.81	2.06	9.94	-20.81	0.008
	2437	37	-31.59	2.08	9.94	-19.57	0.011
		38	-30.59	2.08	9.94	-18.57	0.014
		40	-31.60	2.08	9.94	-19.58	0.011
	2462	37	-31.97	2.09	9.94	-19.94	0.010
		38	-31.02	2.09	9.94	-18.99	0.013
		40	-31.97	2.09	9.94	-19.94	0.010

ANT1

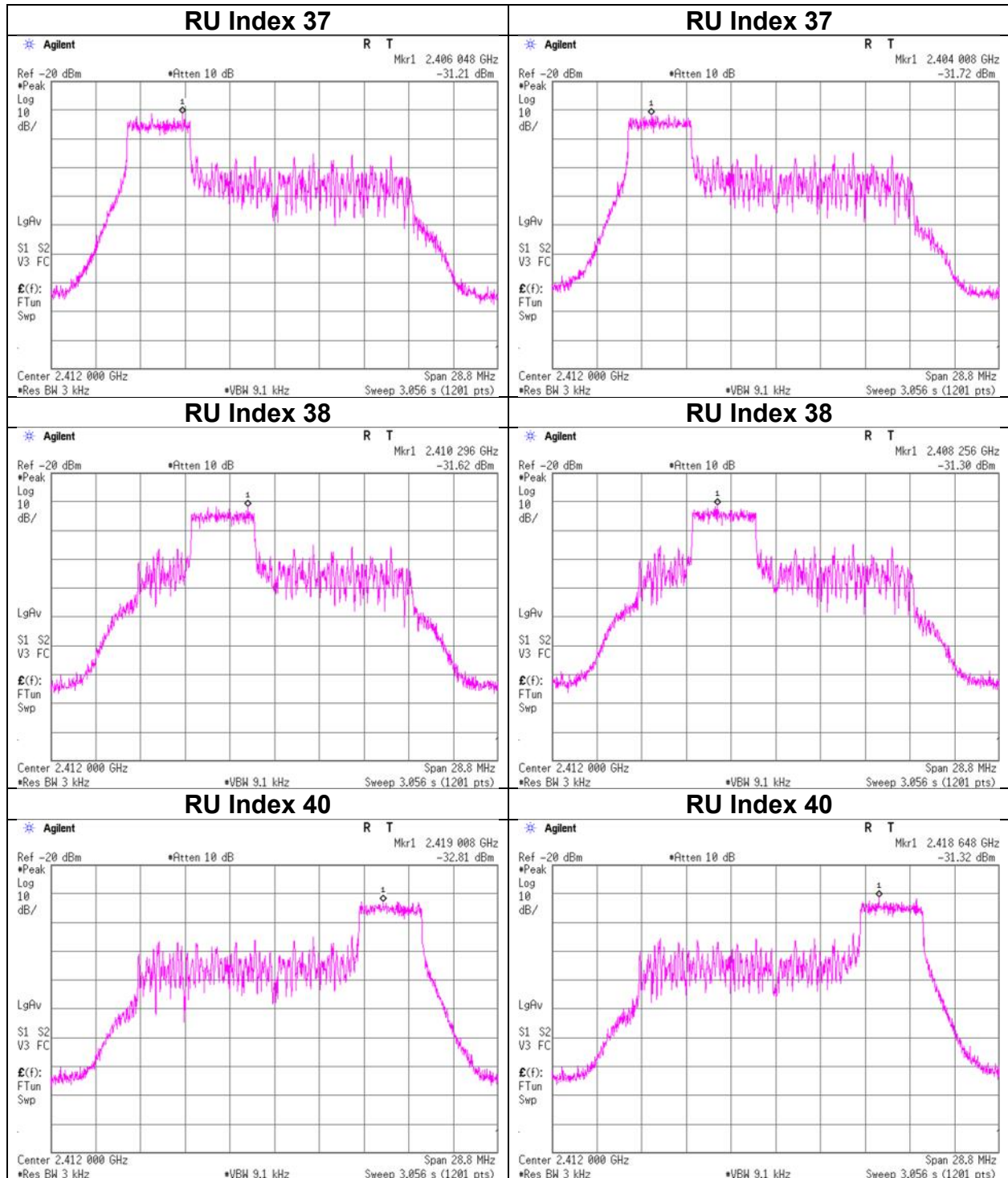
RU Type	Freq. [MHz]	RU Index	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm / 3 kHz]	[mW / 3 kHz]
52-tone RU	2412	37	-31.72	2.06	9.94	-19.72	0.011
		38	-31.30	2.06	9.94	-19.30	0.012
		40	-31.32	2.06	9.94	-19.32	0.012
	2437	37	-31.38	2.08	9.94	-19.36	0.012
		38	-31.04	2.08	9.94	-19.02	0.013
		40	-30.81	2.08	9.94	-18.79	0.013
	2462	37	-32.05	2.09	9.94	-20.02	0.010
		38	-31.08	2.09	9.94	-19.05	0.012
		40	-32.10	2.09	9.94	-20.07	0.010

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

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

Power Density

11ax-20 (OFDMA) 52-tone RU, 2412 MHz ANT0 ANT1

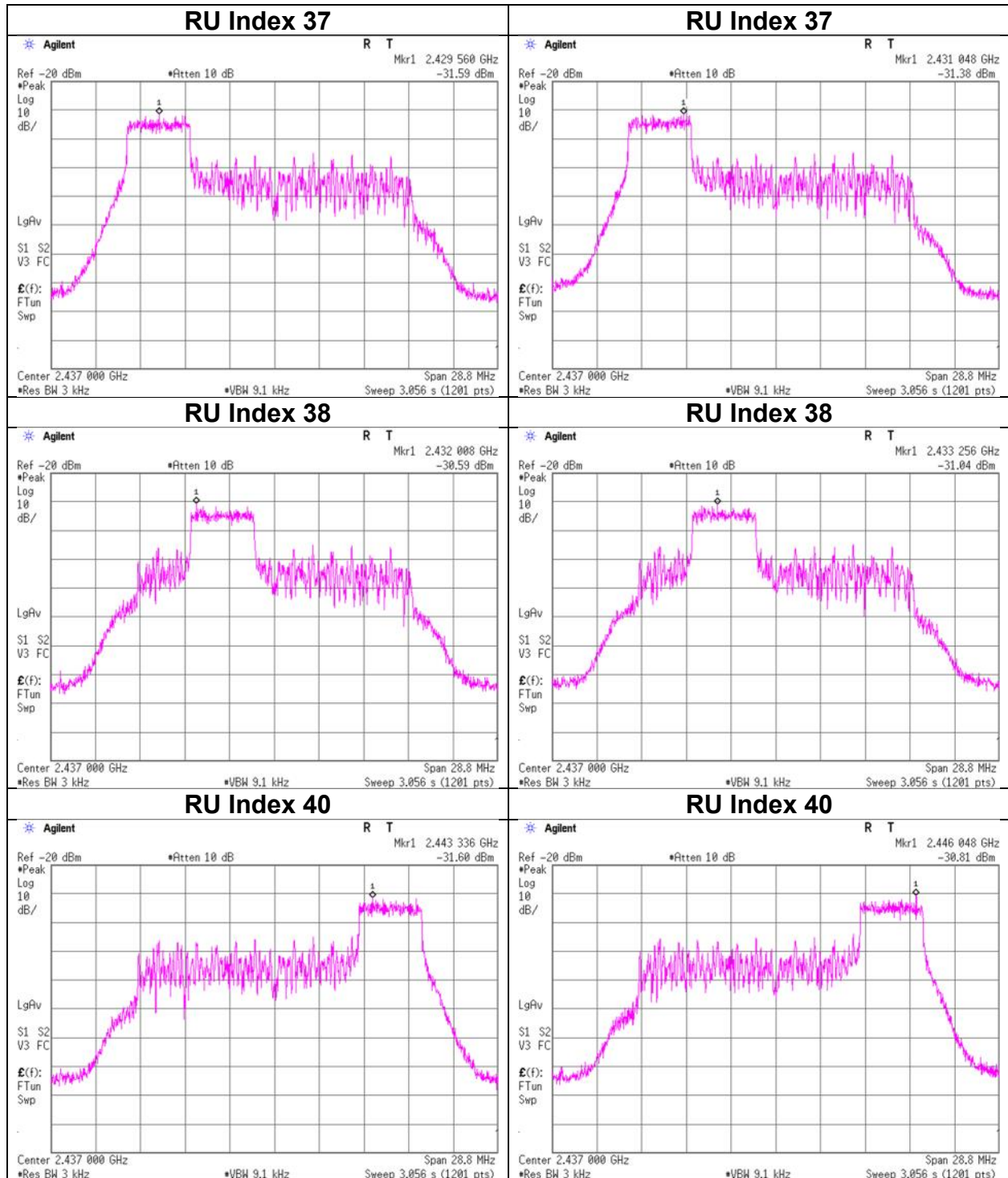


Power Density

11ax-20 (OFDMA) 52-tone RU, 2437 MHz

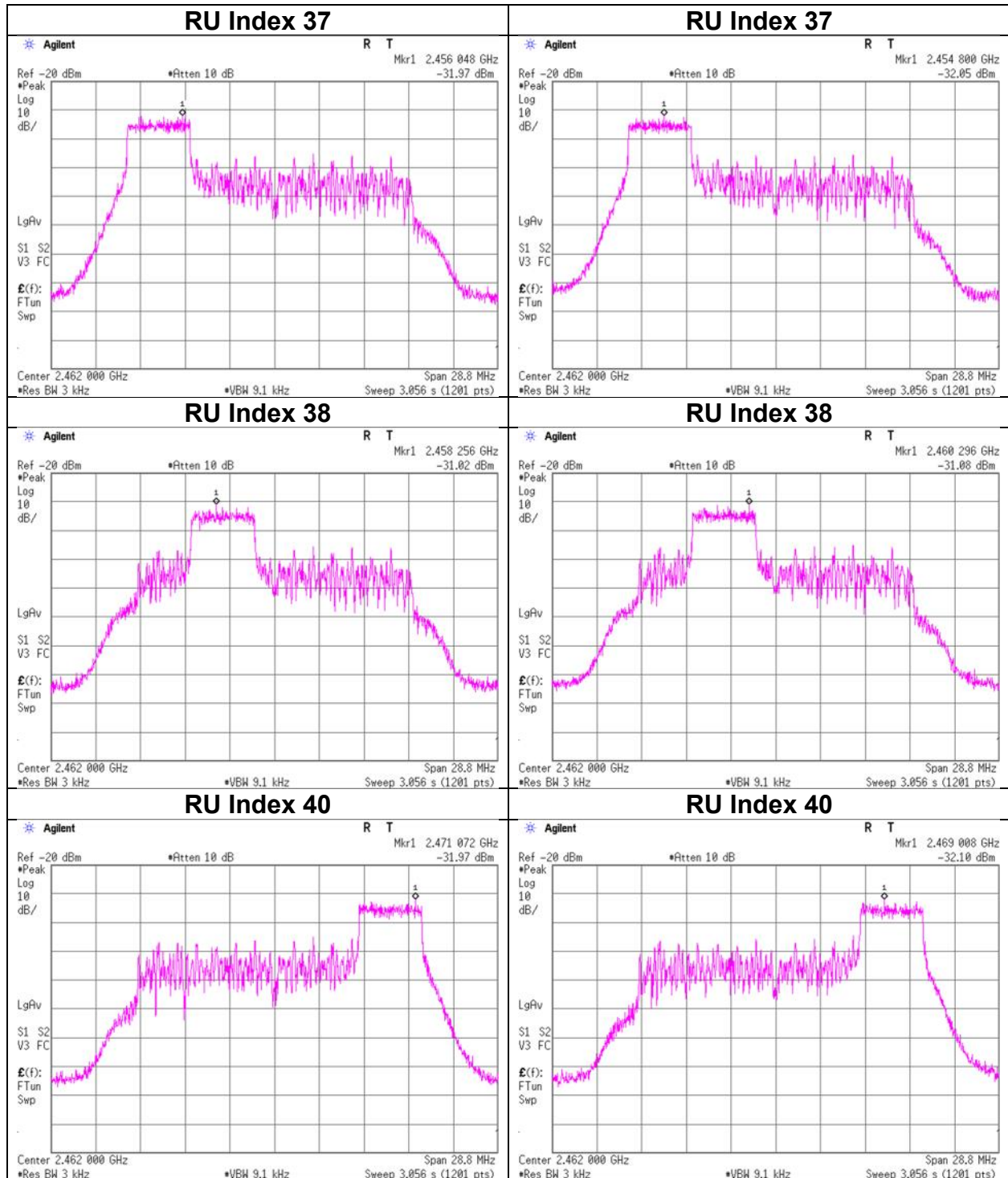
ANT0

ANT1



Power Density

11ax-20 (OFDMA) 52-tone RU, 2462 MHz ANT0 ANT1



Power Density

Test place Shonan EMC Lab. No.5 Shielded Room
Date October 30, 2023
Temperature / Humidity 25 deg. C / 34 % RH
Engineer Shiro Kobayashi
Mode Tx 11ax-20 (OFDMA) 106-tone RU

ANT0 + ANT1

RU Type	Freq. [MHz]	RU Index	ANT0 Result [mW]	ANT1 Result [mW]	Result		Limit [dBm / 3 kHz]	Margin [dB]
					[dBm / 3 kHz]	[mW / 3 kHz]		
106-tone RU	2412	53	0.010	0.012	-16.64	0.022	8.00	24.64
		54	0.012	0.013	-15.99	0.025	8.00	23.99
	2437	53	0.011	0.011	-16.52	0.022	8.00	24.52
		54	0.012	0.013	-15.90	0.026	8.00	23.90
	2462	53	0.010	0.011	-16.71	0.021	8.00	24.71
		54	0.010	0.015	-16.03	0.025	8.00	24.03

Sample Calculation:

Result = ANT0 Result + ANT1 Result

ANT0

RU Type	Freq. [MHz]	RU Index	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm / 3 kHz]	[mW / 3 kHz]
106-tone RU	2412	53	-32.13	2.06	9.94	-20.13	0.010
		54	-31.23	2.06	9.94	-19.23	0.012
	2437	53	-31.52	2.08	9.94	-19.50	0.011
		54	-31.15	2.08	9.94	-19.13	0.012
	2462	53	-31.99	2.09	9.94	-19.96	0.010
		54	-31.87	2.09	9.94	-19.84	0.010

ANT1

RU Type	Freq. [MHz]	RU Index	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm / 3 kHz]	[mW / 3 kHz]
106-tone RU	2412	53	-31.21	2.06	9.94	-19.21	0.012
		54	-30.79	2.06	9.94	-18.79	0.013
	2437	53	-31.59	2.08	9.94	-19.57	0.011
		54	-30.73	2.08	9.94	-18.71	0.013
	2462	53	-31.53	2.09	9.94	-19.50	0.011
		54	-30.39	2.09	9.94	-18.36	0.015

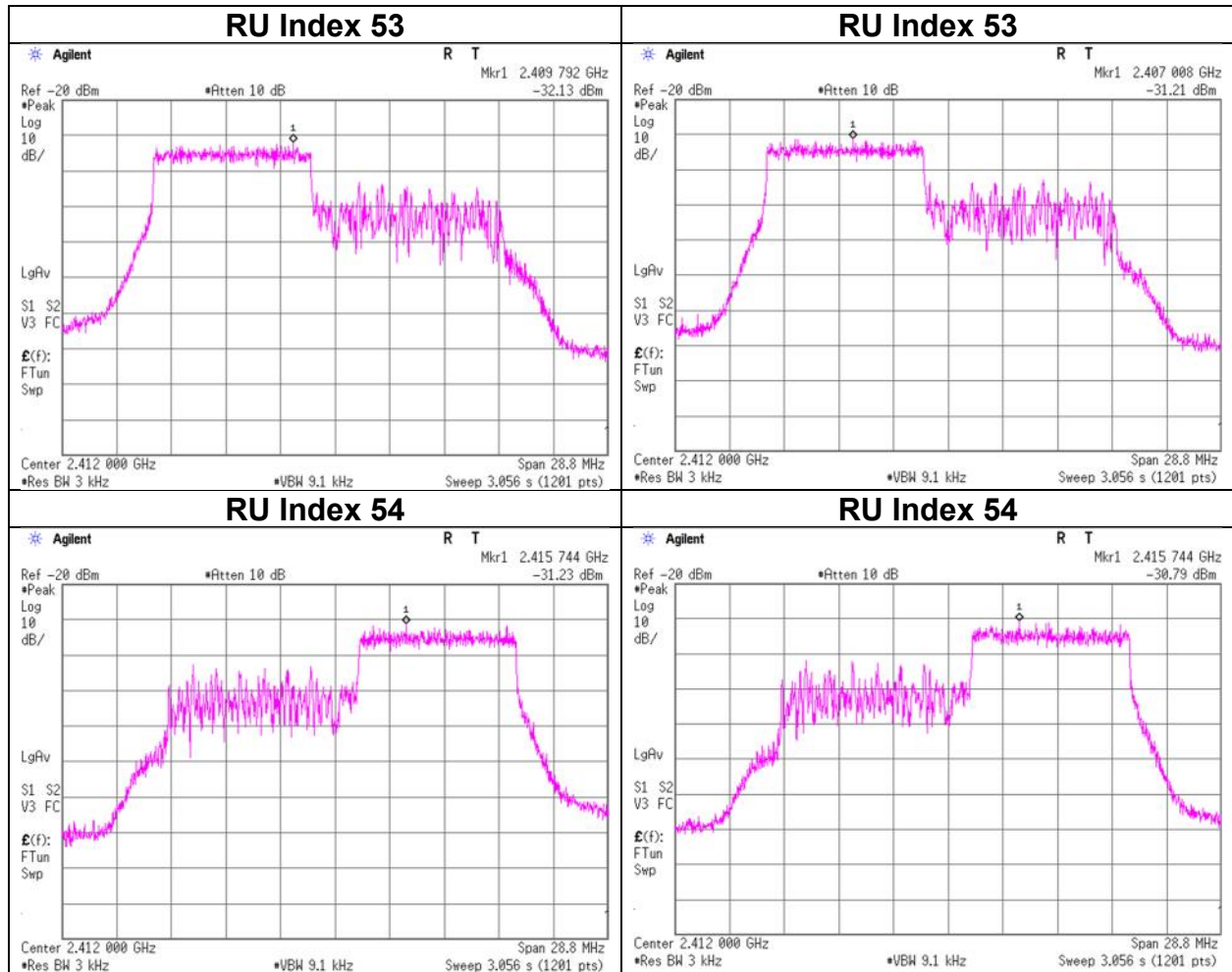
Sample Calculation:

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

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

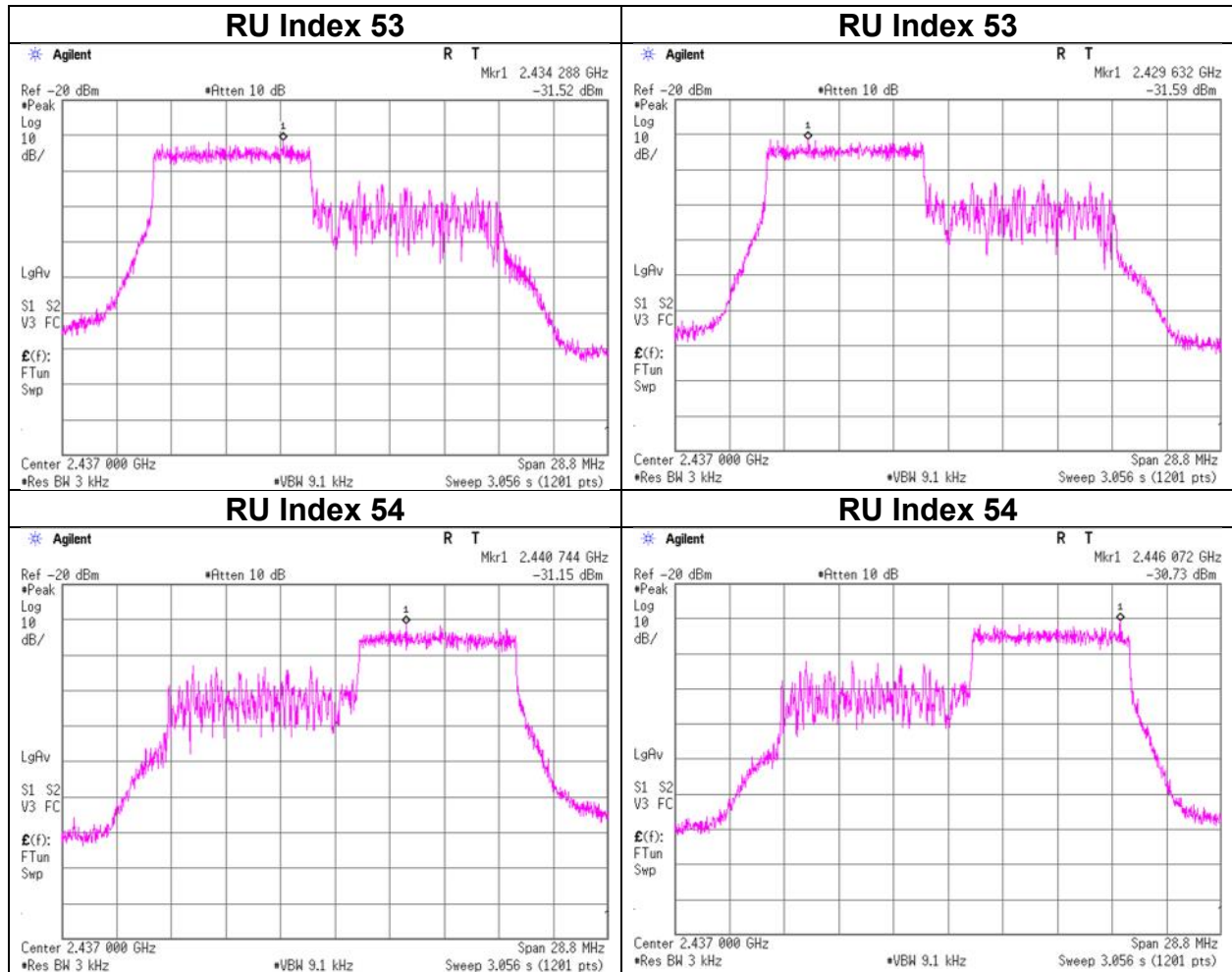
Power Density

11ax-20 (OFDMA) 106-tone RU, 2412 MHz ANT0 ANT1



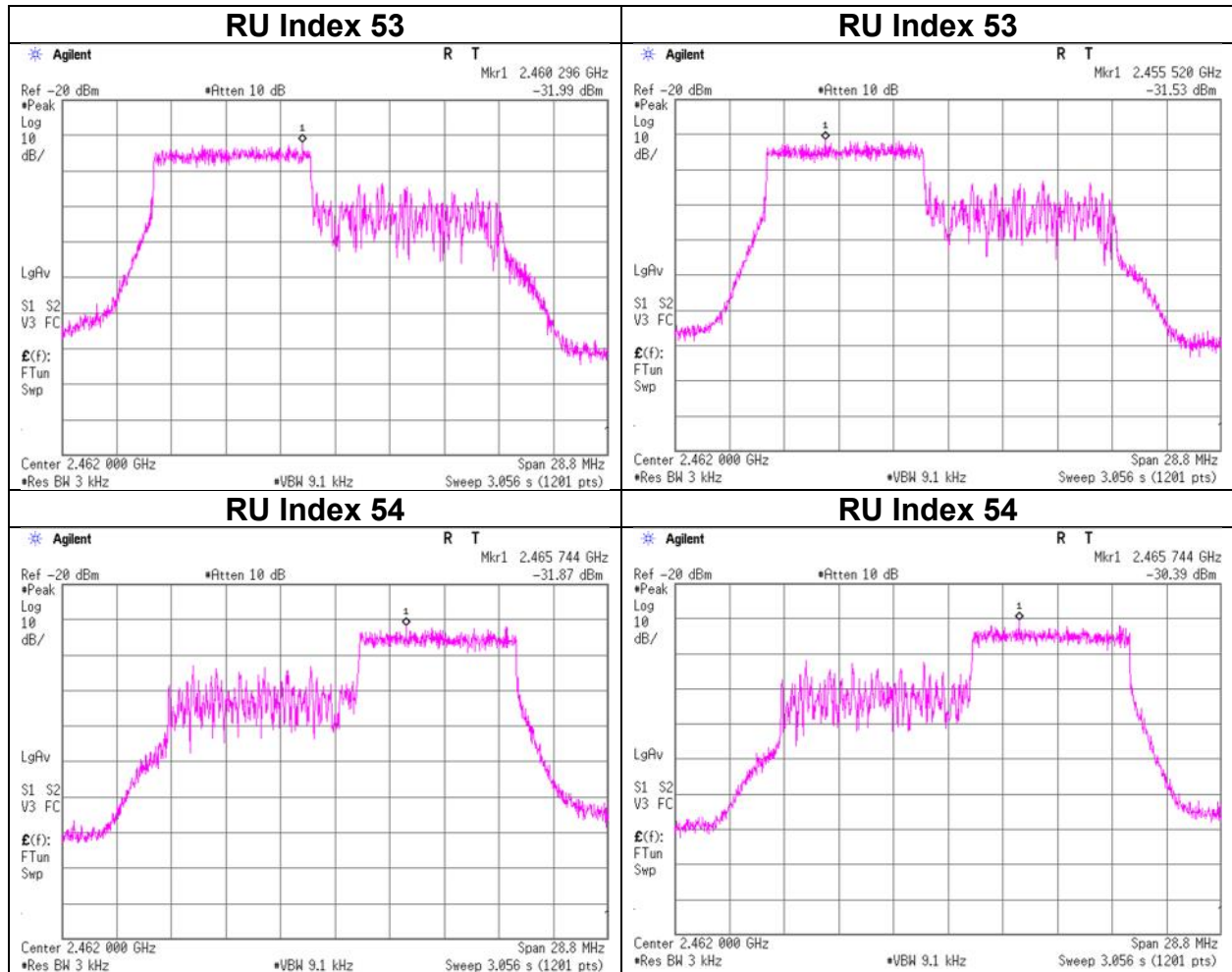
Power Density

11ax-20 (OFDMA) 106-tone RU, 2437 MHz ANT0 ANT1



Power Density

11ax-20 (OFDMA) 106-tone RU, 2462 MHz ANT0 ANT1



Power Density

Test place Shonan EMC Lab. No.5 Shielded Room
Date October 30, 2023
Temperature / Humidity 25 deg. C / 34 % RH
Engineer Shiro Kobayashi
Mode Tx 11ax-20 (OFDMA) 242-tone RU

ANT0 + ANT1

RU Type	Freq. [MHz]	RU Index	ANT0 Result [mW]	ANT1 Result [mW]	Result		Limit	Margin
					[dBm / 3 kHz]	[mW / 3 kHz]	[dBm / 3 kHz]	[dB]
242-tone RU	2412	61	0.010	0.012	-16.54	0.022	8.00	24.54
	2437	61	0.013	0.015	-15.56	0.028	8.00	23.56
	2462	61	0.010	0.014	-16.21	0.024	8.00	24.21

Sample Calculation:

Result = ANT0 Result + ANT1 Result

ANT0

RU Type	Freq. [MHz]	RU Index	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm / 3 kHz]	[mW / 3 kHz]
242-tone RU	2412	61	-32.03	2.06	9.94	-20.03	0.010
	2437	61	-30.93	2.08	9.94	-18.91	0.013
	2462	61	-31.93	2.09	9.94	-19.90	0.010

ANT1

RU Type	Freq. [MHz]	RU Index	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm / 3 kHz]	[mW / 3 kHz]
242-tone RU	2412	61	-31.12	2.06	9.94	-19.12	0.012
	2437	61	-30.27	2.08	9.94	-18.25	0.015
	2462	61	-30.67	2.09	9.94	-18.64	0.014

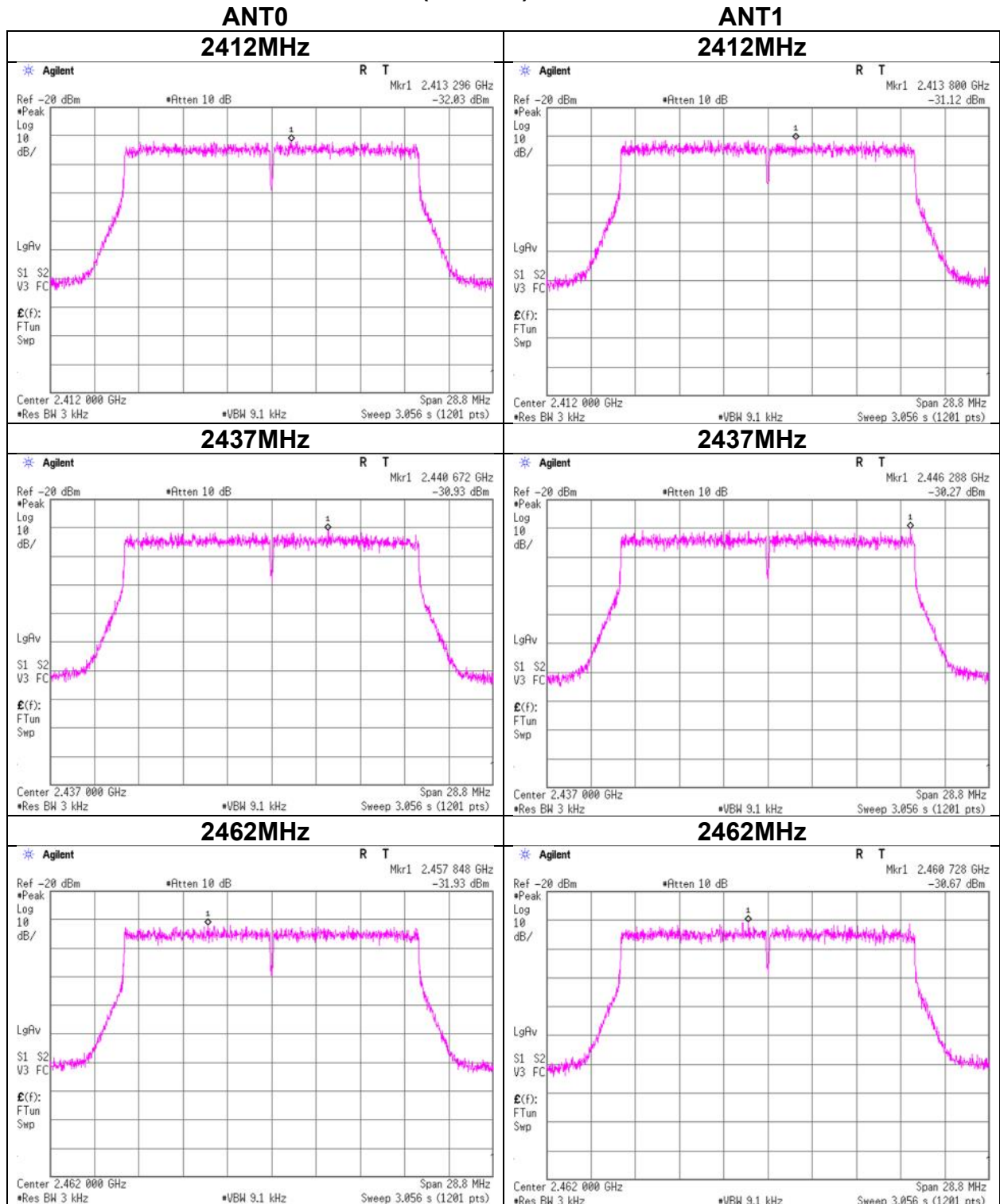
Sample Calculation:

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

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

Power Density

11ax-20 (OFDMA) 242-tone RU



Power Density

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 5, 2023
Temperature / Humidity 24 deg. C / 42 % RH
Engineer Yusuke Tanikawara
Mode Tx BT LE 1M-PHY

BT LE 1M-PHY

Frequency [MHz]	Measured Frequency [MHz]	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm/3 kHz]	Limit [dBm/3 kHz]	Margin [dB]
2402	2402.013	-20.80	2.06	9.94	-8.80	8.00	16.80
2440	2440.007	-20.62	2.08	9.94	-8.60	8.00	16.60
2480	2480.001	-21.02	2.10	9.94	-8.98	8.00	16.98

BT LE 2M-PHY

Frequency [MHz]	Measured Frequency [MHz]	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm/3 kHz]	Limit [dBm/3 kHz]	Margin [dB]
2402	2401.993	-24.03	2.06	9.94	-12.03	8.00	20.03
2440	2439.987	-23.76	2.08	9.94	-11.74	8.00	19.74
2480	2479.980	-24.25	2.10	9.94	-12.21	8.00	20.21

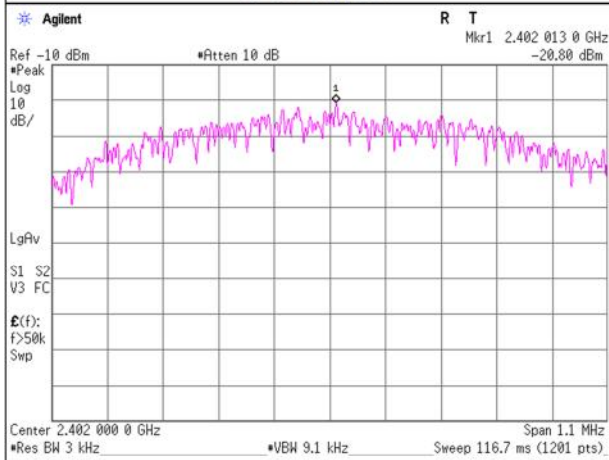
Sample Calculation:

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

Power Density

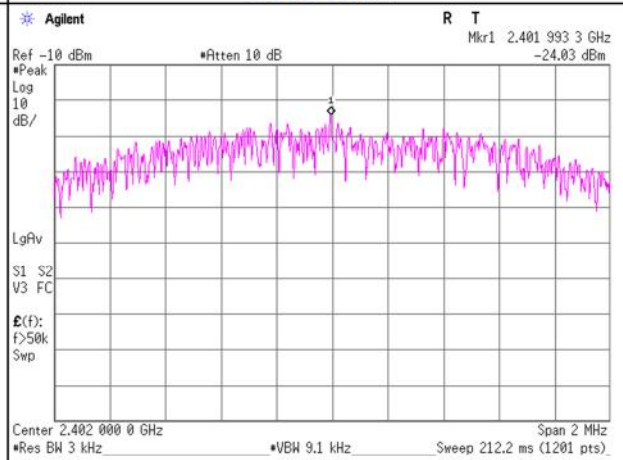
BT LE 1M-PHY

2402 MHz

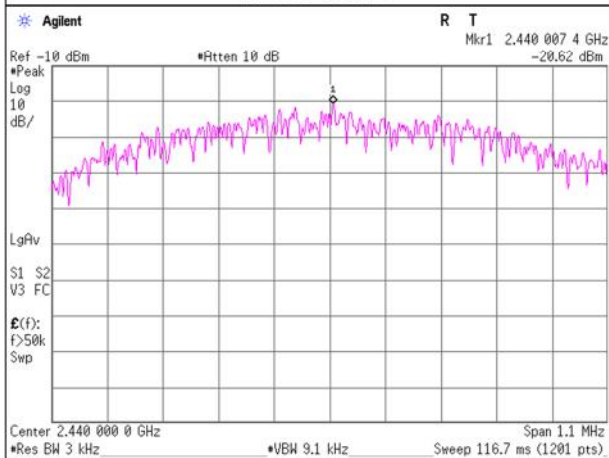


BT LE 2M-PHY

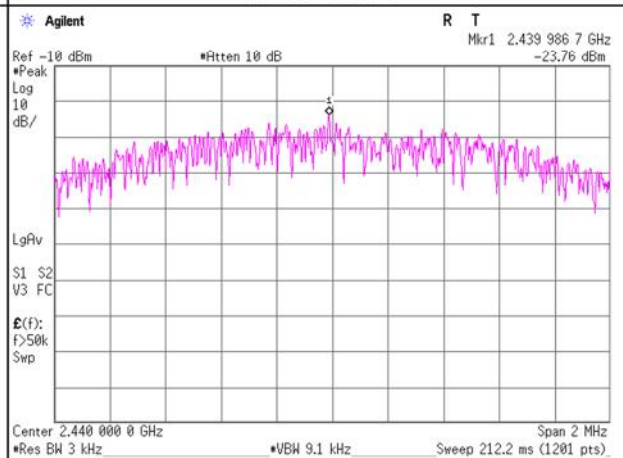
2402 MHz



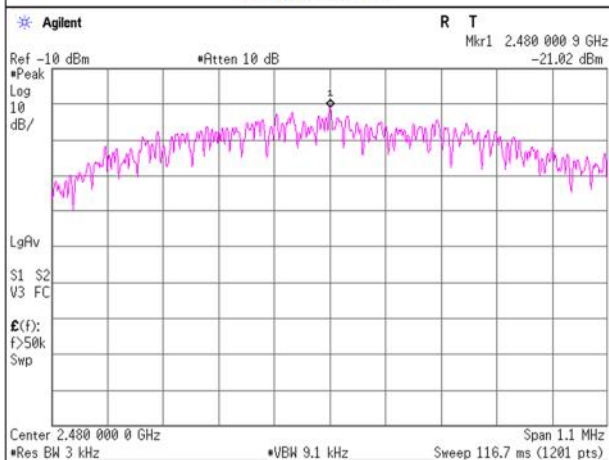
2440 MHz



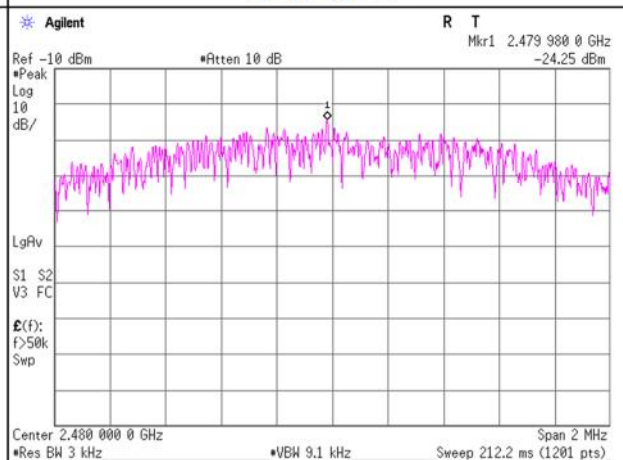
2440 MHz



2480 MHz



2480 MHz



APPENDIX 2: Test Instruments

Test Equipment (1/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	145005	Pre Amplifier	Toyo Corporation	TPA0118-36	2046104	2024/02/16	12
RE	145007	Pre Amplifier	Toyo Corporation	HAP18-26W	19	2024/03/05	12
RE	145023	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	BBA9106	91032666	2023/05/16	12
RE	145039	Coaxial Cable	Junkosha	J12J102207-00	APR-30-15-037	2023/01/12	12 *1)
RE	145126	Pre Amplifier	SONOMA	310N	290213	2024/02/07	12
RE	145136	Attenuator	Keysight Technologies Inc	8493C-010	74864	2023/10/12	12
RE	145171	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/T OYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	2024/04/01	12
RE	145176	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	2023/08/23	12
RE	145301	Highpass Filter	Micro-Tronics	HPM50111	51	2023/10/13	12
RE	145305	Highpass Filter	Micro-Tronics	HPM50111	119	2024/03/05	12
RE	145377	Highpass Filter	Micro-Tronics	HPM50112	28	2023/10/11	12
RE	145501	Horn Antenna	Schwarzbeck Mess-Elektronik OHG	BBHA9120D	9120D-739	2024/03/20	12
RE	145512	Horn Antenna	ETS-Lindgren	3160-09	00094868	2023/06/12	12
RE	145514	Horn Antenna	ETS-Lindgren	3160-10	00092383	2023/06/12	12
RE	145529	Logperiodic Antenna	Schwarzbeck Mess-Elektronik OHG	VUSLP9111B	196	2023/05/16	12
RE	145565	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	2024/04/03	12
RE	145566	Semi-Anechoic Chamber	TDK	SAEC-03(SVSWR)	3	2023/05/14	12
RE	146105	Antenna Tilt Jig	Intelligent System Engineering Co., Ltd	Antenna Tilt Jig	T-S003	-	-
RE	146396	Regulated DC Power supply	Kikusui Electronics Corp.	PAN35-10A	DE001677	-	-
RE	150461	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY46186392	2023/05/02	12
RE	150463	Test Receiver	Rohde & Schwarz	ESW44	101581	2023/08/25	12
RE	156380	Coaxial Cable	Huber+Suhner	SUCOFLEX_104_E	SN MY 13406/4E	2023/05/19	12
RE	166491	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S005	2024/01/10	12
RE	167094	Attenuator	JFW	50HF-006N	-	2024/02/13	12
RE	168300	Coaxial Cable	Huber+Suhner	SUCOFLEX 104	800375/4A	2022/11/10	12 *1)
RE	171614	Terminator	Weinschel - API Technologies Corp	M1459A	88995	2023/05/11	12
RE	179540	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	802815/2	2024/03/05	12
RE	191840	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	-	2023/08/03	12
RE	194685	Horn Antenna	Schwarzbeck Mess-Elektronik OHG	BBHA 9120 C	711	2024/03/20	12
RE	196945	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	803414/2	2024/03/12	12
RE	196985	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	803650/2	2024/03/05	12
RE	200010	Coaxial Cable	Huber+Suhner	SUCOFLEX 104	575618/4	2023/06/06	12
RE	202959	Highpass Filter	Micro-Tronics	HPM50107	G077	2023/10/11	12
RE	213530	Test Receiver	Rohde & Schwarz	ESW44	103068	2024/02/22	12
RE	236869	Coaxial Cable	Huber+Suhner	SUCOFLEX 104	200084/4A	2023/06/06	12

Test Equipment (2/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
AT	145111	Digital Tester	SANWA	PC500	7019232	2023/09/25	12
AT	146212	Digital Hitester	HIOKI E.E. CORPORATION	3805-50	80997828	2023/09/25	12
AT	146247	Power Meter	Keysight Technologies Inc	8990B	MY51000272	2023/05/29	12
AT	146268	Power Meter	Raditeq (Formerly DARE!! Instruments)	RPR3006W	15I00041SNO73	2023/05/30	12
AT	146310	Power sensor	Keysight Technologies Inc	N1923A	MY5326009	2023/05/29	12
AT	146311	Power sensor	Keysight Technologies Inc	N1923A	MY5349008	2023/05/29	12
AT	169910	Power Meter	Keysight Technologies Inc	8990B	MY51000448	2023/09/28	12
AT	169911	Power sensor	Keysight Technologies Inc	N1923A	MY57270004	2023/09/28	12
AT	169912	Power sensor	Keysight Technologies Inc	N1923A	MY57290005	2023/09/28	12
AT	175823	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	-	2023/08/01	12
AT	179108	Coaxial Cable	Junkosha	MWX241-03000KMSKMS/B	1901Q033-R	2024/04/09	12
AT	179109	Coaxial Cable	Junkosha	MWX241-03000KMSKMS/B	1901Q034-R	2024/04/09	12
AT	191845	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	-	2023/08/07	12
AT	204925	Attenuator	Weinschel Corp.	54A-10	109970	2024/02/14	12
AT	204926	Attenuator	Weinschel Corp.	54A-10	109971	2024/02/14	12
AT,RE	145800	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY48250106	2024/03/25	12
AT,RE	145801	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY48250152	2024/02/27	12
AT,RE	171615	Terminator	Weinschel - API Technologies Corp	M1459A	88997	2023/05/11	12
CE	144960	Attenuator	JFW	50HF-003N	-	2023/08/22	12
CE	145036	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	2024/04/01	12
CE	145542	LISN	Rohde & Schwarz	ENV216	100516	2024/02/06	12
CE,RE	146209	Test Receiver	Rohde & Schwarz	ESU26	100484	2023/09/22	12
CE,RE	146210	Digital Hitester	HIOKI E.E. CORPORATION	3805-50	80997823	2023/09/25	12
CE,RE	146432	Tape Measure	TAJIMA	GL19-55	-	-	-
CE,RE	170932	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3(RE,CE,ME,PE)	-	-	-

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

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

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

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

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

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