Mode: 802.11n_HT40
Band: UNII-2C
Distance of measurement: 3 meter
Channel: 134

- **Spurious**

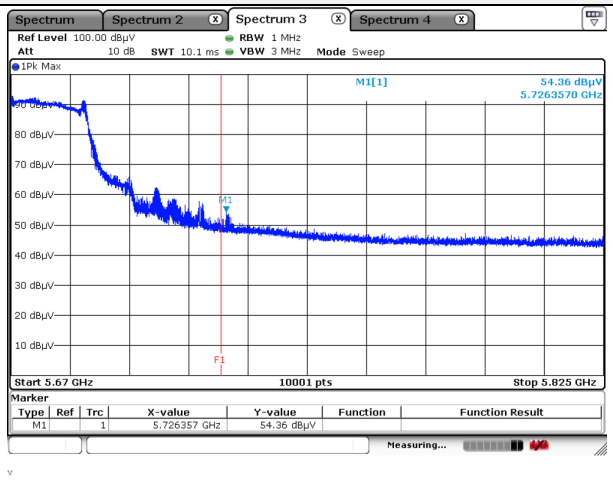
Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 062.74	43.84	Peak	V	-10.04	-	33.80	74.00	40.20
1 224.73	44.95	Peak	H	-9.05	-	35.90	74.00	38.10
3 477.50	43.15	Peak	V	-0.17	-	42.98	68.20	25.22
3 673.48	44.73	Peak	H	0.74	-	45.47	74.00	28.53

- **Band edge**

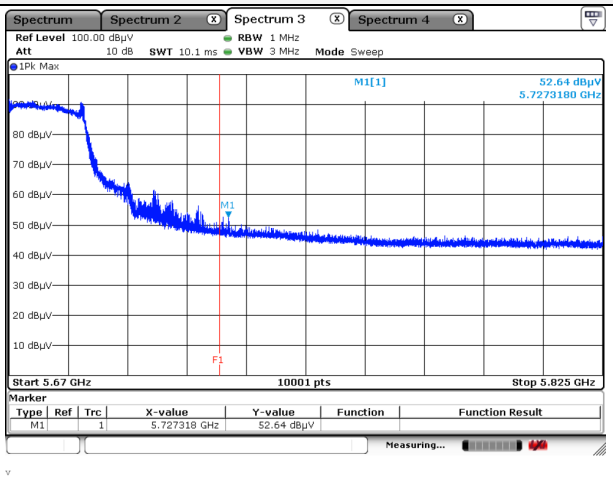
Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
5 726.36	54.36	Peak	H	7.28	-	61.64	68.20	6.56
5 726.36	37.71	Average	H	7.28	0.27	45.26	48.20	2.94
5 727.32	52.64	Peak	V	7.29	-	60.6	68.20	7.60
5 727.32	36.65	Average	V	7.29	0.27	44.21	48.20	3.99

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

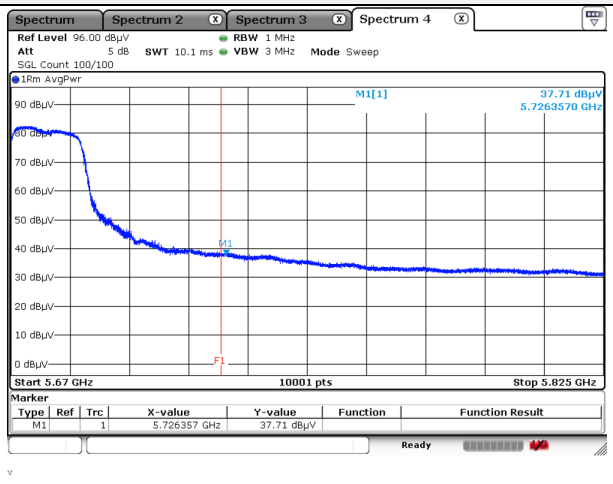
Restricted band // Horizontal // Peak



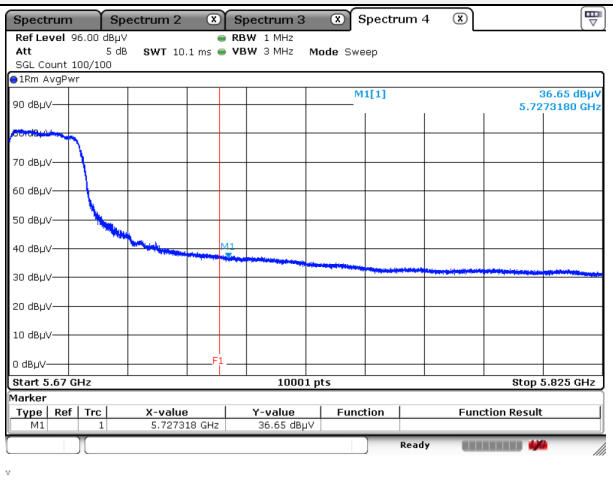
Restricted band // Vertical // Peak



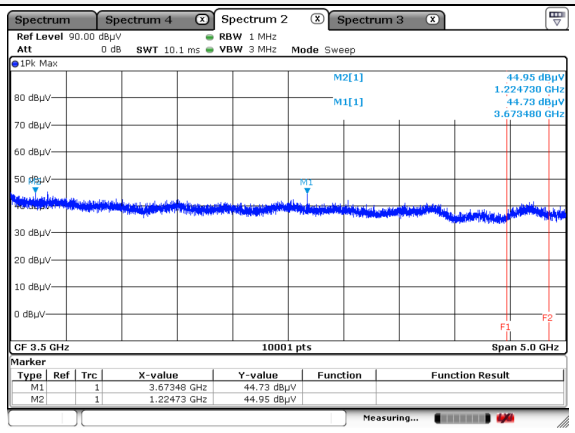
Restricted band // Horizontal // Average



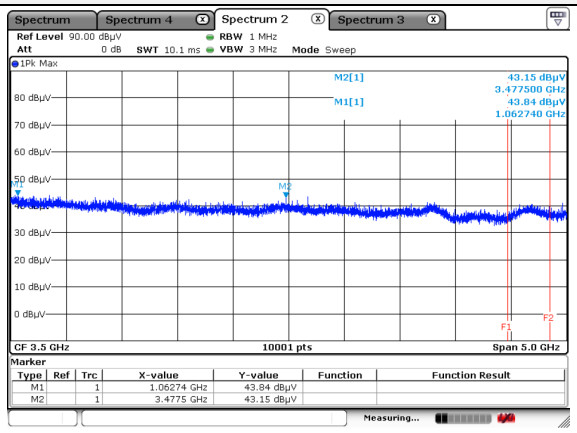
Restricted band // Vertical // Average



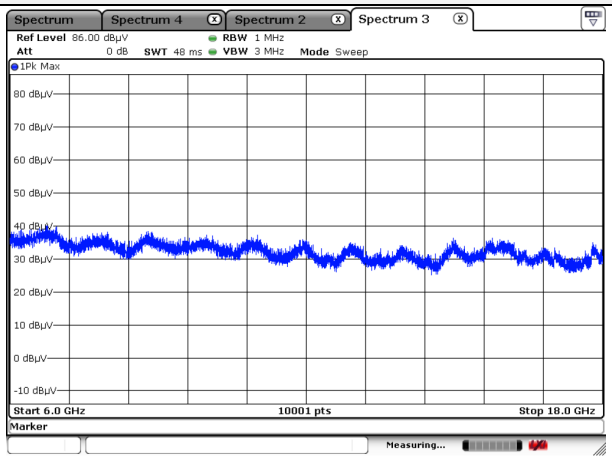
Horizontal // Peak for 1 ㎓ to 6 ㎓



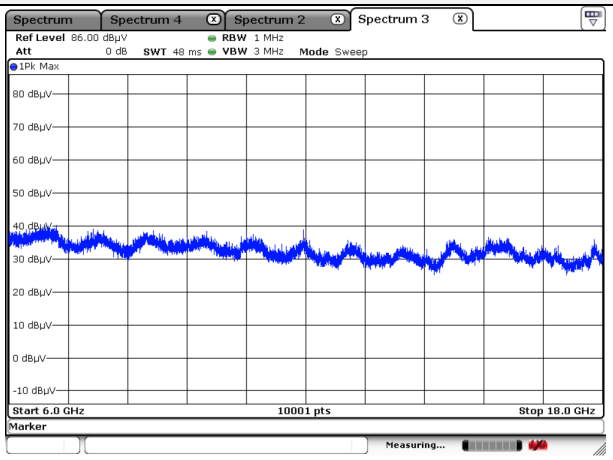
Vertical // Peak for 1 ㎓ to 6 ㎓



Horizontal // Peak for 6 ㎓ to 18 ㎓



Vertical // Peak for 6 ㎓ to 18 ㎓



Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

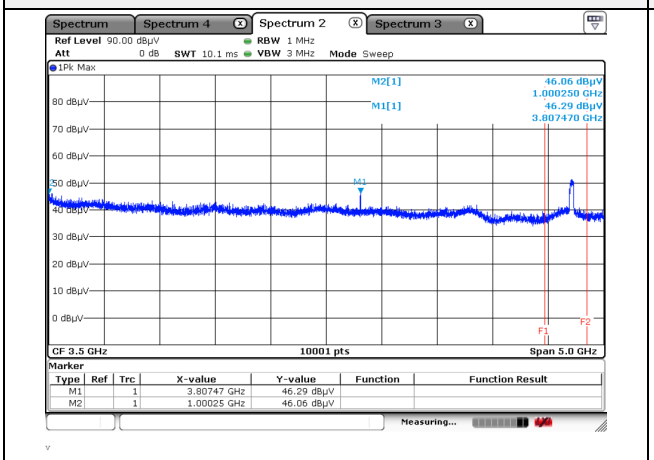
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Mode:	802.11n_HT40
Band:	UNII-2C
Distance of measurement:	3 meter
Channel:	142

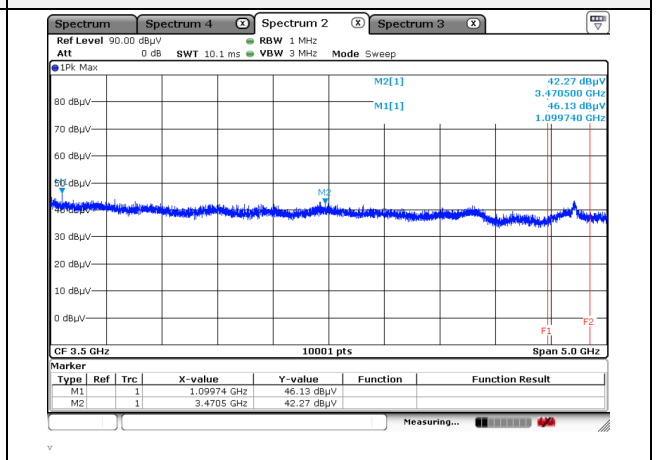
- **Spurious**

Frequency (㎒)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 000.25	46.06	Peak	H	-10.42	-	35.64	74.00	38.36
1 099.74	46.13	Peak	V	-9.81	-	36.32	74.00	37.68
3 470.50	42.27	Peak	V	-0.17	-	42.10	68.20	26.10
3 807.47	46.29	Peak	H	1.35	-	47.64	74.00	26.36

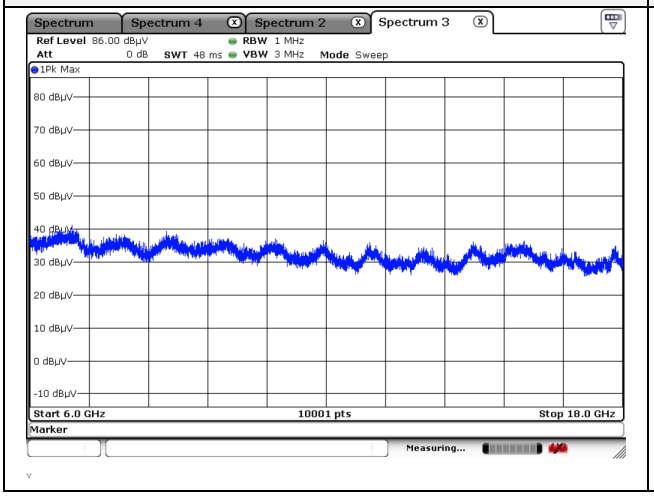
Horizontal // Peak for 1 ㎓ to 6 ㎓



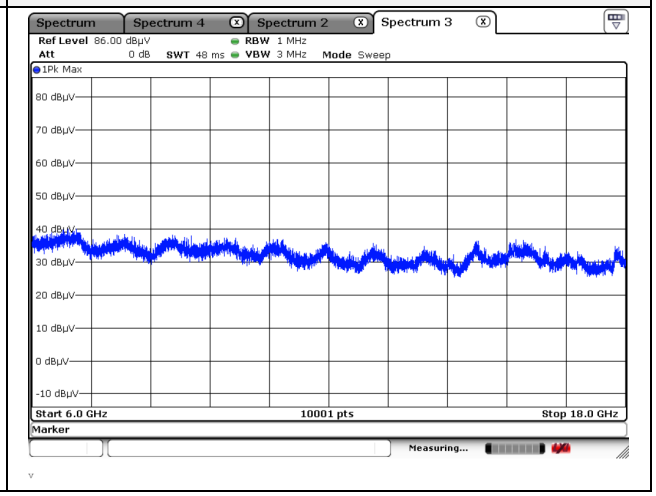
Vertical // Peak for 1 ㎓ to 6 ㎓



Horizontal // Peak for 6 ㎓ to 18 ㎓



Vertical // Peak for 6 ㎓ to 18 ㎓



Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Mode:	802.11a
Band:	UNII-3
Distance of measurement:	3 meter
Channel:	149

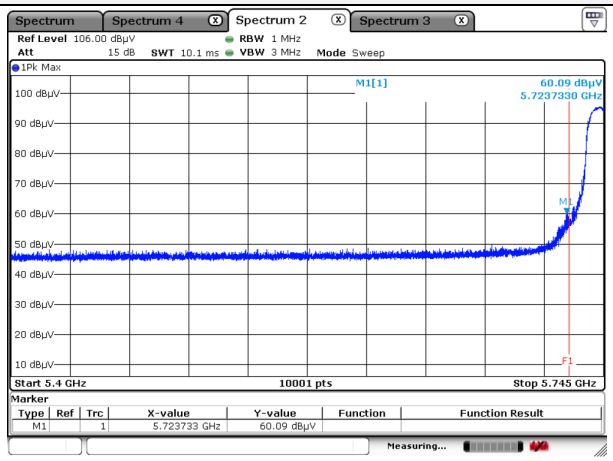
- **Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 000.25	49.92	Peak	H	-10.42	-	39.50	74.00	34.50
1 201.23	44.53	Peak	V	-9.19	-	35.34	74.00	38.66
3 830.47	44.82	Peak	H	1.45	-	46.27	74.00	27.73
3 830.47	42.39	Peak	V	1.45	-	43.84	74.00	30.16

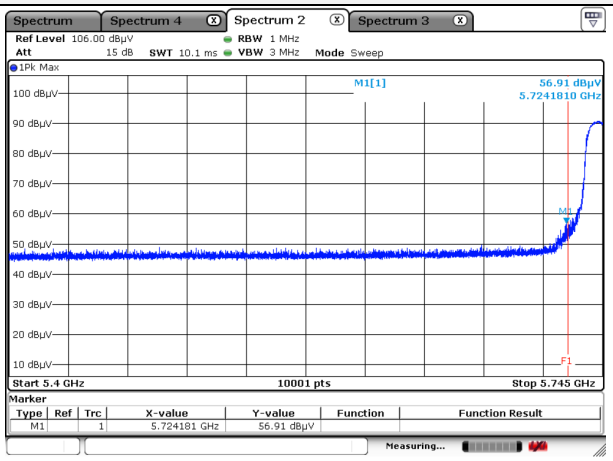
- **Band edge**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
5 723.73	60.09	Peak	H	7.27	-	67.36	119.33	51.97
5 724.18	56.91	Peak	V	7.27	-	64.18	120.36	56.18

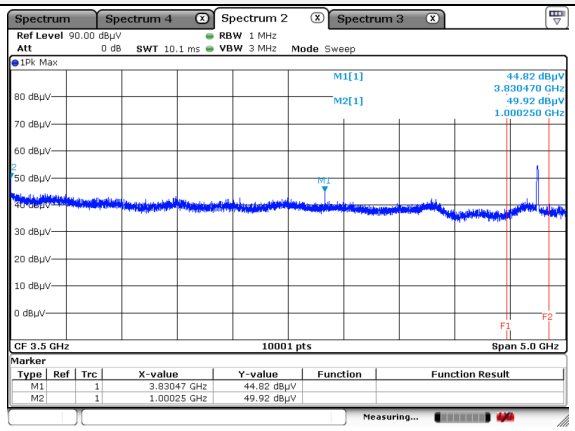
Restricted band // Horizontal // Peak



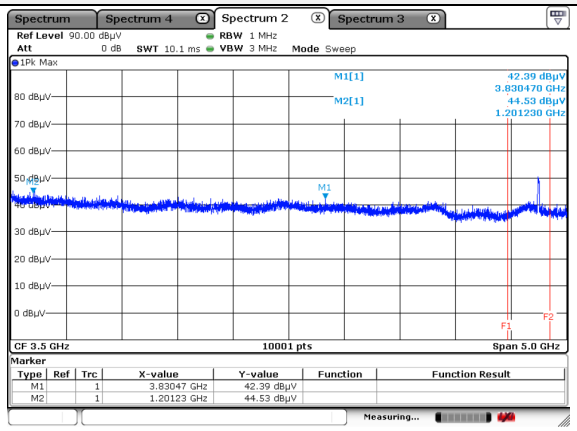
Restricted band // Vertical // Peak



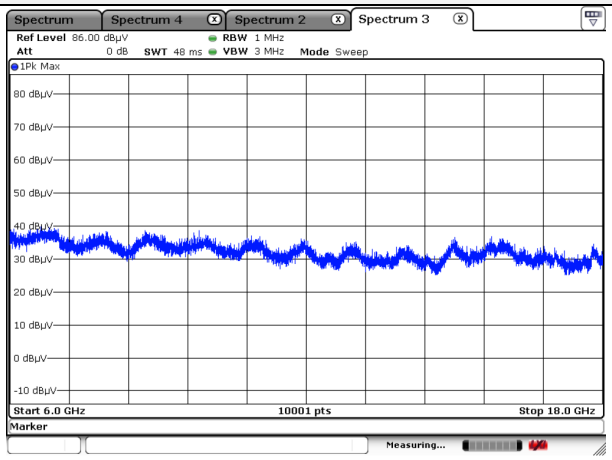
Horizontal // Peak for 1 ㎓ to 6 ㎓



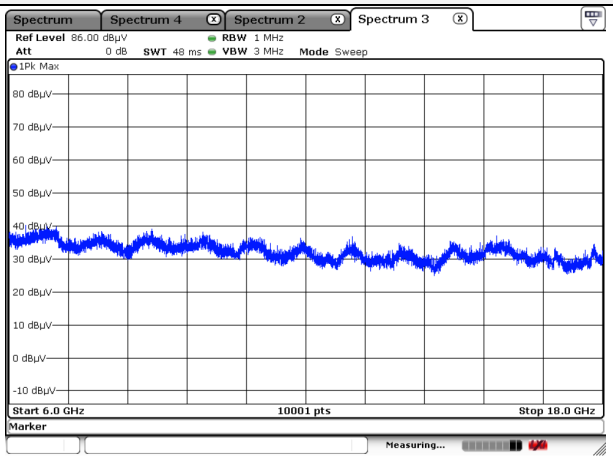
Vertical // Peak for 1 ㎓ to 6 ㎓



Horizontal // Peak for 6 ㎓ to 18 ㎓



Vertical // Peak for 6 ㎓ to 18 ㎓



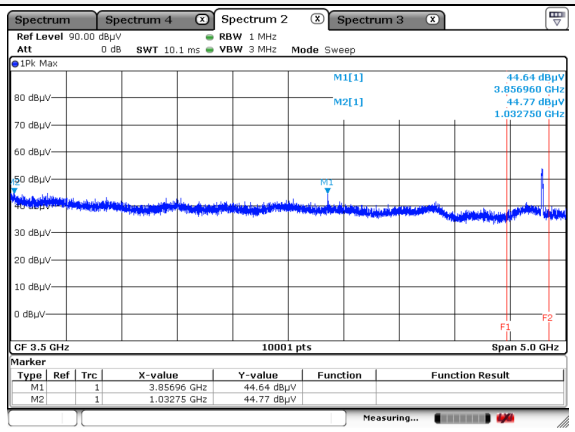
Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

Mode:	802.11a
Band:	UNII-3
Distance of measurement:	3 meter
Channel:	157

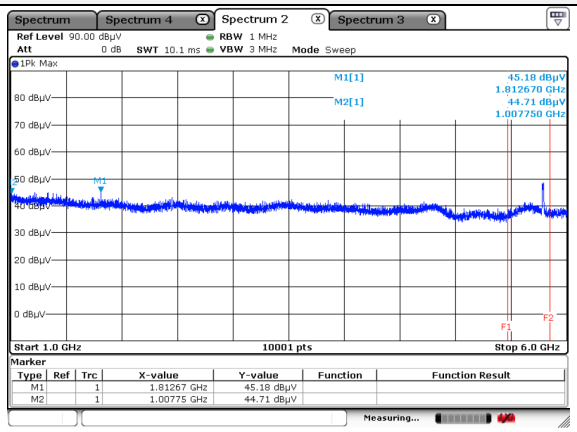
- **Spurious**

Frequency (㎒)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 007.75	44.71	Peak	V	-10.37	-	34.34	74.00	39.66
1 032.75	44.77	Peak	H	-10.22	-	34.55	74.00	39.45
1 812.67	45.18	Peak	V	-3.97	-	41.21	68.20	26.99
3 856.96	44.64	Peak	H	1.58	-	46.22	74.00	27.78

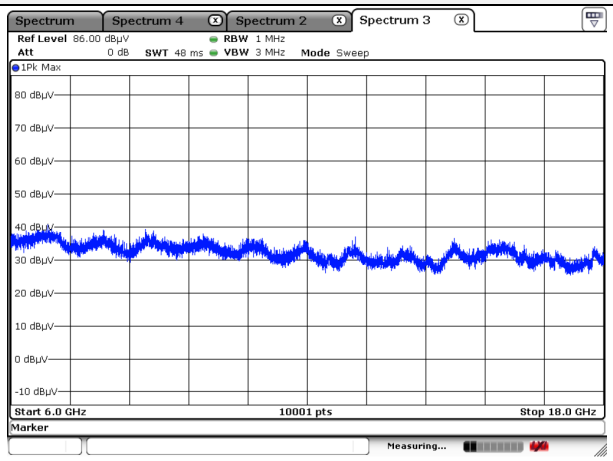
Horizontal // Peak for 1 ㎓ to 6 ㎓



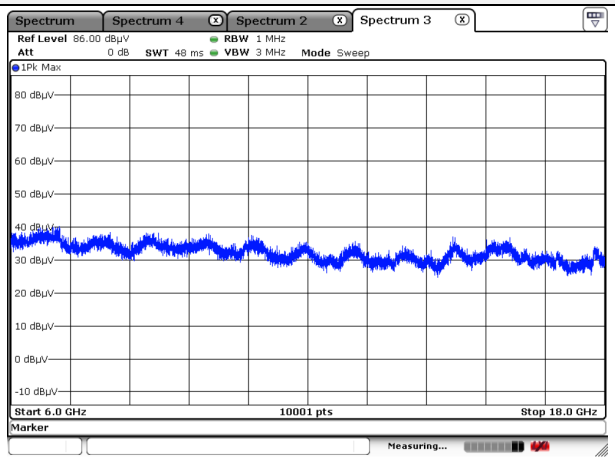
Vertical // Peak for 1 ㎓ to 6 ㎓



Horizontal // Peak for 6 ㎓ to 18 ㎓



Vertical // Peak for 6 ㎓ to 18 ㎓



Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Mode:	802.11a
Band:	UNII-3
Distance of measurement:	3 meter
Channel:	165

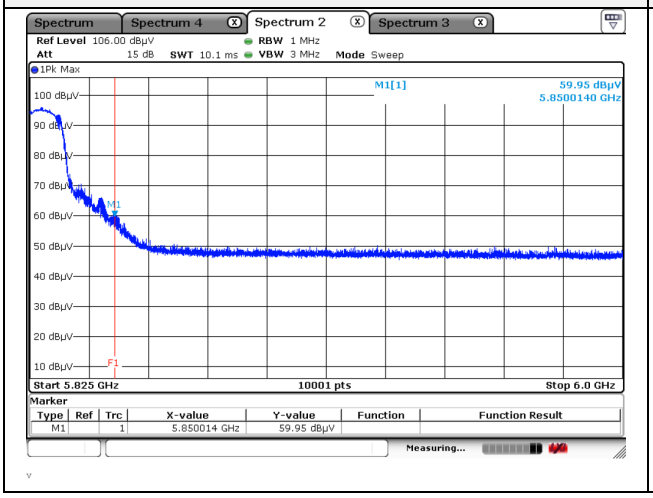
- **Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 008.75	43.99	Peak	V	-10.37	-	33.62	74.00	40.38
1 056.24	44.77	Peak	H	-10.08	-	34.69	74.00	39.31
1 439.71	44.82	Peak	V	-7.76	-	37.06	74.00	36.94
3 883.46	44.87	Peak	H	1.70	-	46.57	74.00	27.43

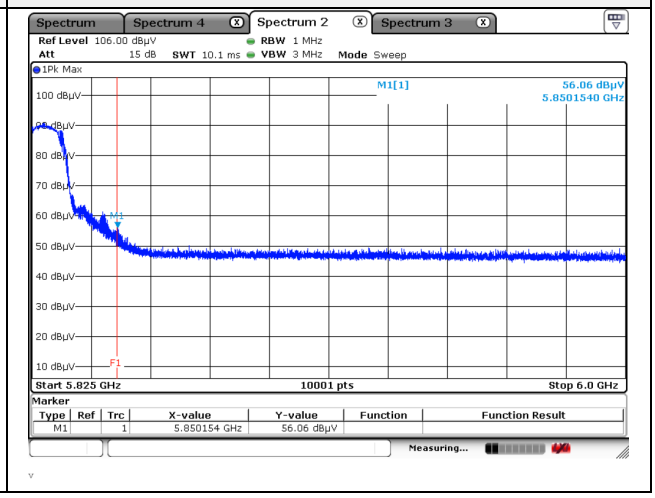
- **Band edge**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
5 850.01	59.95	Peak	V	7.80	-	67.75	122.21	54.46
5 850.15	56.06	Peak	V	7.80	-	63.86	121.89	58.03

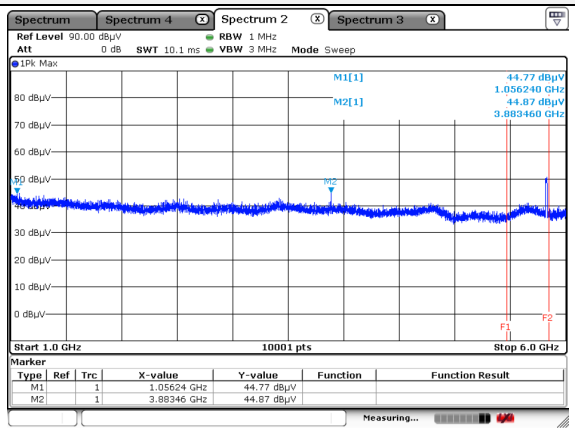
Restricted band // Horizontal // Peak



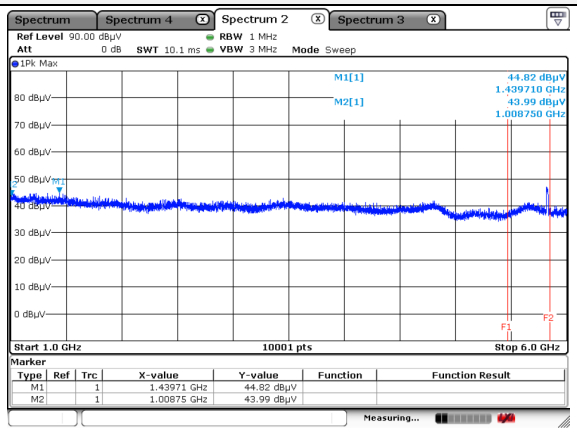
Restricted band // Vertical // Peak



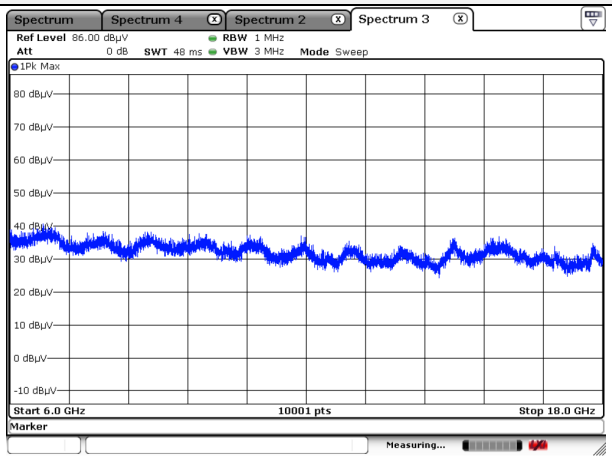
Horizontal // Peak for 1 ㎓ to 6 ㎓



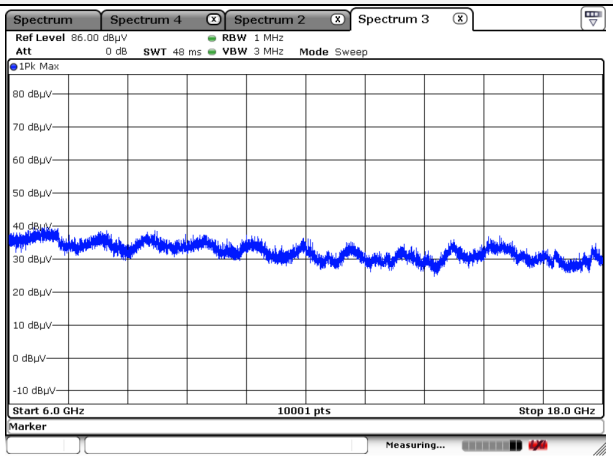
Vertical // Peak for 1 ㎓ to 6 ㎓



Horizontal // Peak for 6 ㎓ to 18 ㎓



Vertical // Peak for 6 ㎓ to 18 ㎓



Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Mode:	802.11n_HT20
Band:	UNII-3
Distance of measurement:	3 meter
Channel:	149

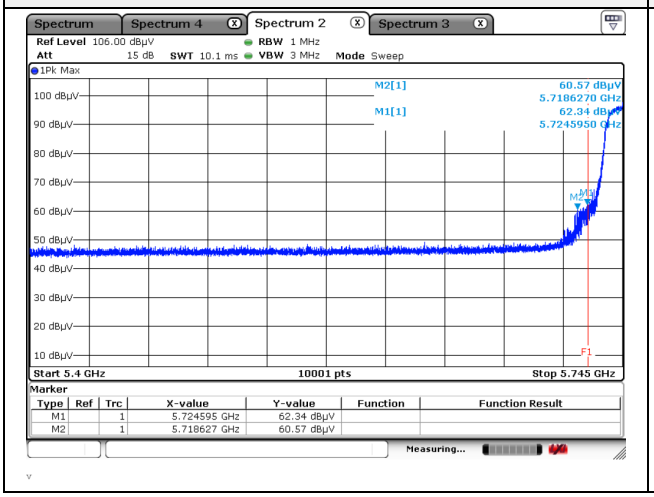
- **Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 008.75	45.45	Peak	H	-10.37	-	35.08	74.00	38.92
1 333.22	45.16	Peak	V	-8.38	-	36.78	74.00	37.22
3 395.01	43.16	Peak	V	-0.17	-	42.99	74.00	31.01
3 829.97	44.35	Peak	H	1.45	-	45.80	74.00	28.20

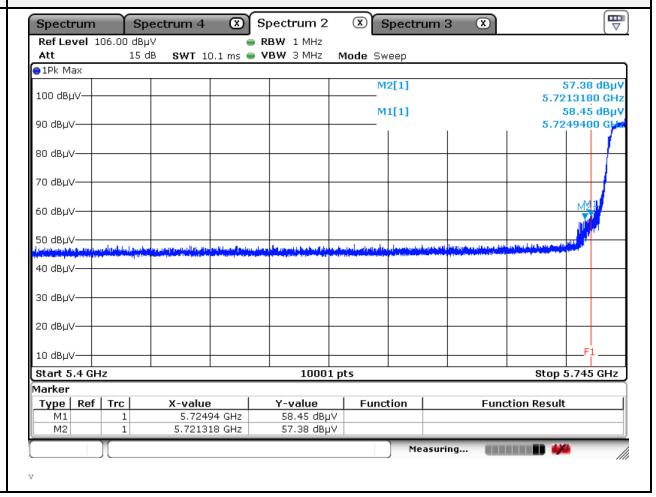
- **Band edge**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
5 718.63	60.57	Peak	H	7.24	-	67.81	110.45	42.64
5 721.32	57.38	Peak	V	7.25	-	64.63	113.84	49.21
5 724.60	62.34	Peak	H	7.27	-	69.61	121.32	51.71
5 724.94	58.45	Peak	V	7.27	-	65.72	122.09	56.37

Restricted band // Horizontal // Peak

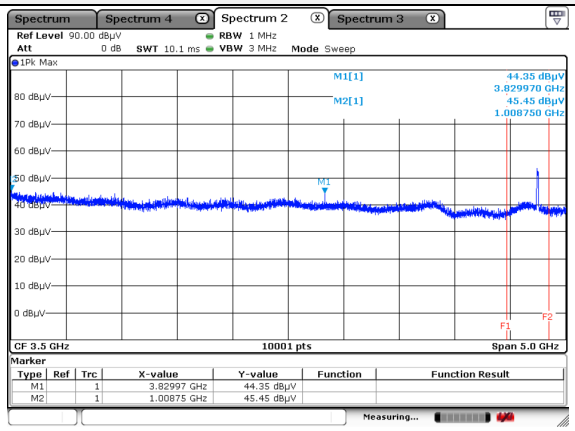


Restricted band // Vertical // Peak

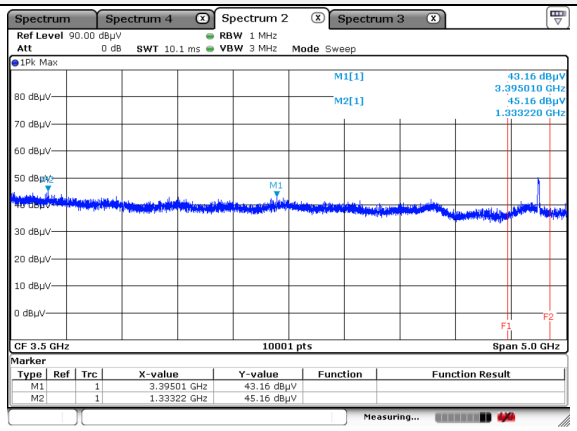


This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

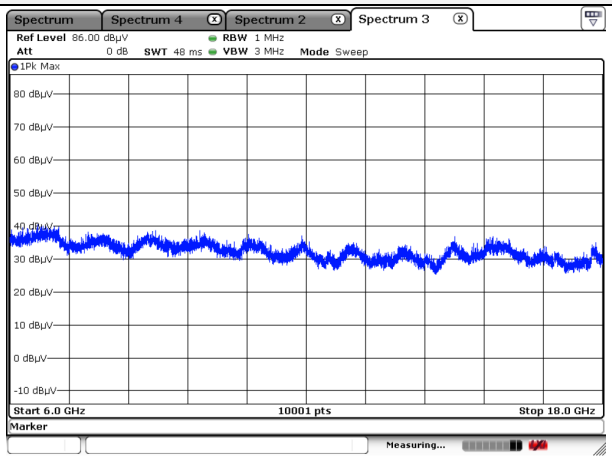
Horizontal // Peak for 1 ㎓ to 6 ㎓



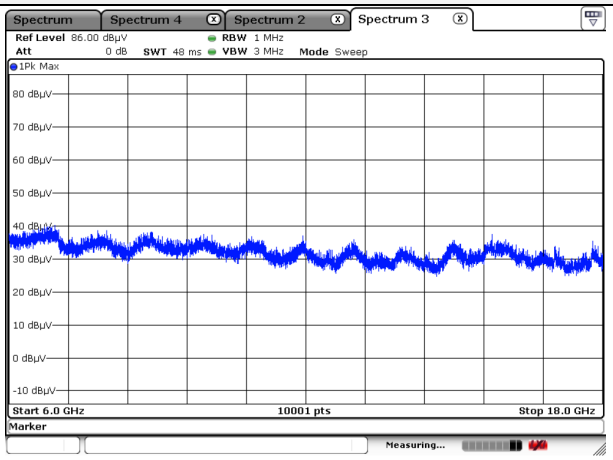
Vertical // Peak for 1 ㎓ to 6 ㎓



Horizontal // Peak for 6 ㎓ to 18 ㎓



Vertical // Peak for 6 ㎓ to 18 ㎓



Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

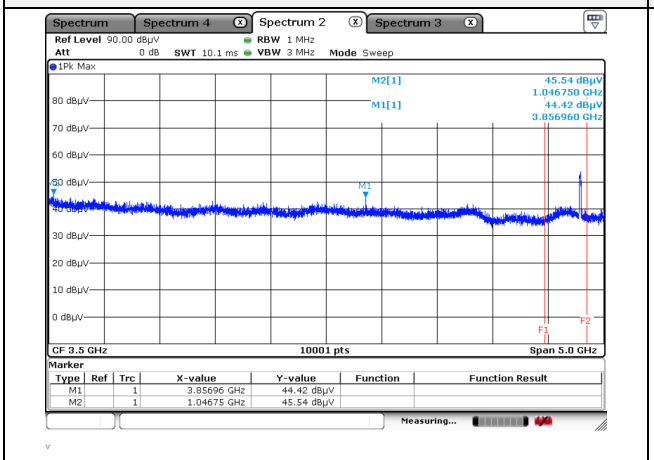
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Mode:	802.11n_HT20
Band:	UNII-3
Distance of measurement:	3 meter
Channel:	157

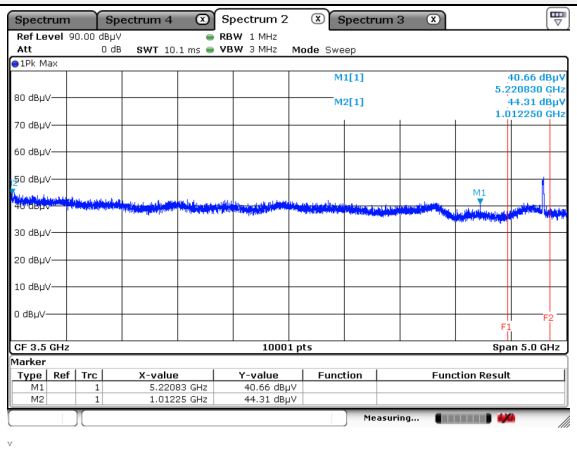
- **Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 012.25	44.31	Peak	V	-10.34	-	33.97	74.00	40.03
1 046.75	45.54	Peak	H	-10.13	-	35.41	74.00	38.59
3 856.96	44.42	Peak	H	1.58	-	46.00	68.20	22.20
5 220.83	40.66	Peak	V	6.01	-	46.67	74.00	27.33

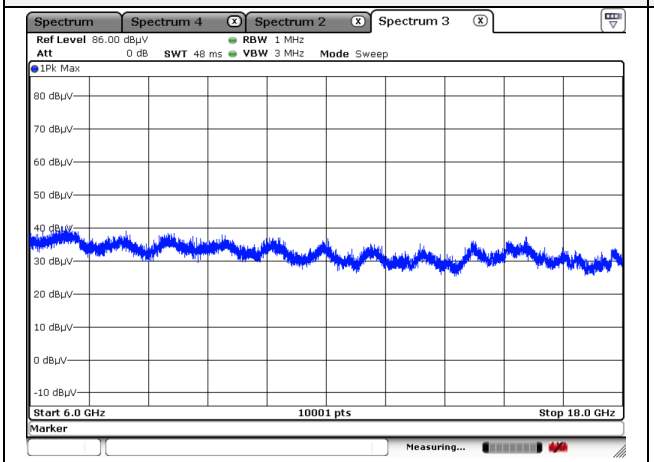
Horizontal // Peak for 1 GHz to 6 GHz



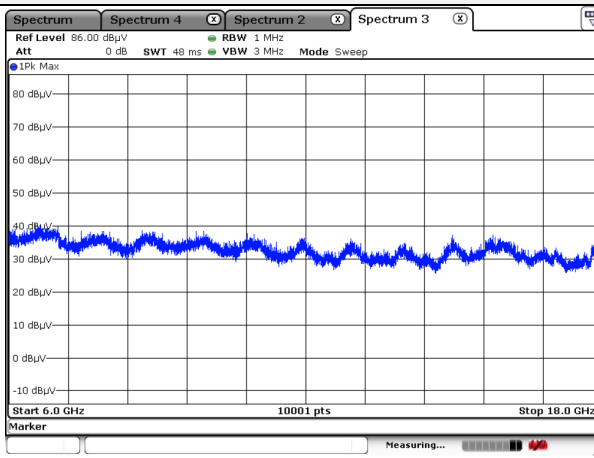
Vertical // Peak for 1 GHz to 6 GHz



Horizontal // Peak for 6 GHz to 18 GHz



Vertical // Peak for 6 GHz to 18 GHz



Note.
1. No spurious emission were detected above 6 GHz.
2. Average test would be performed if the peak result were greater than the average limit.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Mode:	802.11n_HT20
Band:	UNII-3
Distance of measurement:	3 meter
Channel:	165

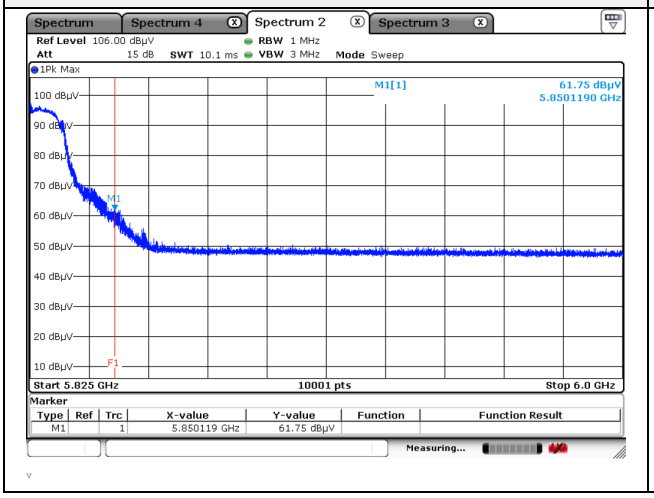
- **Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 008.25	44.91	Peak	H	-10.37	-	34.54	74.00	39.46
1 404.71	44.55	Peak	V	-7.94	-	36.61	74.00	37.39
1 530.70	44.59	Peak	V	-7.13	-	37.46	74.00	36.54
3 883.46	44.24	Peak	H	1.70	-	45.94	74.00	28.06

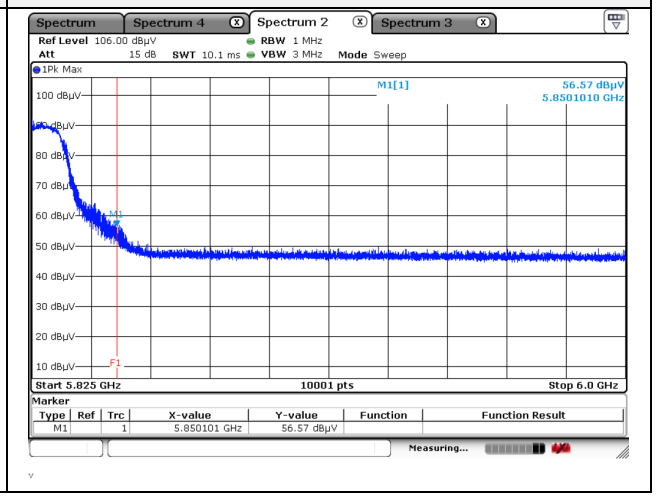
- **Band edge**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
5 850.10	56.57	Peak	V	7.80	-	64.37	122.00	57.63
5 850.12	61.75	Peak	H	7.80	-	69.55	121.96	52.41

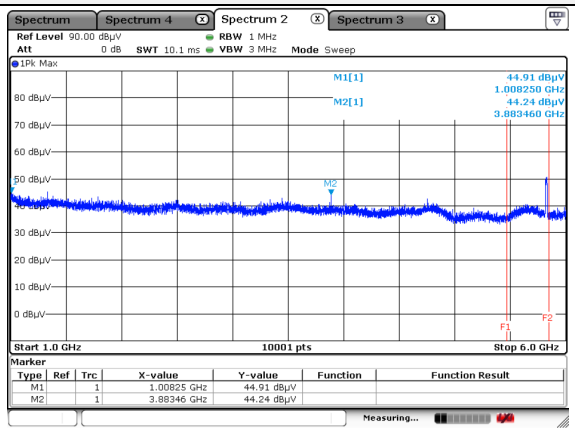
Restricted band // Horizontal // Peak



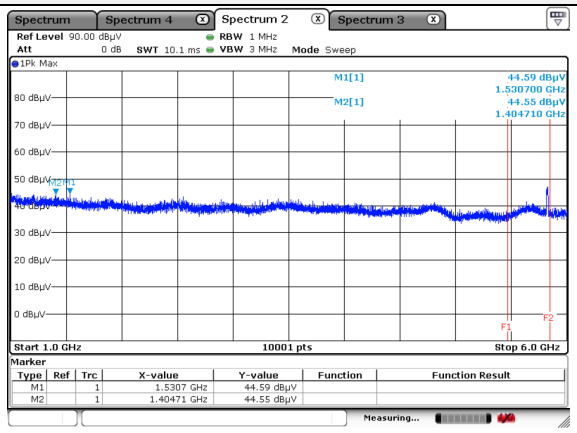
Restricted band // Vertical // Peak



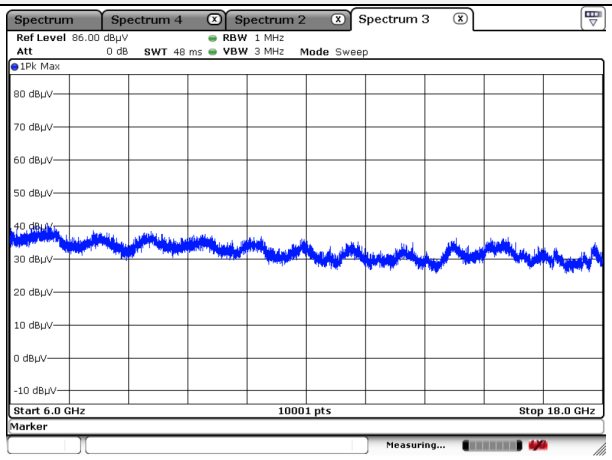
Horizontal // Peak for 1 ㎓ to 6 ㎓



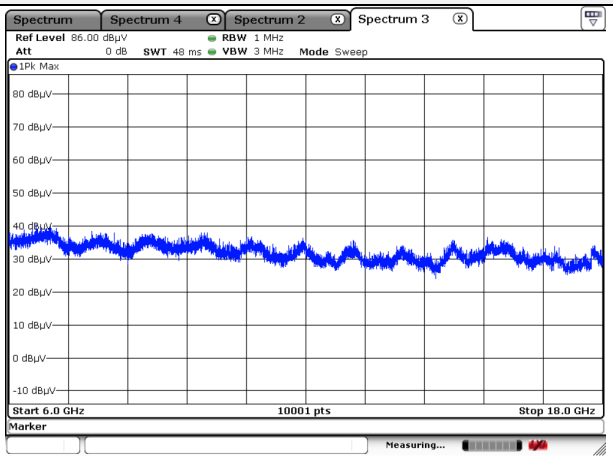
Vertical // Peak for 1 ㎓ to 6 ㎓



Horizontal // Peak for 6 ㎓ to 18 ㎓



Vertical // Peak for 6 ㎓ to 18 ㎓



Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Mode:	802.11n_HT40
Band:	UNII-3
Distance of measurement:	3 meter
Channel:	151

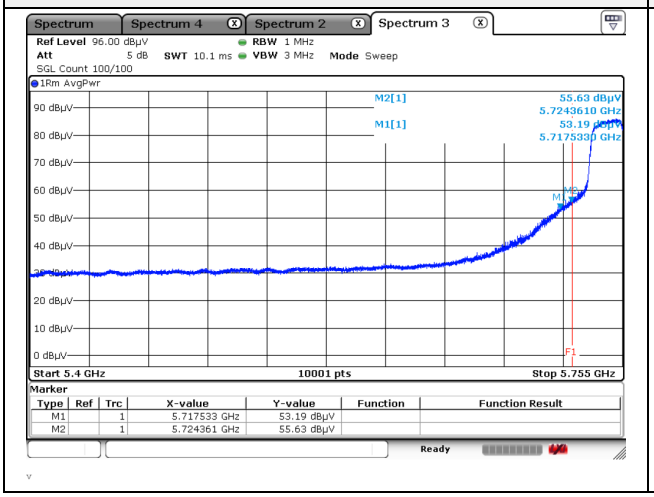
- **Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 007.25	44.72	Peak	H	-10.37	-	34.35	74.00	39.65
1 008.75	45.32	Peak	V	-10.37	-	34.95	74.00	39.05
2 435.61	44.22	Peak	V	-1.67	-	42.55	68.20	25.65
3 836.97	44.41	Peak	H	1.48	-	45.89	74.00	28.11

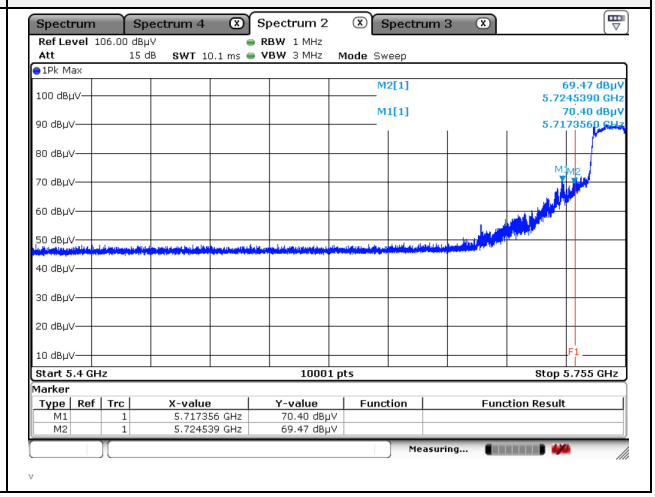
- **Band edge**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
5 717.36	70.40	Peak	V	7.23	-	77.63	110.09	32.46
5 717.53	74.76	Peak	H	7.23	-	81.99	110.14	28.15
5 724.36	73.95	Peak	H	7.27	-	81.22	120.77	39.55
5 724.54	69.47	Peak	V	7.27	-	76.74	121.18	44.44

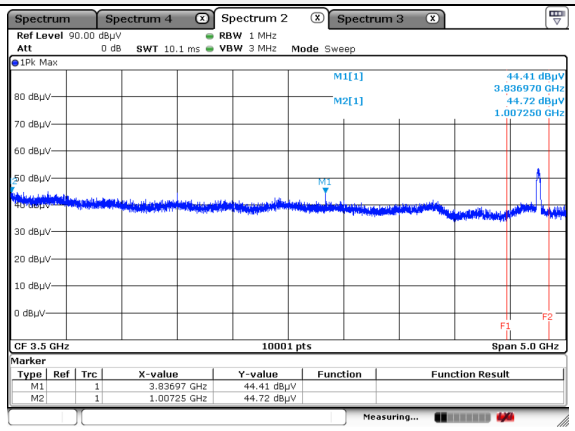
Restricted band // Horizontal // Peak



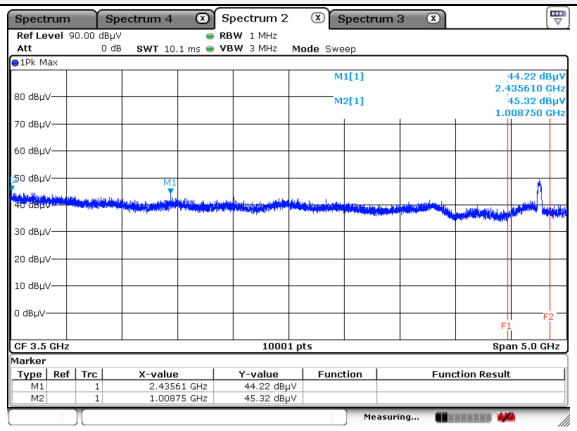
Restricted band // Vertical // Peak



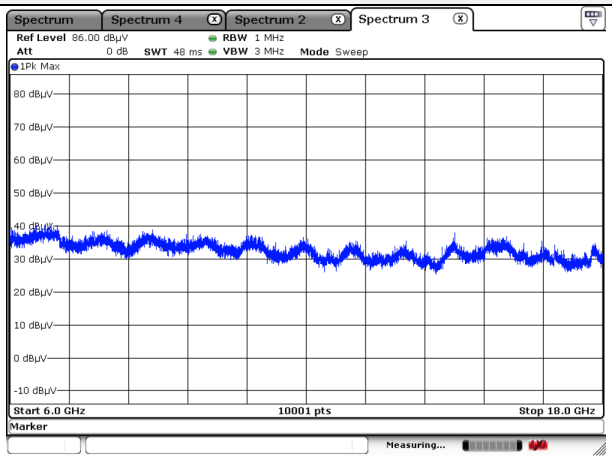
Horizontal // Peak for 1 ㎓ to 6 ㎓



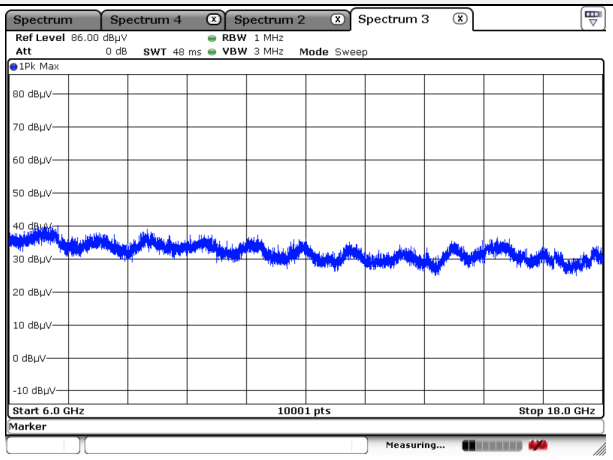
Vertical // Peak for 1 ㎓ to 6 ㎓



Horizontal // Peak for 6 ㎓ to 18 ㎓



Vertical // Peak for 6 ㎓ to 18 ㎓



Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Mode:	802.11n_HT40
Band:	UNII-3
Distance of measurement:	3 meter
Channel:	159

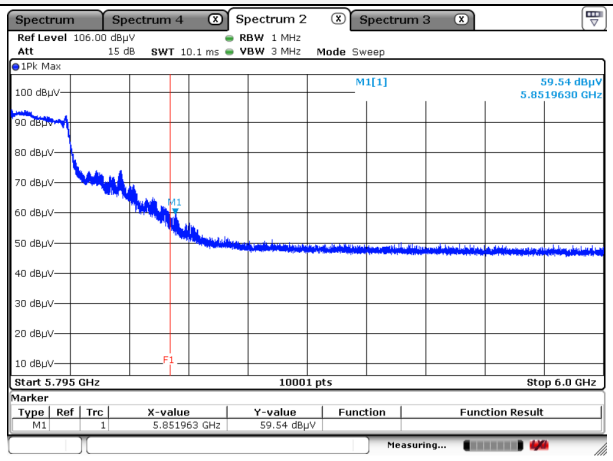
- **Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 329.72	48.24	Peak	H	-8.40	-	39.84	74.00	34.16
1 524.70	44.39	Peak	V	-7.19	-	37.20	74.00	36.80
2 573.59	43.41	Peak	V	-1.45	-	41.96	68.20	26.24
3 863.96	47.40	Peak	H	1.61	-	49.01	74.00	24.99

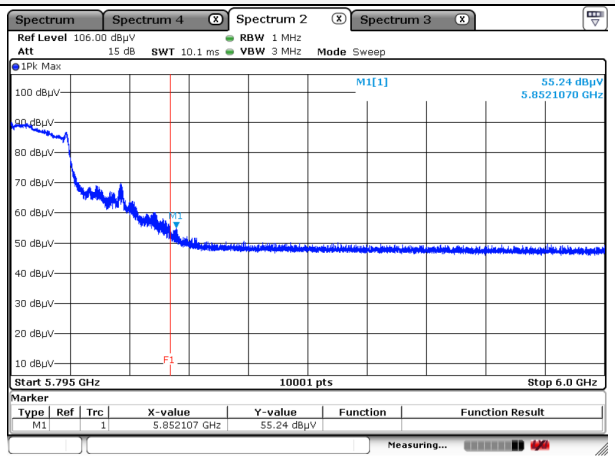
- **Band edge**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
5 851.96	59.54	Peak	H	7.80	-	67.34	117.76	50.42
5 852.11	55.24	Peak	V	7.80	-	63.71	117.42	53.71

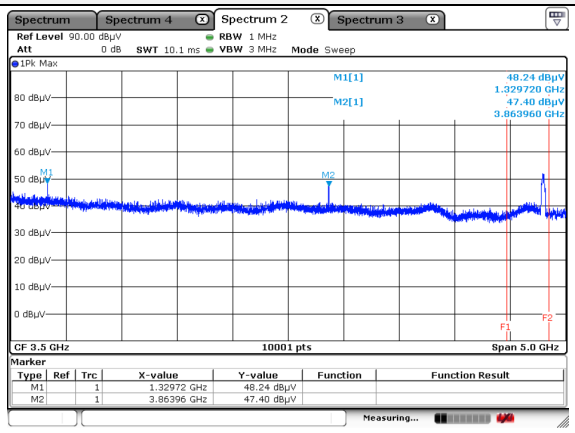
Restricted band // Horizontal // Peak



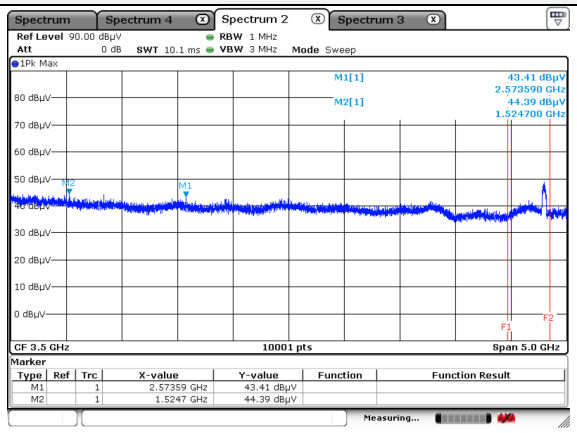
Restricted band // Vertical // Peak



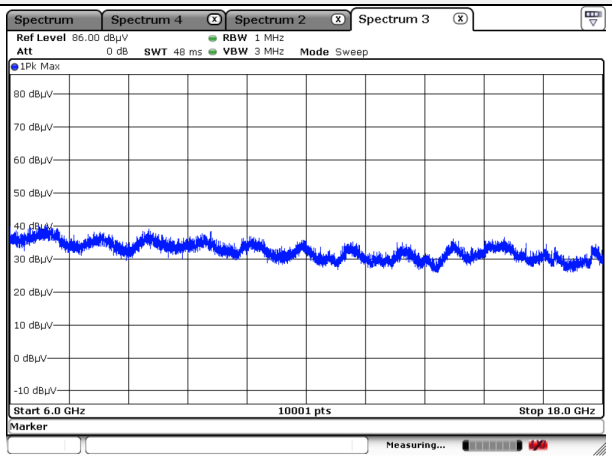
Horizontal // Peak for 1 ㎓ to 6 ㎓



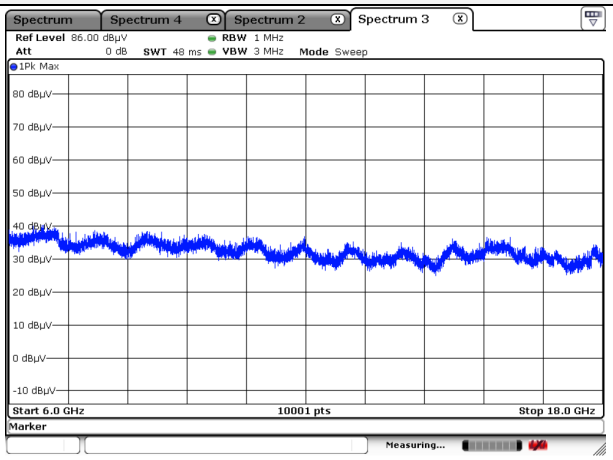
Vertical // Peak for 1 ㎓ to 6 ㎓



Horizontal // Peak for 6 ㎓ to 18 ㎓



Vertical // Peak for 6 ㎓ to 18 ㎓

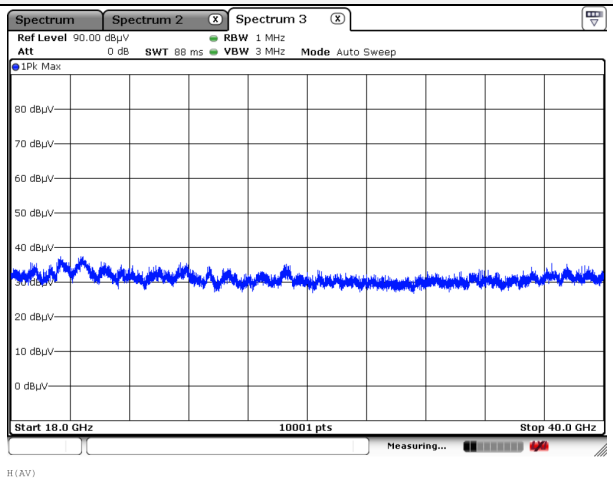
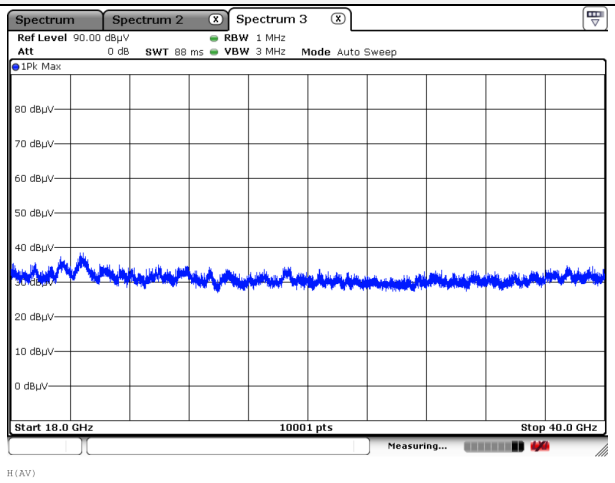


Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Test results (18 ㎓ to 40 ㎓)

Mode:	802.11n_HT40
Band:	UNII-1
Channel:	46 (Worst Case)
Distance of measurement:	3 meter

Horizontal // 18 ㎓ ~ 40 ㎓	Vertical // 18 ㎓ ~ 40 ㎓
	

Note.

1. No spurious emission were detected above 18 ㎓.

3.7. AC conducted emissions

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 ㎑ to 30 ㎒, shall not exceed the limits in the following table, as measured using a 50uH/50 ohm line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequencies ranges.

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

According to RSS-Gen 8.8, For an EUT that connects to the AC power lines indirectly, through another device, the requirement for compliance with the limits in table 4 shall apply at the terminals of the AC power-line mains cable of a representative support device, while it provides power to the EUT. The lower limit applies at the boundary between the frequency ranges. The device used to power the EUT shall be representative of typical applications.

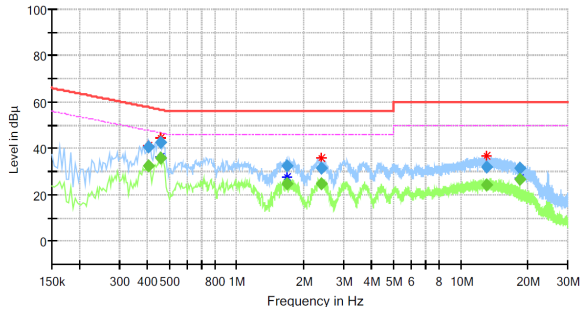
Frequency of Emission (㎒)	Conducted limit (dBμV/m)	
	Quasi-peak	Average
0.15 – 0.50	66 - 56*	56 - 46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Test results

Mode:	802.11n_HT40
Band:	UNII-1
Channel:	38 (Worst Case)

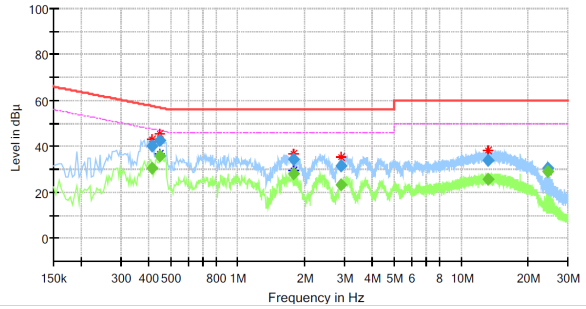
Hot Line



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.402000	40.51	---	57.81	17.30	1000.0	9.000	L1	19.8
0.402000	---	32.57	47.81	15.24	1000.0	9.000	L1	19.8
0.458000	---	35.81	46.73	10.92	1000.0	9.000	L1	19.8
0.458000	42.74	---	56.73	13.99	1000.0	9.000	L1	19.8
1.670000	---	24.93	46.00	21.07	1000.0	9.000	L1	20.4
1.670000	32.50	---	56.00	23.50	1000.0	9.000	L1	20.4
2.398000	---	24.86	46.00	21.14	1000.0	9.000	L1	20.4
2.398000	31.69	---	56.00	24.31	1000.0	9.000	L1	20.4
13.030000	---	24.40	50.00	25.60	1000.0	9.000	L1	20.5
13.030000	32.13	---	60.00	27.87	1000.0	9.000	L1	20.5
18.430000	---	26.63	50.00	23.37	1000.0	9.000	L1	20.8
18.430000	31.63	---	60.00	28.37	1000.0	9.000	L1	20.8

Neutral Line



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.414000	40.08	---	57.57	17.49	1000.0	9.000	N	19.8
0.414000	---	30.64	47.57	16.93	1000.0	9.000	N	19.8
0.450000	42.66	---	56.88	14.22	1000.0	9.000	N	19.8
0.450000	---	35.67	46.88	11.21	1000.0	9.000	N	19.8
1.778000	34.15	---	56.00	21.85	1000.0	9.000	N	20.4
1.778000	---	27.92	46.00	18.08	1000.0	9.000	N	20.4
2.898000	31.28	---	56.00	24.72	1000.0	9.000	N	20.4
2.898000	---	23.10	46.00	22.90	1000.0	9.000	N	20.4
13.142000	33.76	---	60.00	26.24	1000.0	9.000	N	20.5
13.142000	---	25.56	50.00	24.44	1000.0	9.000	N	20.5
24.574000	---	29.02	50.00	20.98	1000.0	9.000	N	21.0
24.574000	30.58	---	60.00	29.42	1000.0	9.000	N	21.0

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

3.8. Antenna Requirement

According to 15.207(a), An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Appendix A. Measurement equipment

Equipment	Manufacturer	Model	Serial No.	Calibration interval	Calibration due.
Spectrum analyzer	R&S	FSV3044	101272	1 year	2023.03.14
Spectrum analyzer	R&S	FSV40-N	102194	1 year	2023.08.11
SIGNAL GENERATOR	KEYSIGHT	N5182B	MY59100115	1 year	2023.04.27
SIGNAL GENERATOR	Anritsu	68369B	002118	1 year	2023.05.13
Power Meter	Anritsu	ML2495A	2010001	1 year	2023.04.27
Pulse Power Sensor	Anritsu	MA2411B	1911111	1 year	2023.04.27
Attenuator	Mini-Circuits	BW-S10-2W263+	3	1 year	2023.01.17
Loop Antenna	Schwarzbeck	FMZB1513	225	2 years	2023.01.18
TRILOG-BROADBAND ANTENNA	Schwarzbeck	VULB 9163	714	2 years	2024.04.19
Attenuator	HUBER+SHHNER	6806.17.A	NONE	1 year	2023.04.01
Horn Antenna	A.H	SAS-571	414	1 year	2023.01.18
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA 9170550	1 year	2023.01.18
Amplifier	SONOMA INSTRUMENT	310N	100517	1 year	2023.08.01
PREAMPLIFIER	HP	8449B	3008A00538	1 year	2023.06.02
BROADBAND AMPLIFIER	SCHWARZBECK	BBV9721	PS9721-003	1 year	2023.01.17
AC POWER SOURCE/ ANALYZER	HP	6813A	3729A00754	1 year	2023.01.14
EMI Test Receiver	R&S	ESU26	100517	1 year	2023.08.01
EMI Test Receiver	R&S	ESR3	101783	1 year	2023.11.11
PULSE LIMITER	R&S	ESH2-Z2	101915	1 year	2023.11.10
BAND REJECT FILTER	MICRO-TRONICS	BRM50716	G199	1 year	2023.01.14
LISN	R&S	ENV216	101787	1 year	2023.11.10
Temp. & Humid. Chamber	ESPEC	SH642	93012658	1 year	2023.06.16

Peripheral devices

Device	Manufacturer	Model No.	Serial No.
Notebook computer	LG Electronics Inc.,	LGS53	306QCZP560949
Test Jig Board	N/A	N/A	N/A

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr