

UNII 2A

802.11a_Lowest Channel (5 260 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB($\mu V/m$))	(dB($\mu V/m$))	(dB)
Peak data								
7 363.25 ¹⁾	V	59.20	36.37	-38.75	-	56.82	74.00	17.18
8 415.52 ¹⁾	V	53.40	37.23	-39.72	-	50.91	74.00	23.09
10 521.17	V	54.60	38.94	-39.98	-	53.56	68.20	14.64
15 771.68 ¹⁾	V	52.20	38.70	-37.28	-	53.62	74.00	20.38
Average Data								
7 363.25 ¹⁾	V	51.48	36.37	-38.75	0.38	49.48	54.00	4.52

802.11a_Middle Channel (5 280 MHz)

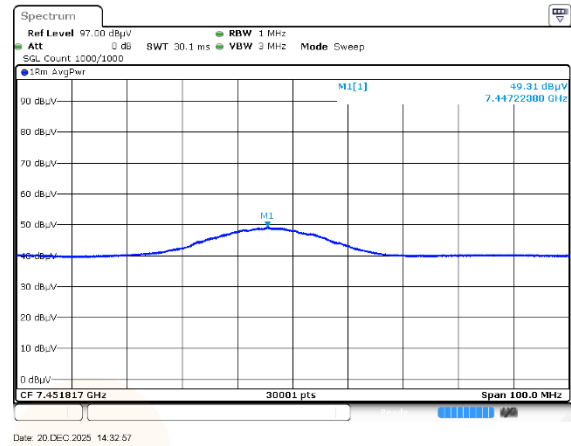
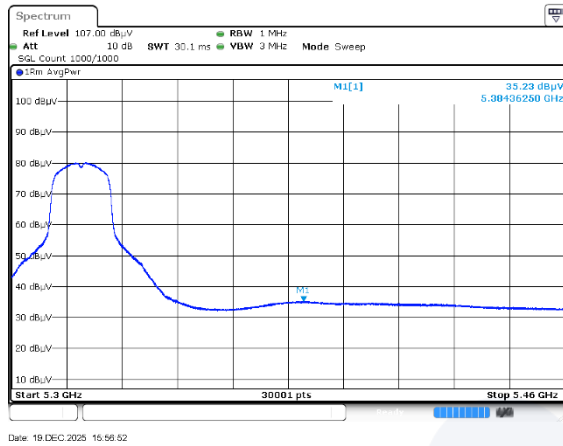
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB($\mu V/m$))	(dB($\mu V/m$))	(dB)
Peak data								
7 391.37 ¹⁾	H	58.50	36.32	-38.73	-	56.09	74.00	17.91
8 448.05 ¹⁾	V	54.70	37.30	-39.68	-	52.32	74.00	21.68
10 551.07	V	54.40	38.90	-39.94	-	53.36	68.20	14.84
15 804.27 ¹⁾	V	51.90	38.70	-37.28	-	53.32	74.00	20.68
Average Data								
7 391.37 ¹⁾	H	51.29	36.32	-38.73	0.53	49.41	54.00	4.59
8 448.05 ¹⁾	V	49.81	37.30	-39.68	0.26	47.69	54.00	6.31

802.11a_Highest Channel (5 320 MHz)

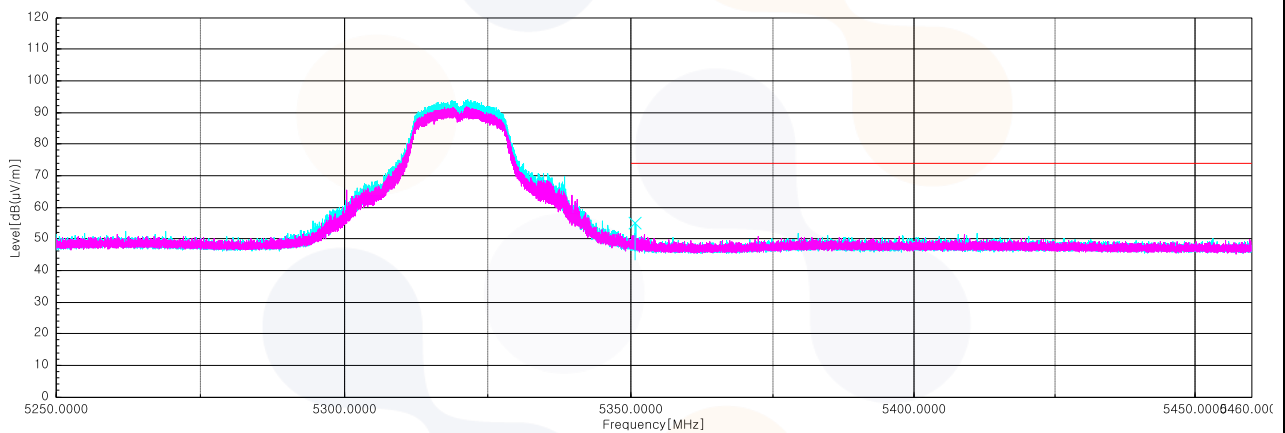
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB($\mu V/m$))	(dB($\mu V/m$))	(dB)
Peak data								
5 384.36 ¹⁾	V	49.30	32.90	-27.45	-	54.75	74.00	19.25
7 447.22 ¹⁾	V	58.60	36.21	-38.69	-	56.12	74.00	17.88
8 512.12	V	55.80	37.52	-39.63	-	53.69	68.20	14.51
10 648.43 ¹⁾	V	54.40	39.10	-39.84	-	53.66	74.00	20.34
15 838.38 ¹⁾	H	52.00	38.70	-37.29	-	53.41	74.00	20.59
Average Data								
5 384.36 ¹⁾	V	35.23	32.90	-27.45	0.52	41.20	54.00	12.80
7 447.22 ¹⁾	V	49.31	36.21	-38.69	0.56	47.39	54.00	6.61

802.11a_Highest Channel (5 320 MHz)

Average data



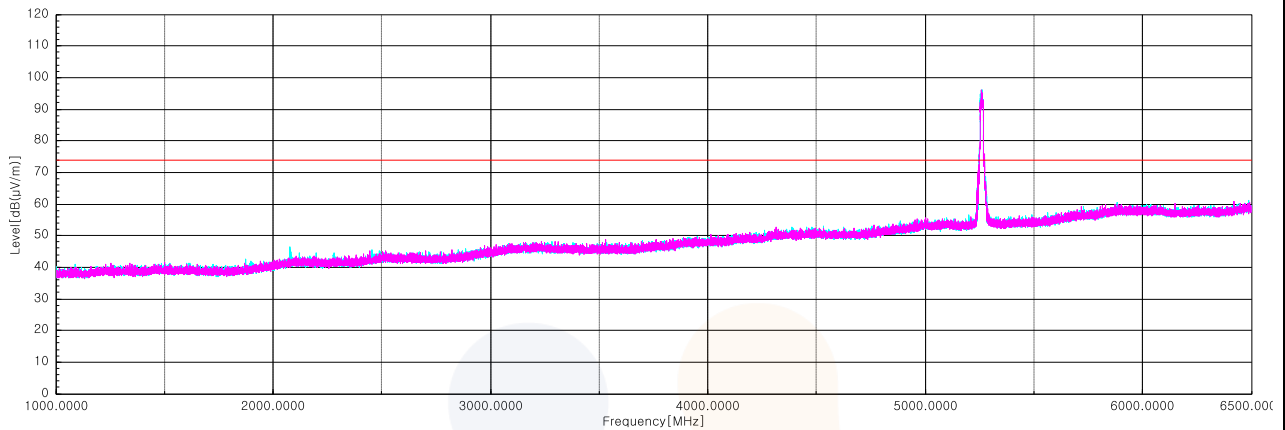
Horizontal/Vertical for Band-edge



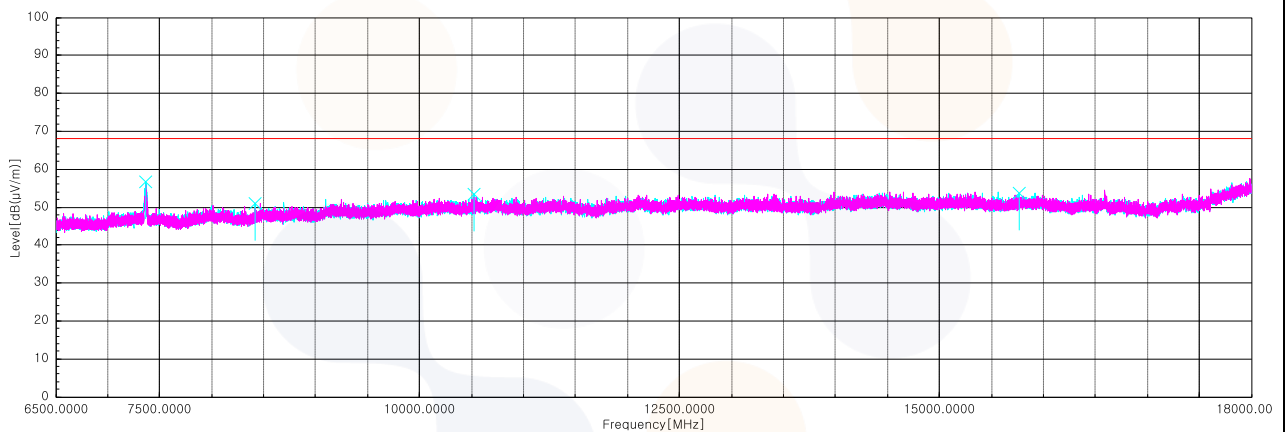
Plot of Harmonics and Spurious Emissions

In order to simplify the report, attached plots were only the lowest margin condition
UNII 2A_802.11a_Lowest Channel (5 260 MHz)

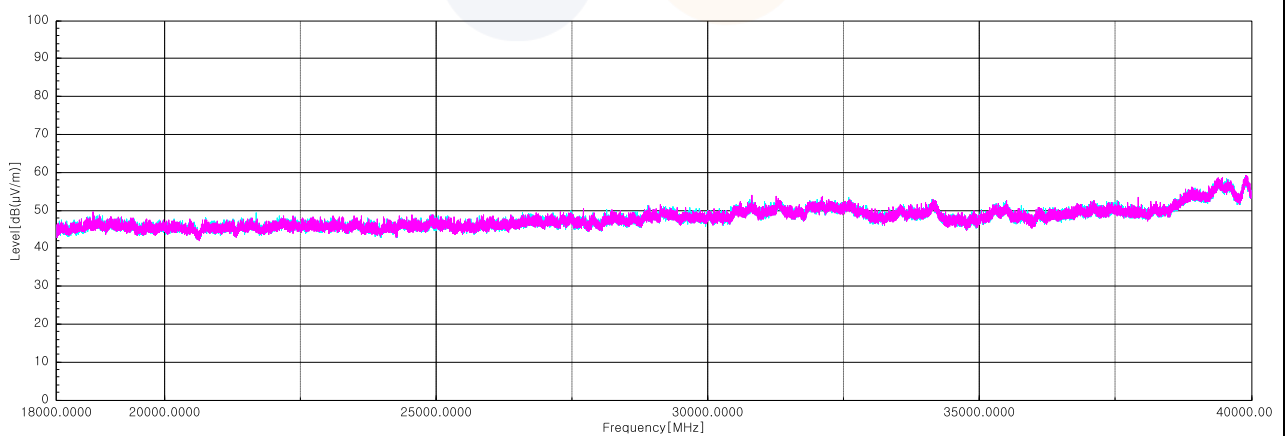
Horizontal/Vertical for 1 GHz ~ 6.5 GHz



Horizontal/Vertical for 6.5 GHz ~ 18 GHz



Horizontal/Vertical for 18 GHz ~ 40 GHz



UNII 2C

802.11a_Lowest Channel (5 500 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 459.95 ¹⁾	V	46.50	33.00	-27.50	-	52.00	74.00	22.00
7 699.59 ¹⁾	V	56.00	36.50	-39.14	-	53.36	74.00	20.64
8 800.38	V	55.30	37.80	-40.26	-	52.84	68.20	15.36
10 999.95 ¹⁾	V	52.90	38.90	-39.79	-	52.01	74.00	21.99
16 468.20	H	51.60	38.60	-37.59	-	52.61	68.20	15.59
Average Data								
5 459.95 ¹⁾	V	34.84	33.00	-27.50	0.52	40.86	54.00	13.14
7 699.59 ¹⁾	V	45.75	36.50	-39.14	0.31	43.42	54.00	10.58

802.11a_Middle Channel (5 580 MHz)

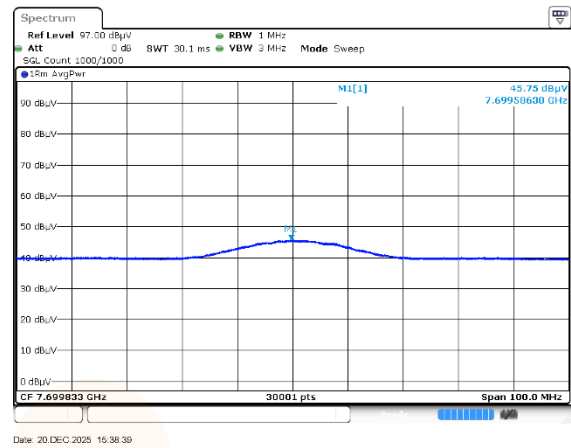
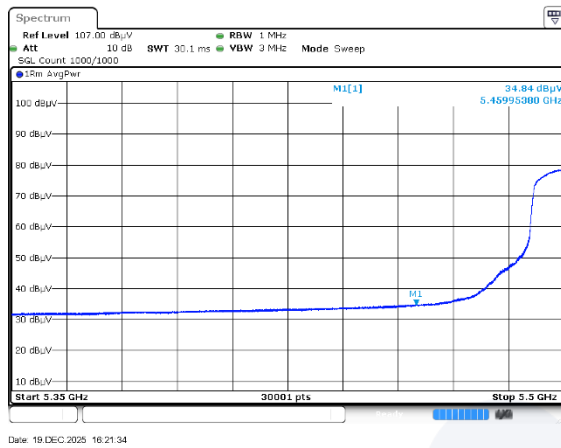
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
7 840.90	H	56.10	36.78	-39.12	-	53.76	68.20	14.44
8 959.85	H	57.00	37.88	-40.76	-	54.12	68.20	14.08
11 193.15 ¹⁾	V	53.70	38.90	-39.61	-	52.99	74.00	21.01
16 675.97	V	51.90	38.40	-36.96	-	53.34	68.20	14.86
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11a_Highest Channel (5 700 MHz)

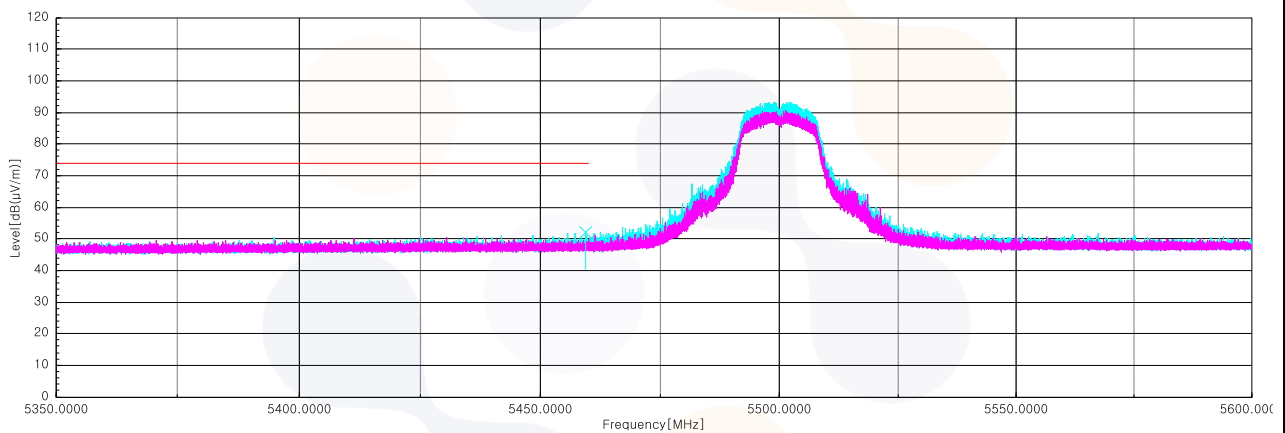
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 812.27	H	45.70	33.95	-26.36	-	53.29	68.20	14.91
11 400.92 ¹⁾	V	53.10	39.10	-39.70	-	52.50	74.00	21.50
17 245.22	H	49.90	38.19	-35.29	-	52.80	68.20	15.40
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11a_Lowest Channel (5 500 MHz)

Average data

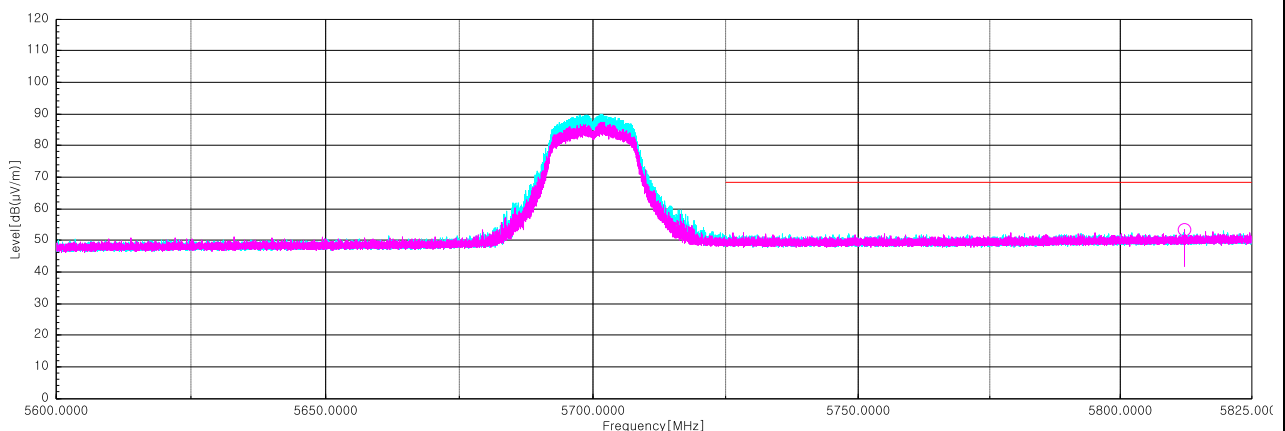


Horizontal/Vertical for Band-edge



Highest Channel (5 700 MHz)

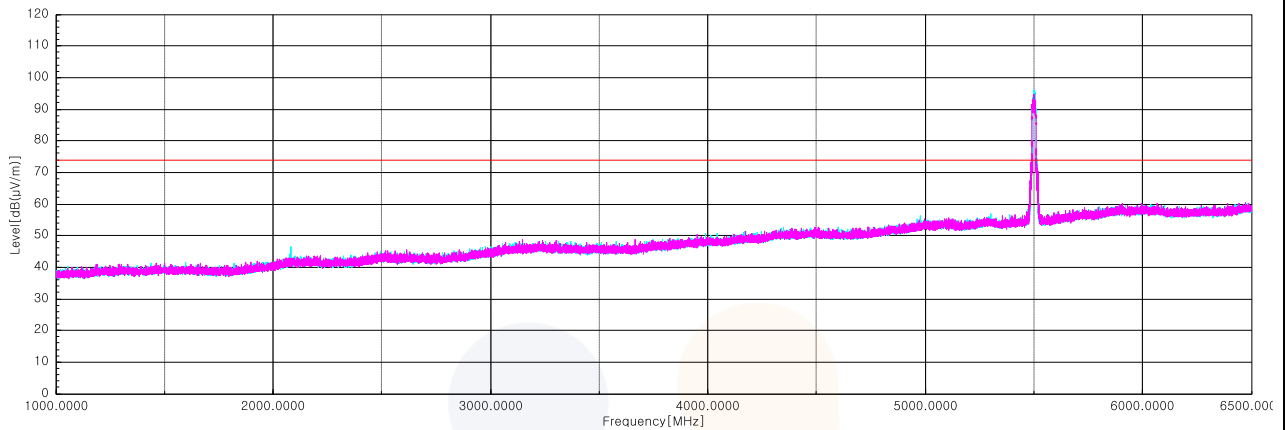
Horizontal/Vertical for Band-edge



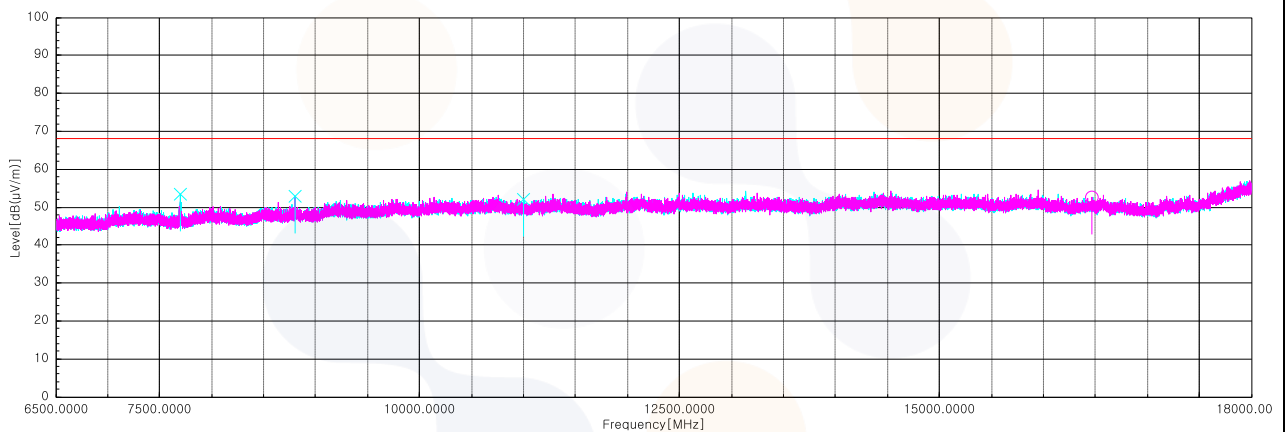
Plot of Harmonics and Spurious Emissions

In order to simplify the report, attached plots were only the lowest margin condition
UNII 2C_802.11a_Lowest Channel (5 500 MHz)

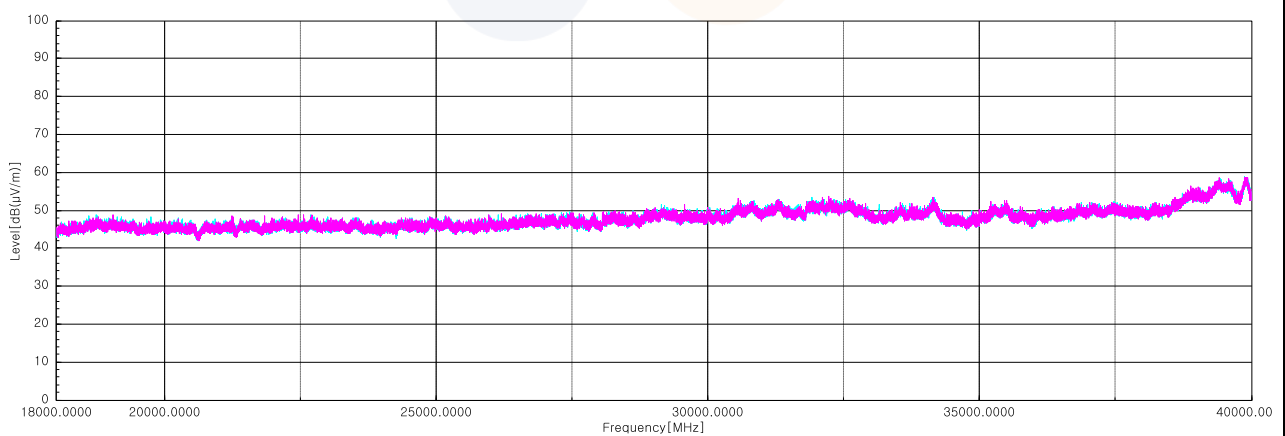
Horizontal/Vertical for 1 GHz ~ 6.5 GHz



Horizontal/Vertical for 6.5 GHz ~ 18 GHz

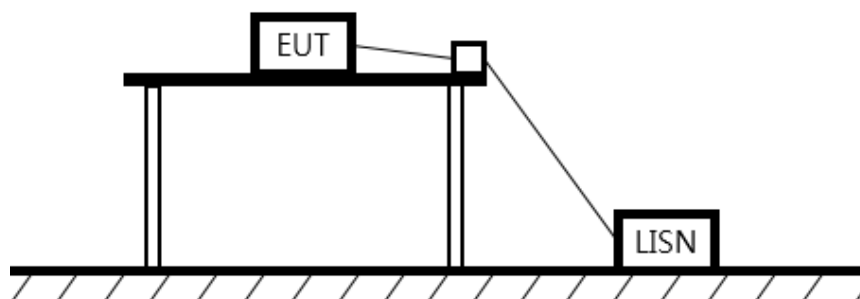


Horizontal/Vertical for 18 GHz ~ 40 GHz



7.7. AC Conducted emission

Test setup



Limit

According to 15.207(a),

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

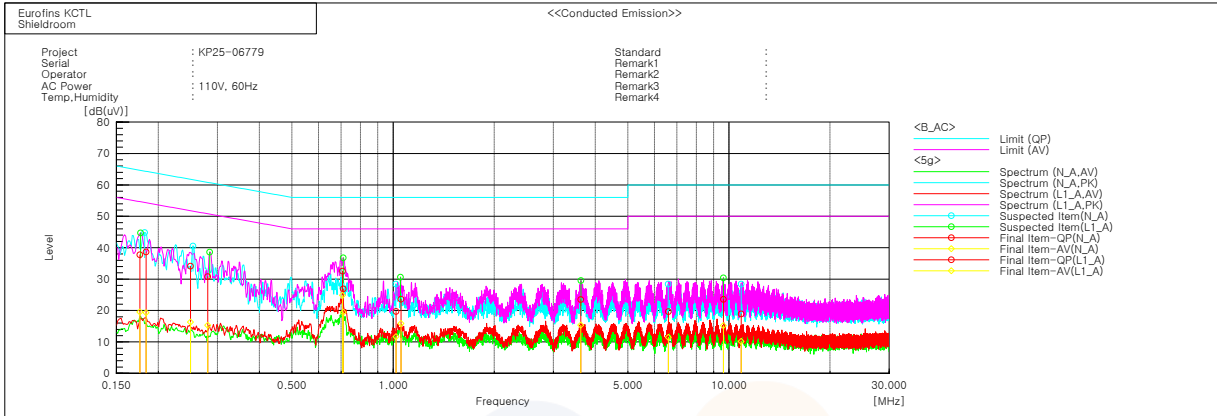
Frequency of Emission (MHz)	Conducted limit (dB μ V/m)	
	Quasi-peak	Average
0.15 – 0.50	66 - 56*	56 - 46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

Measurement procedure

1. The EUT was placed on a wooden table of size, 1 m by 1.5 m, raised 80 cm in which is located 40 cm away from the vertical wall and 1.5m away from the side wall of the shielded room.
2. Each current-carrying conductor of the EUT power cord was individually connected through a 50 Ω /50 μ H LISN, which is an input transducer to a spectrum analyzer or an EMI/Field Intensity Meter, to the input power source.
3. Exploratory measurements were made to identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
4. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment is the system) was then performed over the frequency range of 0.15 MHz to 30 MHz.
5. The measurements were made with the detector set to peak amplitude within a bandwidth of 10 kHz or to quasi-peak and average within a bandwidth of 9 kHz. The EUT was in transmitting mode during the measurements.

Test results

Worst case: 802.11a / UNII 2C_5 580 MHz



Final Result

--- N_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.18388	28.3	9.0	10.3	38.6	19.3	64.3	54.3	25.7	35.0
2	0.2492	24.2	6.4	9.9	34.1	16.3	61.8	51.8	27.7	35.5
3	0.7104	16.8	9.3	10.1	26.9	19.4	56.0	46.0	29.1	26.6
4	1.02071	9.6	1.6	10.1	19.7	11.7	56.0	46.0	36.3	34.3
5	6.60019	9.4	1.2	10.2	19.6	11.4	60.0	50.0	40.4	38.6
6	10.87778	8.4	-0.4	10.5	18.9	10.1	60.0	50.0	41.1	39.9

--- L1_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.17624	27.4	9.2	10.3	37.7	19.5	64.7	54.7	27.0	35.2
2	0.28067	20.9	5.4	9.9	30.8	15.3	60.8	50.8	30.0	35.5
3	0.70691	22.5	14.8	10.1	32.6	24.9	56.0	46.0	23.4	21.1
4	1.05567	13.5	5.7	10.1	23.6	15.8	56.0	46.0	32.4	30.2
5	3.62166	13.5	5.4	10.0	23.5	15.4	56.0	46.0	32.5	30.6
6	9.63311	13.2	4.7	10.4	23.6	15.1	60.0	50.0	36.4	34.9

Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-70-4904-0113 FAX: 82-505-299-8311 www.kctl.co.kr	Report No.: KR25-SRF0231 Page (50) of (50)	
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8. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
DC Power Supply	AGILENT	E3632A	MY40027567	26.04.23
Temp & Humid Chamber	ESPEC	SH-642	93016978	26.01.16
Spectrum Analyzer	R&S	FSV3044	101430	26.08.13
Vector Signal Generator	R&S	SMW200A	109480	26.01.17
Signal Generator	R&S	SMB100A	176206	26.01.17
Vector Signal Generator	R&S	SMBV100A	257566	26.07.01
50Ω Termination	NONE	50Ω	R5	26.04.28
Attenuator	HUBER+SUHNER	6610_SK-50-1/199_NE	ATT06	26.03.17
Attenuator	API Inmet	40AH2W-10	11	26.04.28
Attenuator	API/Inmet	18AH-03	N/A	26.01.17
Step Attenuator	KEYSIGHT	8495D	MY42144296	26.01.20
Step Attenuator	AGILENT	8494B	MY42140747	26.04.23
Directional Coupler	Marki Microwave, Inc.	CBR17-0026	0001	26.06.27
Directional Coupler	Marki Microwave, Inc.	CBR17-0026	0002	26.04.28
Splitter	Mini-Circuits	ZX10-2-98-S+	1635-1	26.01.17
Splitter	Mini-Circuits	ZX10-2-98-S+	1635-2	26.01.17
TWO-LINE V - NETWORK	R&S	ENV216	101584	26.03.25
EMI TEST RECEIVER	R&S	ESCI3	101428	26.08.12
Spectrum Analyzer	R&S	FSV40	100988	26.04.24
Broadband PreAmplifier	SCHWARZBECK	BBV9718D	53	26.07.01
Low Noise Amplifier	TESTEK	TK-PA18H	220123-L	26.07.01
Low Noise Amplifier	TESTEK	TK-PA1840H	220234-L	26.06.30
Horn Antenna	SCHWARZBECK	BBHA9120D	2764	26.06.30
Horn Antenna	SCHWARZBECK	BBHA9170	1266	26.06.29
High Pass Filter	Wainwright Instruments GmbH	WHKX12-2805-3000-18000-40SS	SN59	26.06.27
High Pass Filter	Qotana	DBHF058004000A	23041800061	26.04.28
High Pass Filter	Wainwright Instruments GmbH	WHKX8-5655-6500-18000-40SS	SN7	26.06.27
Controller	INNCO SYSTEMS	CO3000	1442/54370322/P	-
Antenna Mast	INNCO SYSTEMS	MA4640-XP-ET	AM002	-
Turn Device	INNCO SYSTEMS	DS1200-S-1t	0001	-

End of test report