



KES Co., Ltd.

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Report No.:

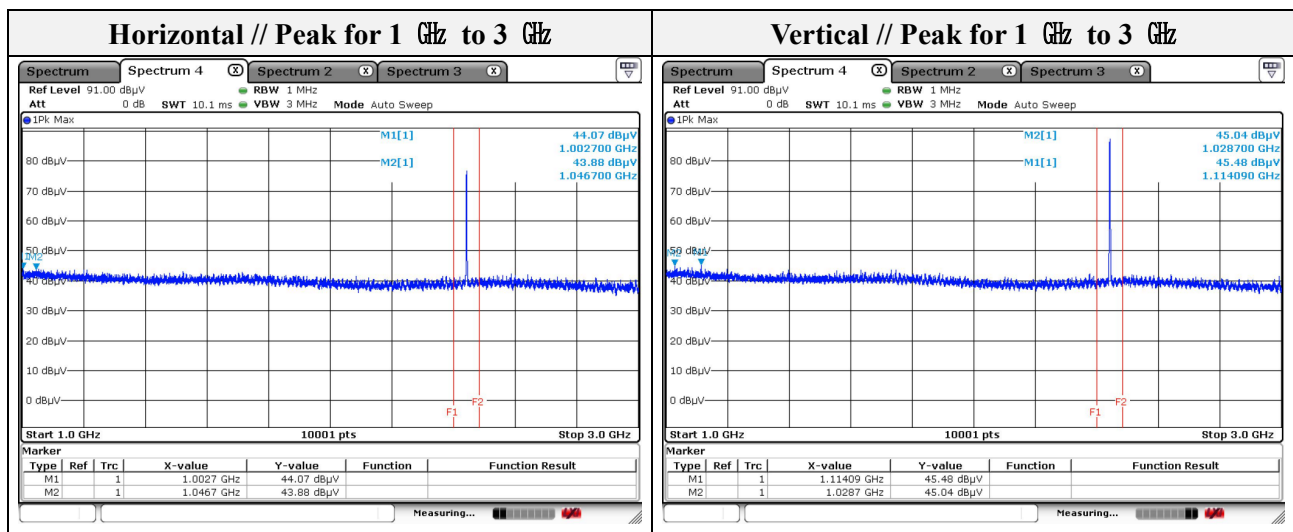
KES-RF1-22T0044

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Mode:	EDR
Transfer rate:	3 Mbps(Worst case)
Distance of measurement:	3 meter
Channel:	40

- Spurious

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 002.70	44.07	Peak	H	-11.15	-	32.92	74.00	41.08
1 028.70	45.04	Peak	V	-11.01	-	34.03	74.00	39.97
1 046.70	43.88	Peak	H	-10.91	-	32.97	74.00	41.03
1 114.09	45.48	Peak	V	-10.55	-	34.93	74.00	39.07
4 884.60	41.37	Peak	V	5.44	-	46.81	74.00	27.19



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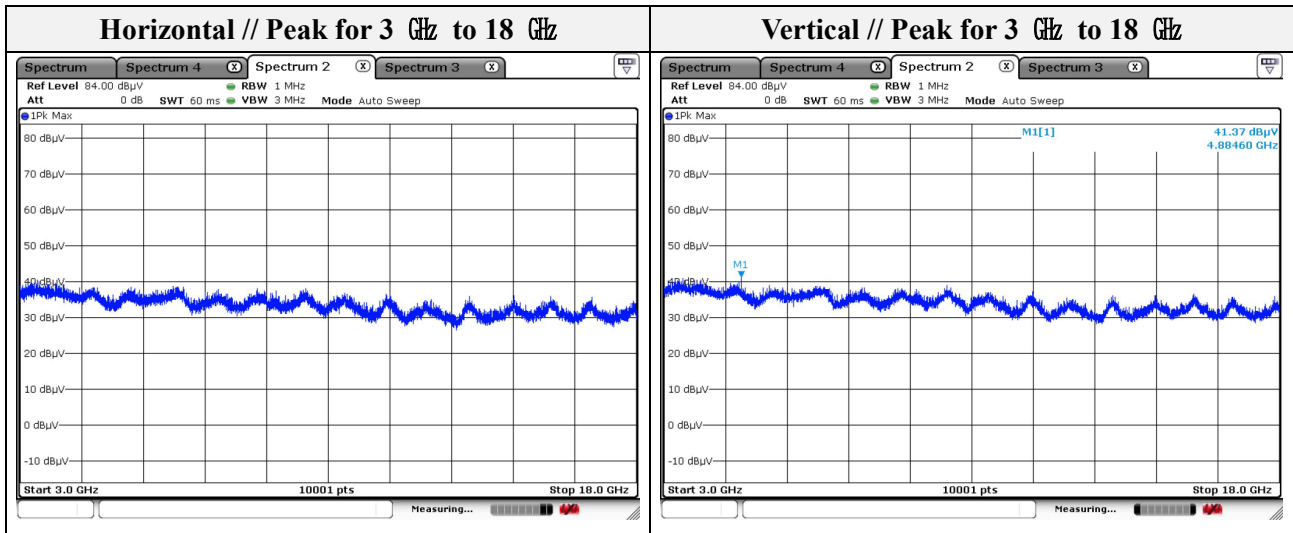
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Note.

1. Average test would be performed if the peak result were greater than the average limit.

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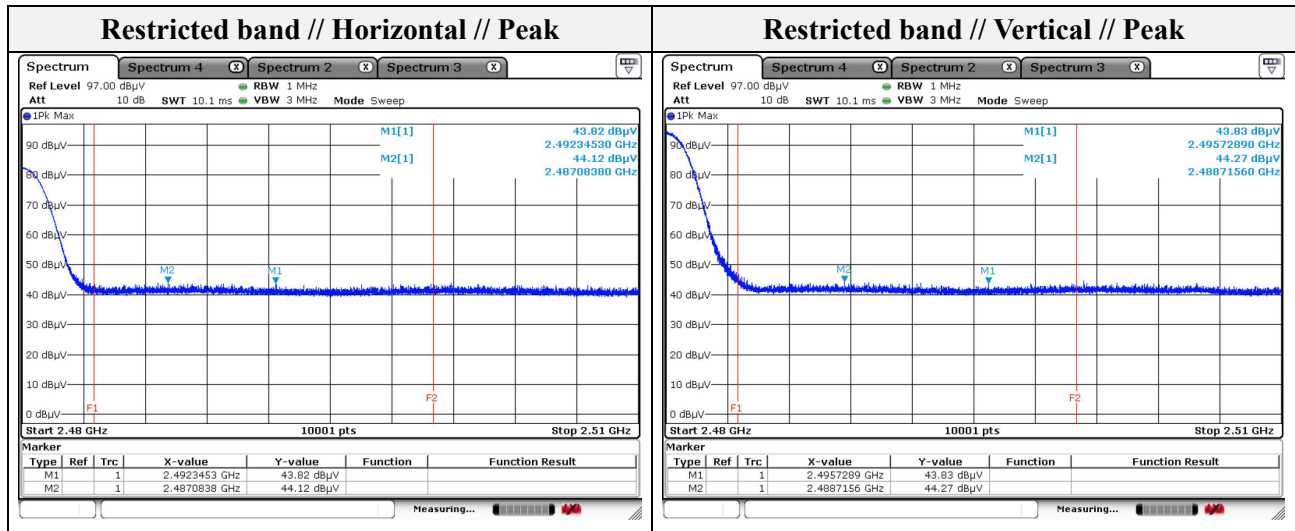
Mode: EDR
Transfer rate: 3 Mbps(Worst case)
Distance of measurement: 3 meter
Channel: 78

- Spurious

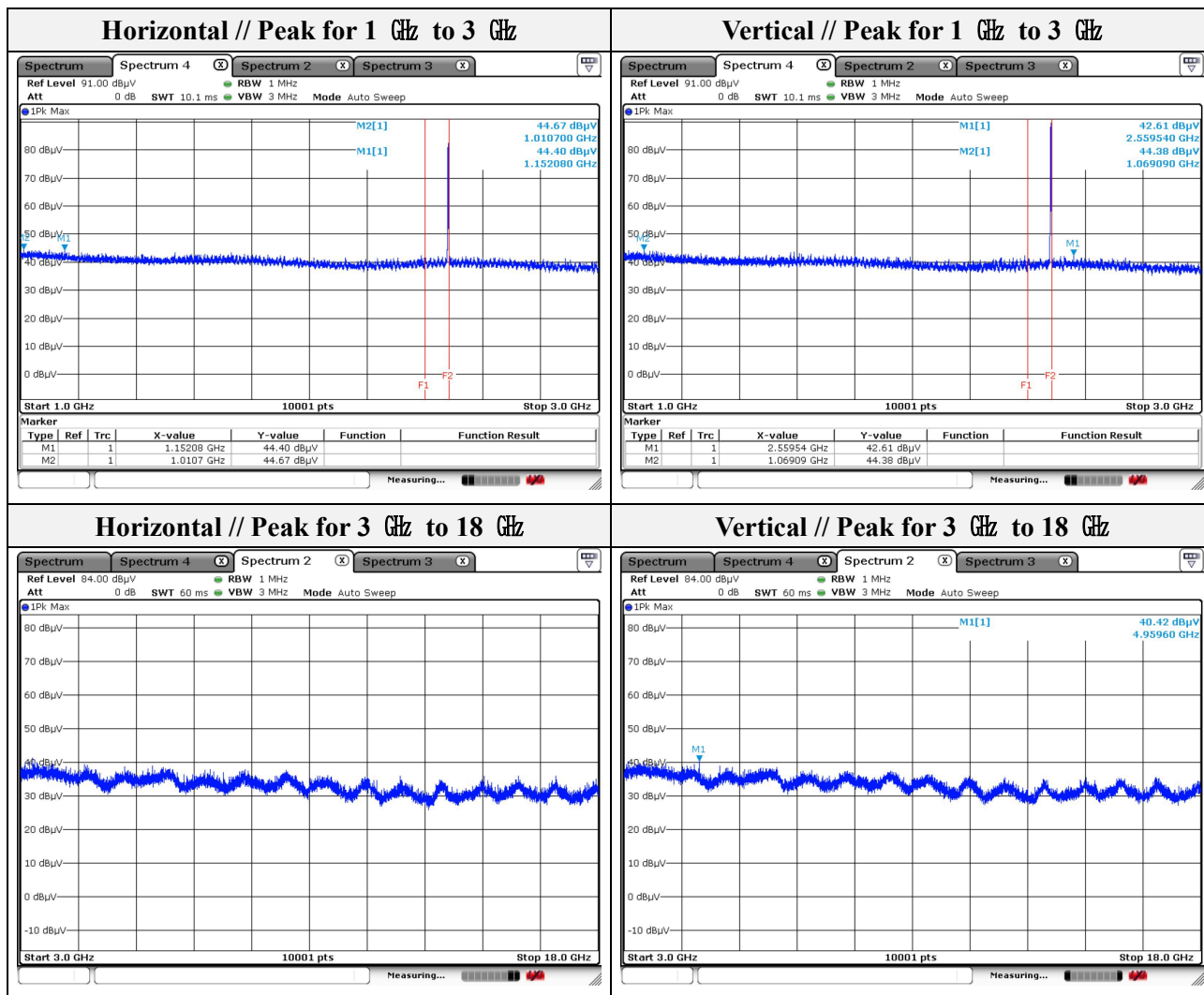
Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 010.70	44.67	Peak	H	-11.10	-	33.57	74.00	40.43
1 069.09	44.38	Peak	V	-10.79	-	33.59	74.00	40.41
1 152.08	44.40	Peak	H	-10.35	-	34.05	74.00	39.95
2 559.54	42.61	Peak	V	-2.17	-	40.44	74.00	33.56
4 959.60	40.42	Peak	V	5.99	-	46.41	74.00	27.59

- 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)
2 487.08	44.12	Peak	H	-2.39	-	41.73	74.00	32.27
2 488.72	44.27	Peak	V	-2.38	-	41.89	74.00	32.11
2 492.35	43.82	Peak	H	-2.36	-	41.46	74.00	32.54
2 495.73	43.83	Peak	V	-2.35	-	41.48	74.00	32.52



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Note.

1. Average test would be performed if the peak result were greater than the average limit.



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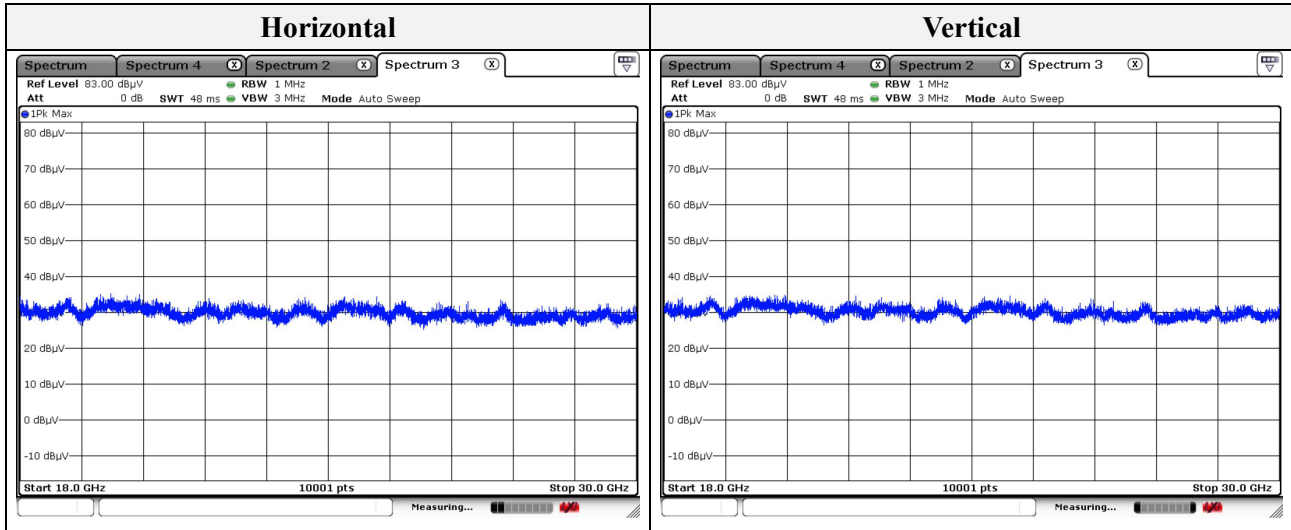
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Test results (18 GHz to 30 GHz) – Worst case

Mode:	BDR
Transfer rate:	1 Mbps
Distance of measurement:	3 meter
Channel:	78(Worst case)



Note.

1. No spurious emission were detected above 18 GHz.

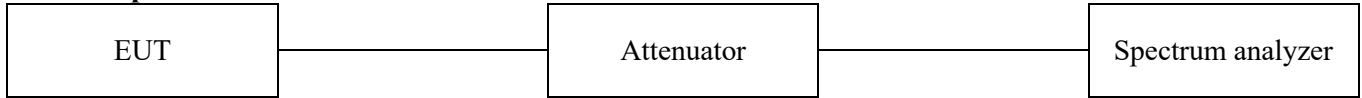
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3.7. Conducted band edge and out of band emissions

Test procedure

KDB 558074 v05r02 & ANSI 63.10-2013

Test setup



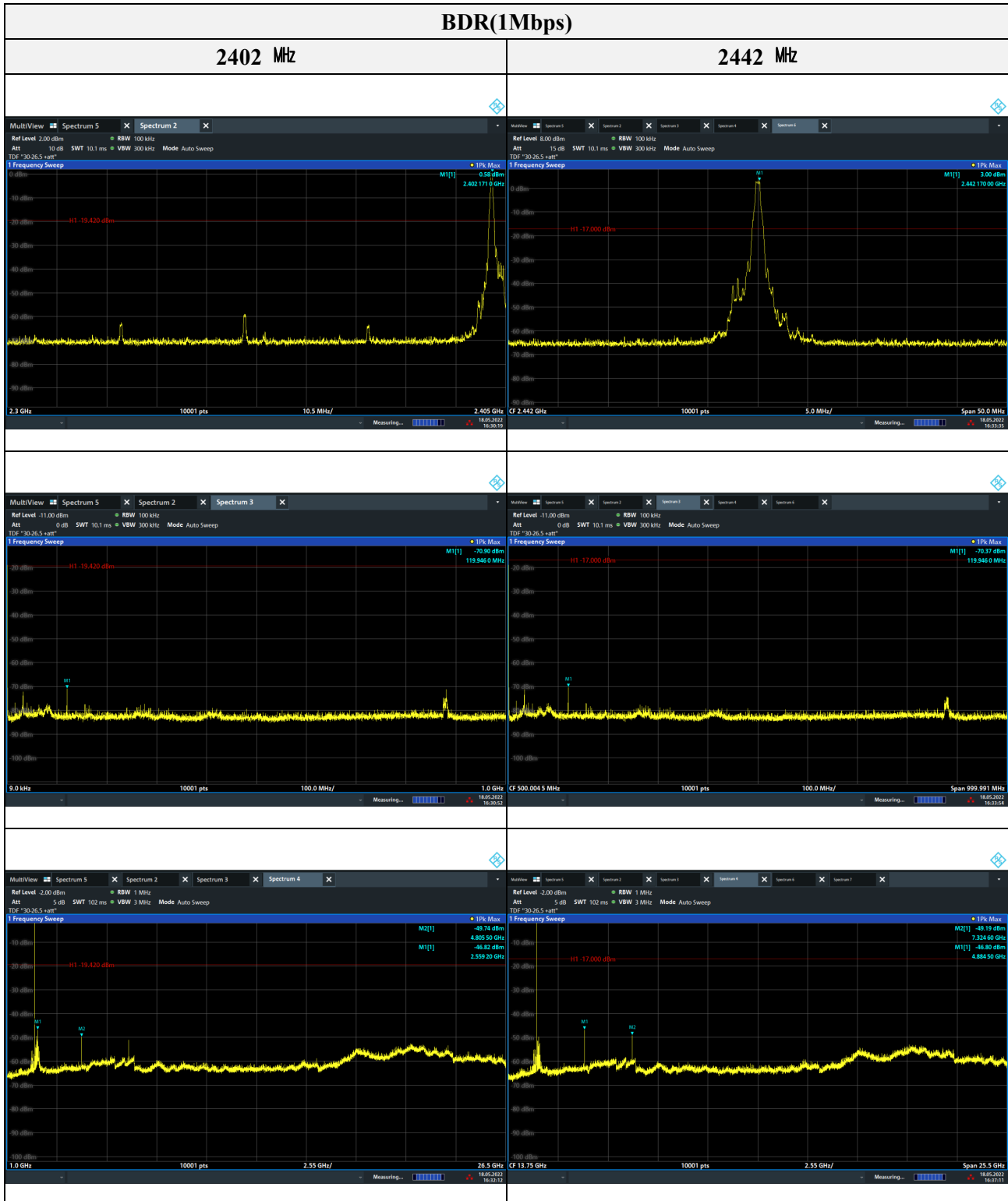
Test setting

1. Span = wide enough to capture the peak level of the in-band emission and all spurious emissions(e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic.
2. RBW = 100 kHz
3. VBW $\geq$ 300 kHz
4. Detector = Peak
5. Number of sweep points $\geq 2 \times \text{Span/RBW}$
7. Trace mode = max hold
8. Sweep time = auto couple
9. The trace was allowed to stabilize

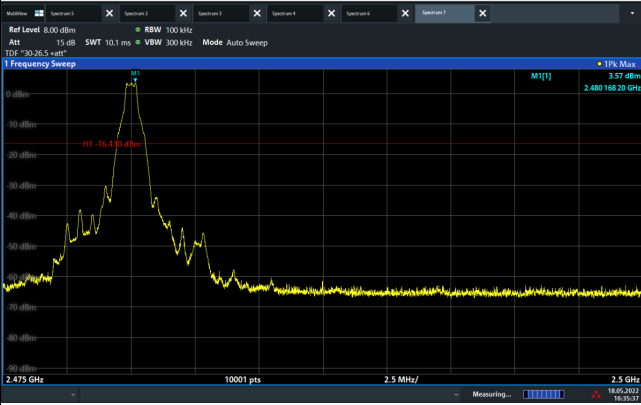
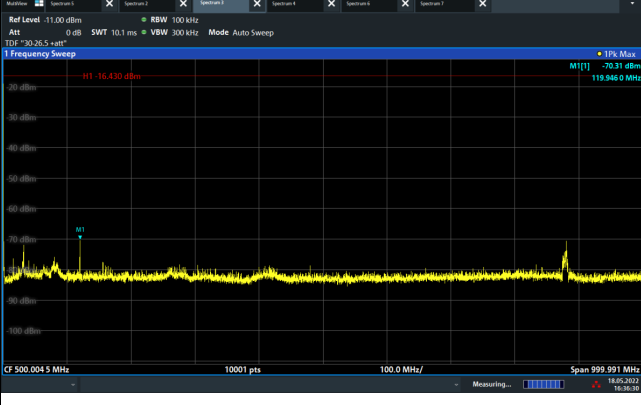
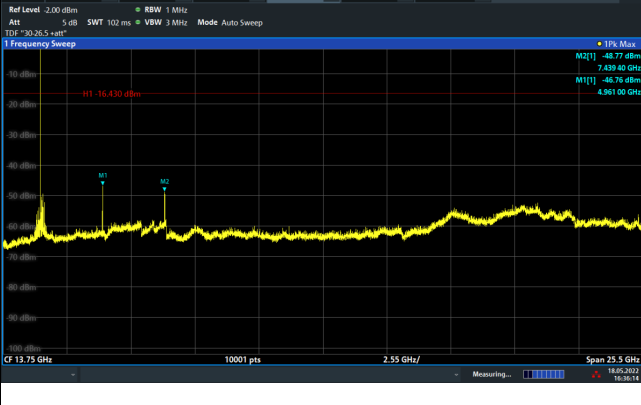
Limit

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))

Test results



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BDR(1Mbps)	
2480 MHz	-
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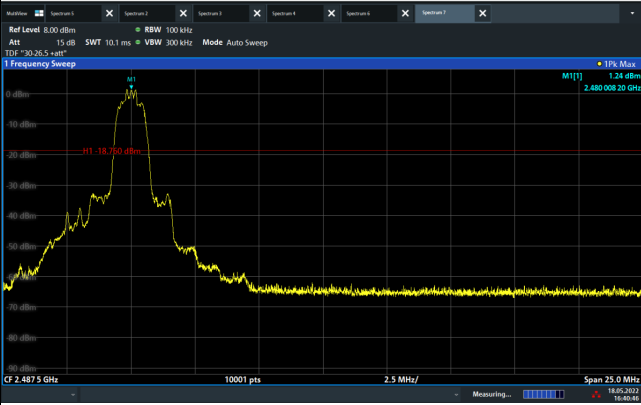
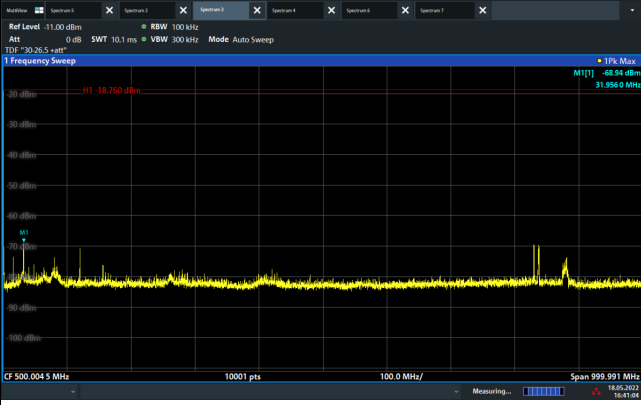
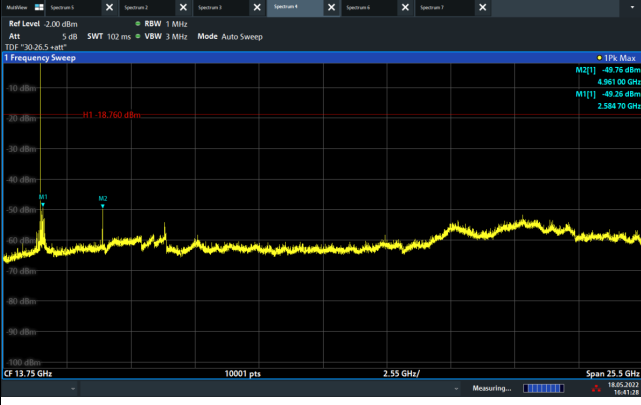
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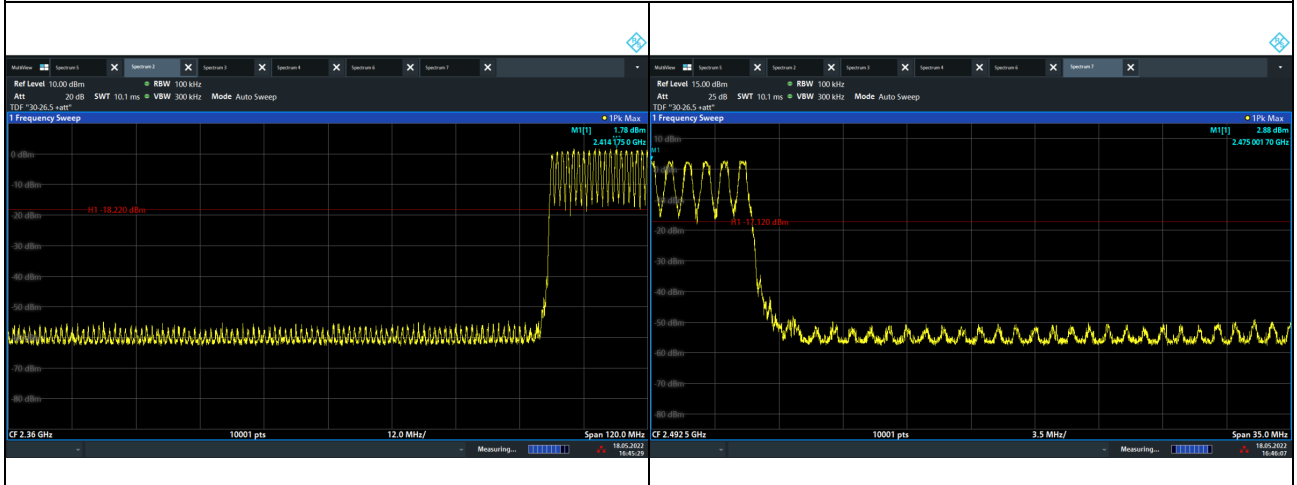
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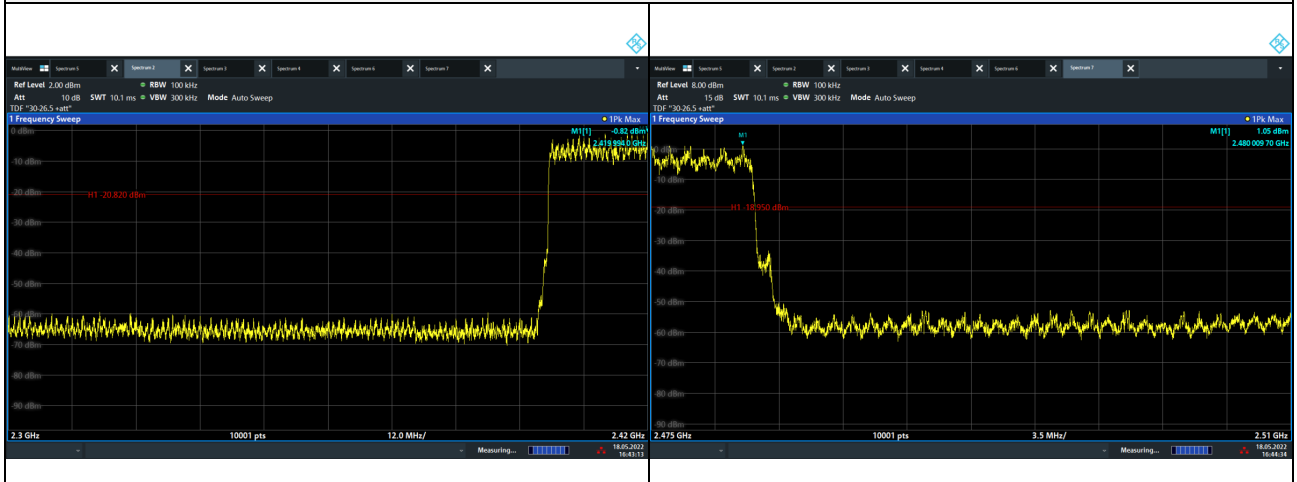
EDR(3Mbps)	
2480 MHz	-
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Hopping mode_BDR(1Mbps)



Hopping mode_EDR(3Mbps)



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3.8. 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.

Frequency of Emission (MHz)	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



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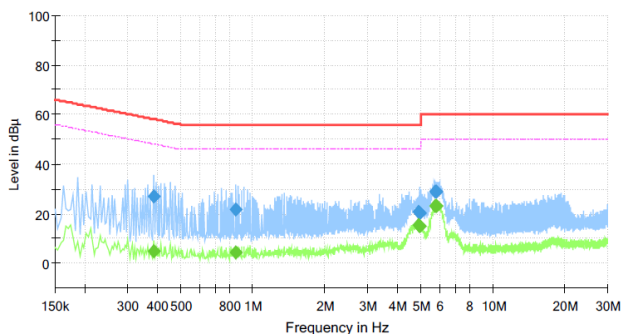
KES-RF1-22T0044

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Test results

Mode:	BDR
Transfer rate:	1 Mbps
Distance of measurement:	3 meter
Channel:	78(Worst case)

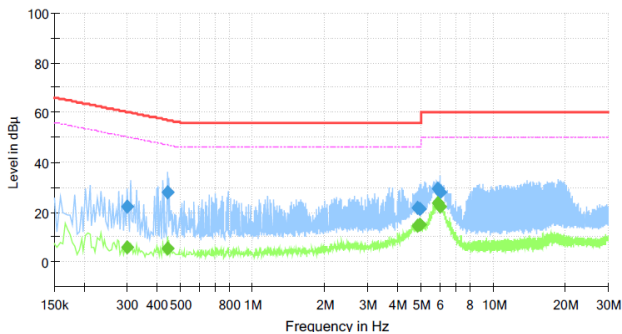
Hot Line



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.386000	26.95	---	58.15	31.20	1000.0	9.000	L1	19.8
0.386000	---	5.06	48.15	43.09	1000.0	9.000	L1	19.8
0.850000	---	4.39	48.00	41.61	1000.0	9.000	L1	20.2
0.850000	21.69	---	58.00	34.31	1000.0	9.000	L1	20.2
4.906000	---	15.27	48.00	30.73	1000.0	9.000	L1	19.9
4.906000	20.84	---	58.00	35.16	1000.0	9.000	L1	19.9
4.962000	---	14.94	48.00	31.06	1000.0	9.000	L1	19.9
4.962000	20.23	---	58.00	35.77	1000.0	9.000	L1	19.9
5.778000	---	23.23	50.00	26.77	1000.0	9.000	L1	19.8
5.778000	28.96	---	60.00	31.04	1000.0	9.000	L1	19.8
5.794000	---	23.32	50.00	26.68	1000.0	9.000	L1	19.8
5.794000	29.01	---	60.00	30.99	1000.0	9.000	L1	19.8

Neutral Line



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.302000	22.20	---	60.19	37.99	1000.0	9.000	N	19.6
0.302000	---	5.66	50.19	44.53	1000.0	9.000	N	19.6
0.442000	---	5.46	47.02	41.56	1000.0	9.000	N	19.8
0.442000	27.85	---	57.02	29.17	1000.0	9.000	N	19.8
4.822000	---	14.33	48.00	31.67	1000.0	9.000	N	19.9
4.822000	21.80	---	58.00	34.20	1000.0	9.000	N	19.9
4.950000	---	15.16	48.00	30.84	1000.0	9.000	N	19.9
4.950000	21.31	---	58.00	34.69	1000.0	9.000	N	19.9
5.886000	---	23.50	50.00	26.50	1000.0	9.000	N	19.8
5.886000	29.27	---	60.00	30.73	1000.0	9.000	N	19.8
6.038000	---	22.31	50.00	27.69	1000.0	9.000	N	19.8
6.038000	27.90	---	60.00	32.10	1000.0	9.000	N	19.8

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Appendix A. Measurement equipment

Equipment	Manufacturer	Model	Serial No.	Calibration interval	Calibration due.
Spectrum analyzer	R&S	FSV3044	101272	1 year	2023.03.14
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
BILOG ANTENNA	Schwarzbeck	VULB 9168	9168-461	2 years	2022.12.22
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	401123	1 year	2022.06.07
PREAMPLIFIER	HP	8449B	3008A00538	1 year	2022.06.21
BROADBAND AMPLIFIER	SCHWARZBECK	BBV9721	PS9721-003	1 year	2023.01.17
Attenuator	HUBER+SHHNER	6806.17.A	NONE	1 year	2023.04.01
AC POWER SOURCE/ ANALYZER	HP	6813A	3729A00754	1 year	2023.01.14
DC Power supply	Agilent	6632B	MY43004090	1 year	2022.06.21
EMI Test Receiver	R&S	ESU26	100552	1 year	2023.03.31
LISN	ENV216	R & S	101787	1 year	2022.12.27
EMI TEST RECEIVER	ESR3	R & S	101783	1 year	2022.12.28
PULSE LIMITER	ESH3-Z2	R & S	101915	1 year	2022.12.27

Peripheral devices

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

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