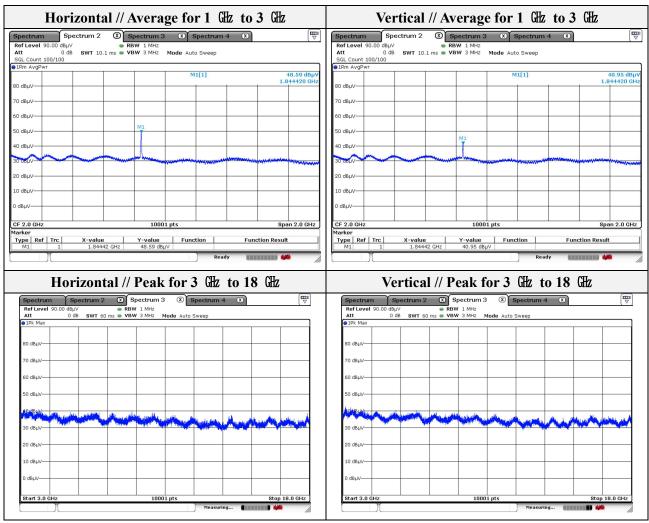


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Note.

1. No spurious emission were detected at horizontal above 3 GHz.

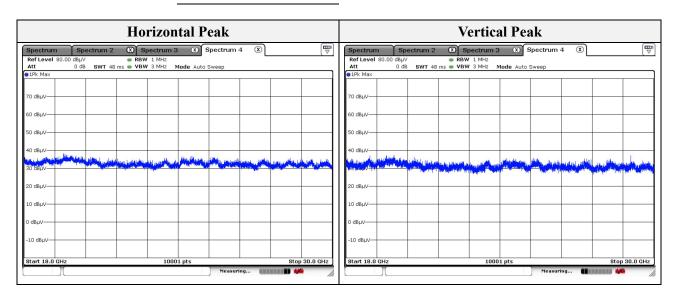


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Distance of measurement: 3 meter

Mode: 802.11ah 2 MHz

Channel: 06



Note.

No spurious emission were detected above 18 GHz.

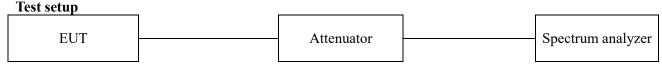


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3.5. Conducted spurious emissions & band edge



Test procedure

Band edge

ANSI C63.10-2013 - Section 11.11

- 1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
- 2. Span was set large enough so as to capture all out of band emissions near the band edge
- 3. Set the RBW = 100 kHz
- 4. Set the VBW = $[3 \times RBW]$.
- 5. Detector = Peak
- 6. Sweep time = auto
- 7. Trace mode = max hold
- 8. Allow trace to fully stabilize.

Out of band emissions

ANSI C63.10-2013 - Section 11.11

- 1. Start frequency was set to 30 MHz and stop frequency was set to 25 GHz for 2.4 GHz frequencies and 40 GHz for 5 GHz frequencies
- 2. Set the RBW = 100 kHz
- 3. Set the VBW = $[3 \times RBW]$.
- 4. Detector = Peak
- 5. Sweep time = auto
- 6. Trace mode = max hold
- 7. Allow trace to fully stabilize.

Limit

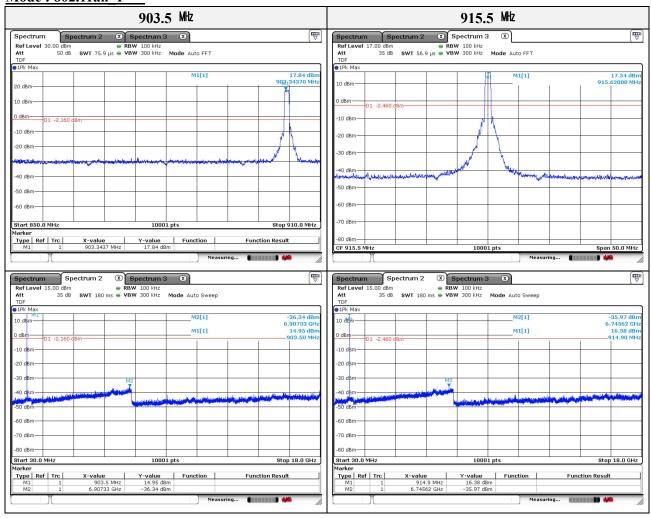
According to 15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph(b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in section 15.209(a) is not required. In addition, radiated emission which in the restricted band, as define in section 15.205(a), must also comply the radiated emission limits specified in section 15.209(a) (see section 15.205(c))



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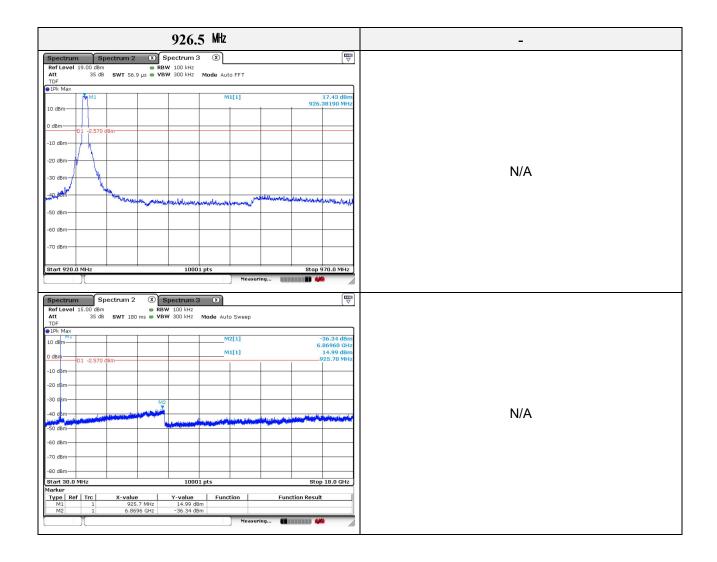
Test results

Mode: 802.11ah 1 Mtz





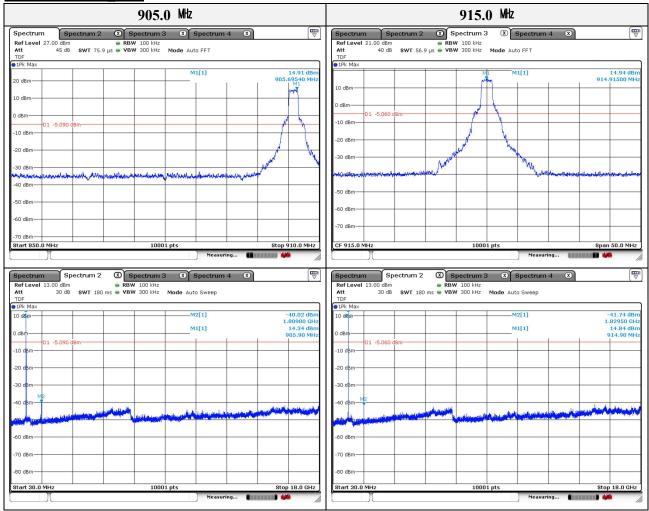
3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea Tel: +82-31-425-6200 / Fax: +82-31-424-0450 www.kes.co.kr Report No.: KES-RF1-22T0010 Page (47) of (56)





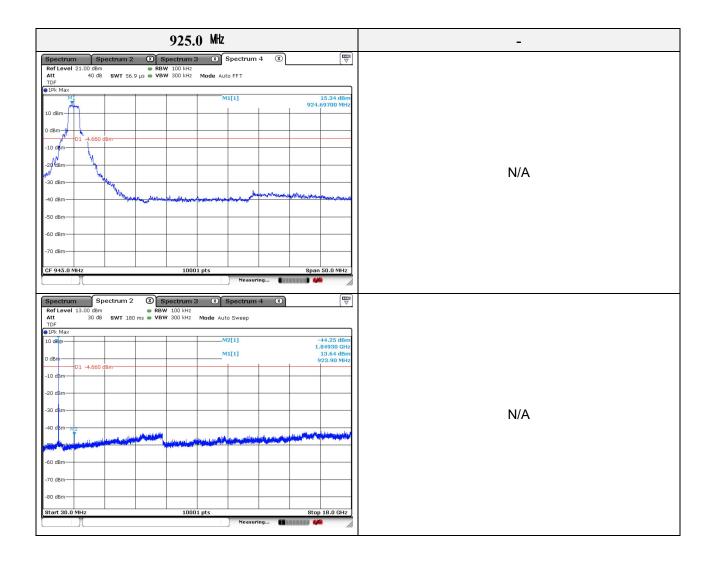
3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea Tel: +82-31-425-6200 / Fax: +82-31-424-0450 www.kes.co.kr Report No.: KES-RF1-22T0010 Page (48) of (56)

Mode: 802.11ah 2 Mb





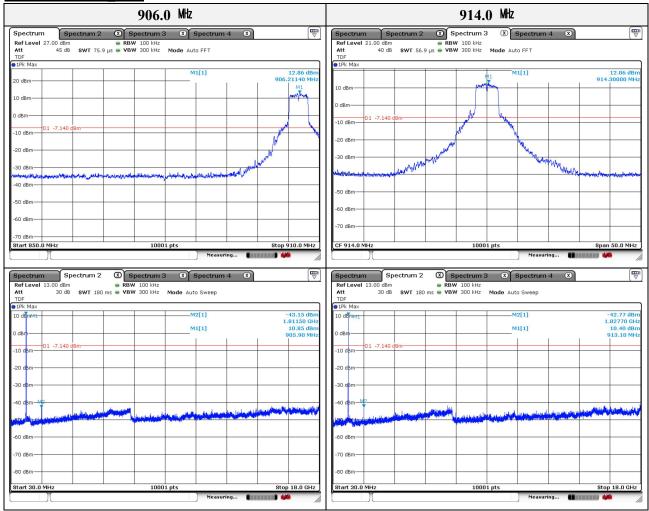
3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea Tel: +82-31-425-6200 / Fax: +82-31-424-0450 www.kes.co.kr Report No.: KES-RF1-22T0010 Page (49) of (56)





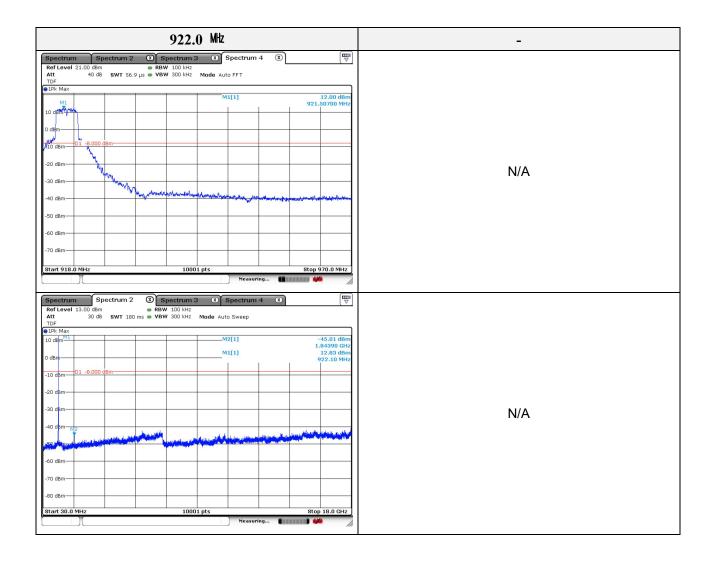
3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea Tel: +82-31-425-6200 / Fax: +82-31-424-0450 www.kes.co.kr Report No.: KES-RF1-22T0010 Page (50) of (56)

Mode: 802.11ah 4 Mb





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3.6. AC conducted emissions

Limit

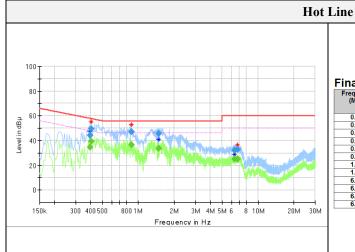
According to 15.207(a), for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the 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.

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



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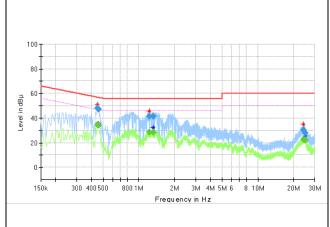
Test results



Final_Result

Frequency	QuasiPeak	Average	Limit	Margin	Meas.	Bandwidth	Line	Corr.
(MHz)	(dBµV)	(dBµV)	(dBµV)	(dB)	Time (ms)	(kHz)		(dB)
0.394000		34.64	47.98	13.34	1000.0	9.000	L1	19.8
0.394000	44.36		57.98	13.62	1000.0	9.000	L1	19.8
0.406000		39.63	47.73	8.10	1000.0	9.000	L1	19.8
0.406000	49.75		57.73	7.98	1000.0	9.000	L1	19.8
0.878000		36.46	46.00	9.54	1000.0	9.000	L1	20.3
0.878000	47.13		56.00	8.87	1000.0	9.000	L1	20.3
1.486000		33.93	46.00	12.07	1000.0	9.000	L1	20.4
1.486000	45.96		56.00	10.04	1000.0	9.000	L1	20.4
6.378000		24.88	50.00	25.12	1000.0	9.000	L1	19.9
6.378000	32.43		60.00	27.57	1000.0	9.000	L1	19.9
6.750000		25.22	50.00	24.78	1000.0	9.000	L1	19.9
6.750000	32.58		60.00	27.42	1000.0	9.000	L1	19.9

Neutral Line



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBμV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.450000		34.77	46.88	12.11	1000.0	9.000	N	19.8
0.450000	48.29		56.88	8.59	1000.0	9.000	N	19.8
0.458000		34.27	46.73	12.46	1000.0	9.000	N	19.8
0.458000	47.23		56.73	9.50	1000.0	9.000	N	19.8
1.226000		28.54	46.00	17.46	1000.0	9.000	N	20.3
1.226000	41.56		56.00	14.44	1000.0	9.000	N	20.3
1.326000		28.61	46.00	17.39	1000.0	9.000	N	20.3
1.326000	41.50		56.00	14.50	1000.0	9.000	N	20.3
24.198000		22.73	50.00	27.27	1000.0	9.000	N	21.0
24.198000	30.14		60.00	29.86	1000.0	9.000	N	21.0
25.054000		22.10	50.00	27.90	1000.0	9.000	N	21.0
25.054000	27.95		60.00	32.05	1000.0	9.000	N	21.0



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Appendix A. Measurement equipment

	Manufacture		Canial N	Calibration	Cal. Day to Next
Equipment	Manufacturer	Model	Serial No.	interval	Cal. day
Constanto Amelyzan	D 0-C	ECVAO N	102104	1 *****	2021.06.18 ~
Spectrum Analyzer	R&S	FSV40-N	102194	1 year	2022.06.18
DMIT AD	D.o.c	ECHO	100552		2021.04.01 ~
EMI Test Receiver	R&S	ESU26	100552	1 year	2022.04.01
g: 1 g		602.60P	002110		2021.05.17 ~
Signal Generator	Anritsu	68369B	002118	1 year	2022.05.17
HIGH PASS	WEINCCHEL	WHKX1.2/15G-	1	1	2021.06.18 ~
FILTER	WEINSCHEL	6TT	1	1 year	2022.06.18
Power Meter	Anritsu	ML2495A	2010001	1 year	2021.04.29 ~
1 Owel Metel	Amnsu	WILZ493A	2010001	1 year	2022.04.29
Pulse Power Sensor	Anritsu	MA2411B	1911111	1 year	2021.04.29 ~
Tuise Tower Sellson	Amnisu	WIAZŦIID	1911111	1 year	2022.04.29
				1 year	2021.01.18 ~
Attenuator	Mini-Circuits	BW-S10-2W263+	1		2022.01.18
rittendator	Willin Cheditis	BW 510 2 W 203	1		2022.01.17 ~
					2023.01.17
Attenuator	HUBER+SUHNER	6806.17.A	_	1 year	2021.11.02 ~
110011000101		0000117111		1) 01	2022.11.02
Loop Antenna	Schwarzbeck	FMZB1513	225	2 years	2021.01.18 ~
_				,	2023.01.18
BILOG	Schwarzbeck	VULB 9168	9168-461	2 years	2020.12.22 ~
ANTENNA					2022.12.22
	A.H	SAS-571	414	1 year	2021.01.22 ~
Horn Antenna					2022.01.22 2022.01.18 ~
					2023.01.18
					2023.01.18 ~
	SCHWARZBECK	ВВНА9170	BBHA 9170550	1 year	2022.01.18
Horn Antenna					2022.01.18
					2023.01.18
	SONOMA				2021.06.07 ~
Amplifier	INSTRUMENT	310N	401123	1 year	2022.06.07
			3008A005		2021.06.21 ~
PREAMPLIFIER	HP	8449B	38	1 year	2022.06.21
BROADBAND	GOLINIA DADEGIA	DD1/0721	PS9721-	1	2021.01.19 ~
AMPLIFIER	SCHWARZBECK	BBV9721	003	1 year	2022.01.19
	Agilent	6632B	MY43004 090	1 year	2021.06.21 ~
DC Power supply					2022.06.21
EMI Test Receiver	R&S	ECU26	100552	1 ******	2021.04.01 ~
EIVII Iest Keceiver	Ras	ESU26	100552	1 year	2022.04.01
LISN	ENV216	R & S	101787	1 year	2021.12.27 ~
	EIN V Z I U				2022.12.27
EMI TEST	1 6003	R & S	101783	1 year	2021.12.28 ~
RECEIVER	LONJ	K & S	101/03	1 year	2022.12.28
PULSE LIMITER	ESH3-Z2	R & S	101915	1 year	2021.12.27 ~
					2022.12.27



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Peripheral devices

Device	Manufacturer	Model No.	Serial No.
Notebook computer	LG Electronics Inc.,	LGS53	306QCZP560949
Jig board	-	-	-