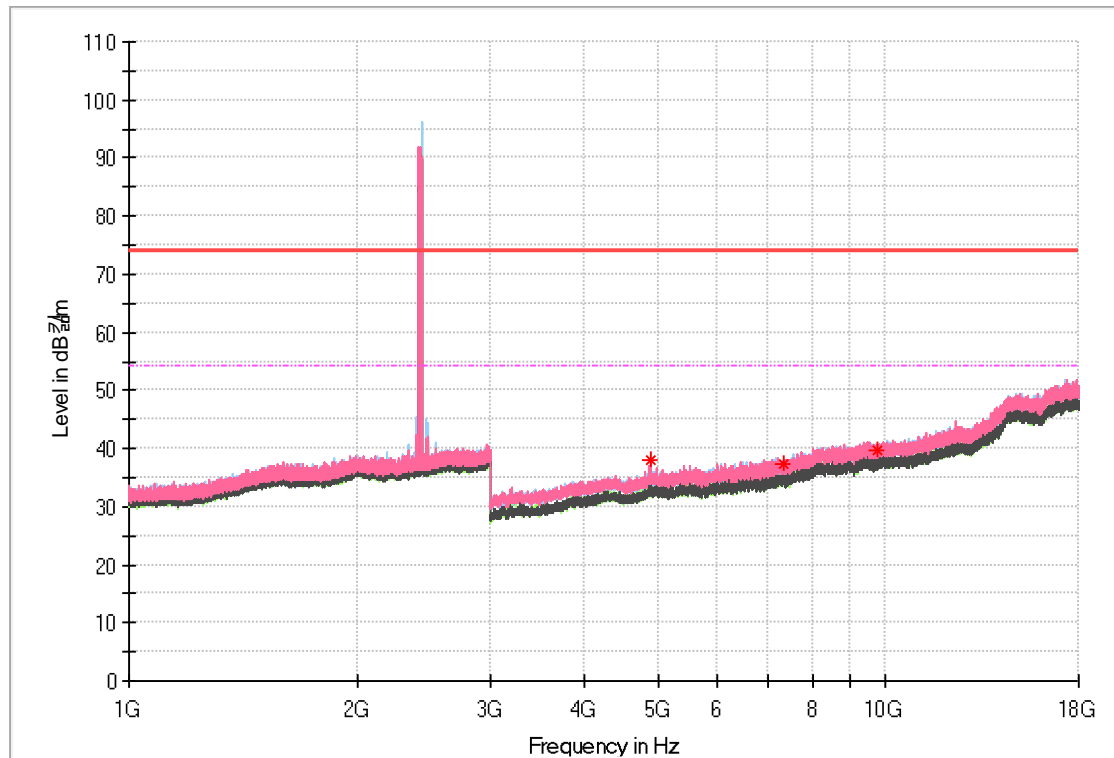


RSE BDR_GFSK_2 441 MHz

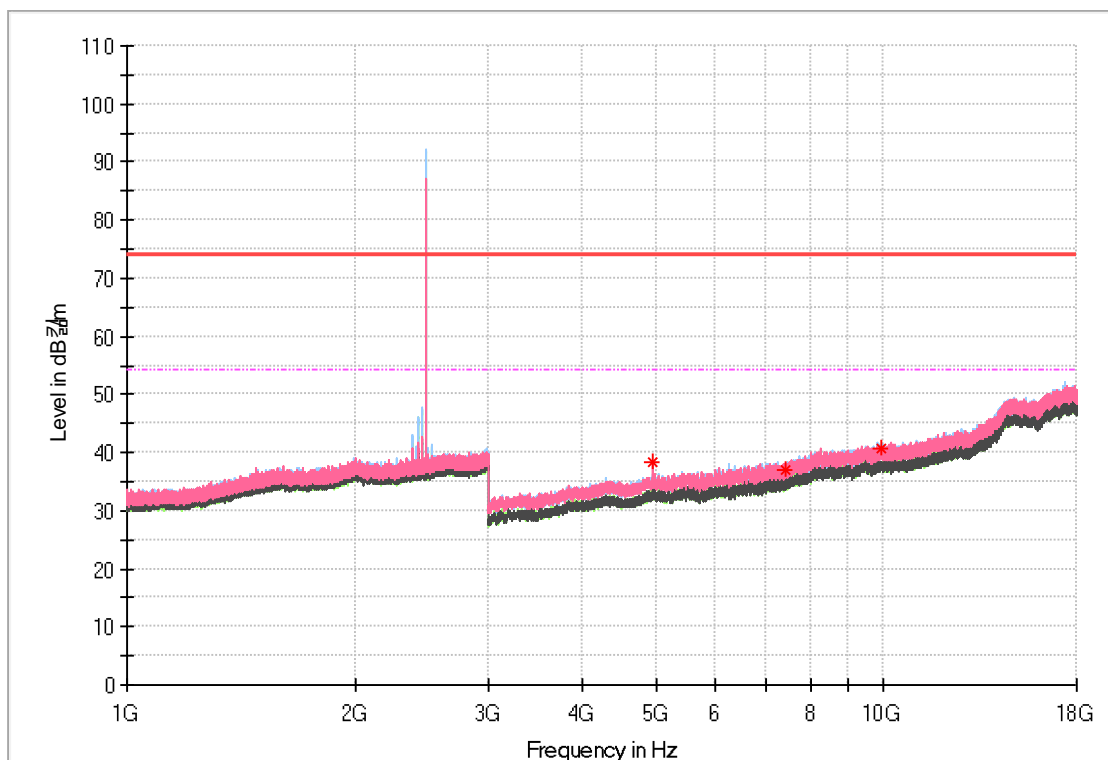


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
* 4882.03	34.92	38.12	---	---	---	200	V	210	3.20	35.88	74.00	---	---
* 7323.28	29.78	37.28	---	---	---	200	V	309	7.50	36.72	74.00	---	---
9763.59	28.94	39.54	---	---	---	300	V	137	10.60	34.46	74.00	---	---

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = Peak Result(dBuV/m) + DCCF
3. DCCF(Duty Cycle Correction Factor) = 20 x Log(worst dwell time/100 ms)
4. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
5. Margin(dB) = (Peak/AVG) Limit (dBuV/m) – (Peak/AVG) Result (dBuV/m)
6. * - indicates frequency in Restricted Band.

RSE BDR_GFSK_2 480 MHz

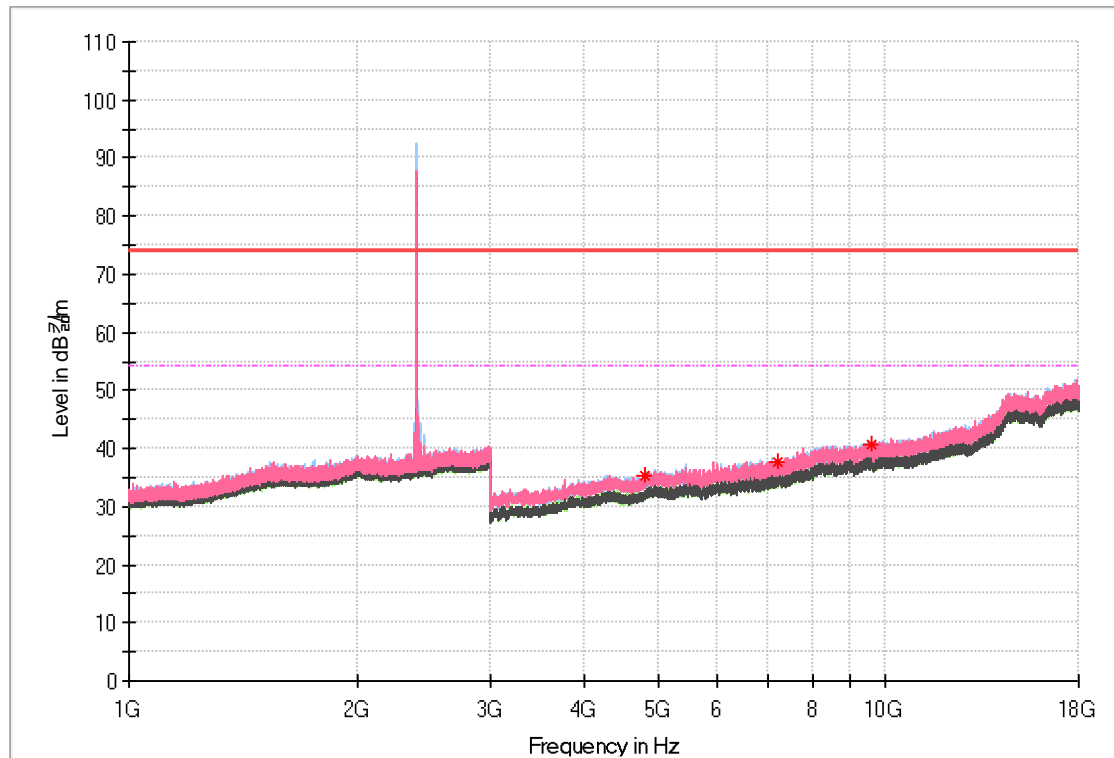


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
* 4 959.84	34.87	38.27	---	---	---	200	V	202	3.40	35.73	74.00	---	---
* 7 440.00	29.24	37.04	---	---	---	200	V	357	7.80	36.96	74.00	---	---
9 918.28	29.69	40.69	---	---	---	300	H	358	11.00	33.31	74.00	---	---

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = Peak Result(dBuV/m) + DCCF
3. DCCF(Duty Cycle Correction Factor) = 20 x Log(worst dwell time/100 ms)
4. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
5. Margin(dB) = (Peak/AVG) Limit (dBuV/m) – (Peak/AVG) Result (dBuV/m)
6. * - indicates frequency in Restricted Band.

RSE EDR_8DPSK_2 402 MHz

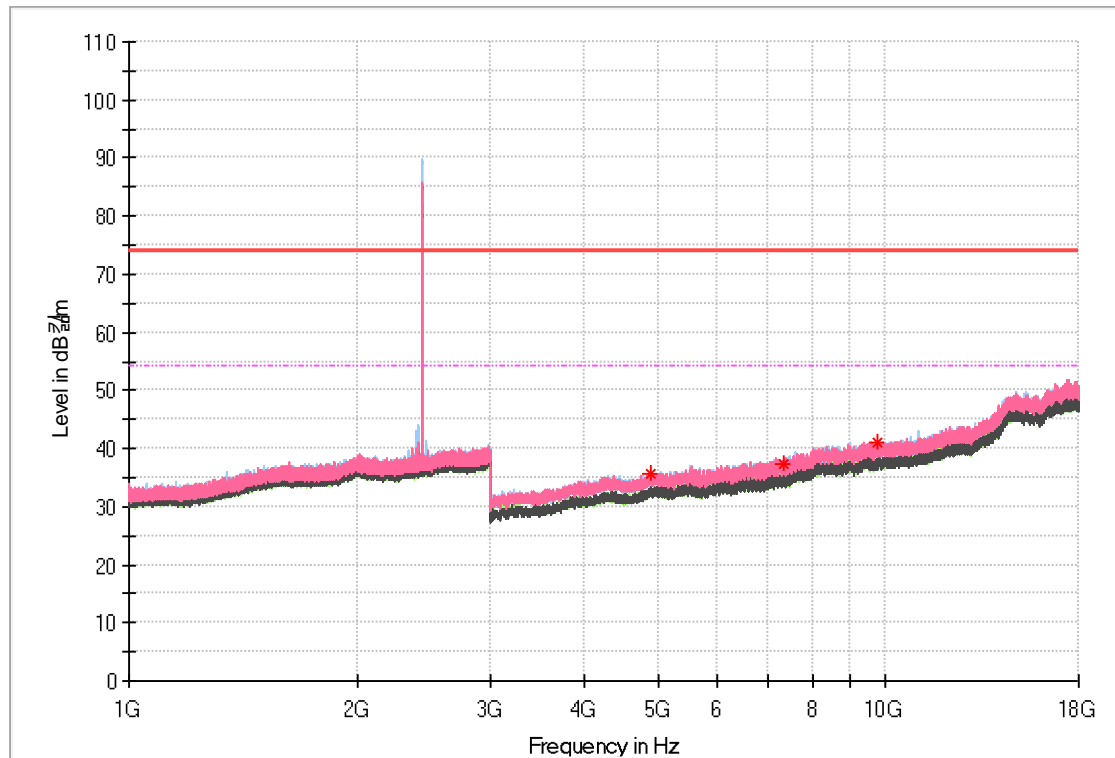


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
4 802.81	32.54	35.24	---	---	---	300	V	1	2.70	38.76	74.00	---	---
7 204.69	30.27	37.67	---	---	---	200	H	87	7.40	36.33	74.00	---	---
9 609.84	30.15	40.65	---	---	---	200	H	63	10.50	33.35	74.00	---	---

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = Peak Result(dBuV/m) + DCCF
3. DCCF(Duty Cycle Correction Factor) = 20 x Log(worst dwell time/100 ms)
4. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
5. Margin(dB) = (Peak/AVG) Limit (dBuV/m) – (Peak/AVG) Result (dBuV/m)
6. * - indicates frequency in Restricted Band.

RSE EDR_8DPSK_2 441 MHz

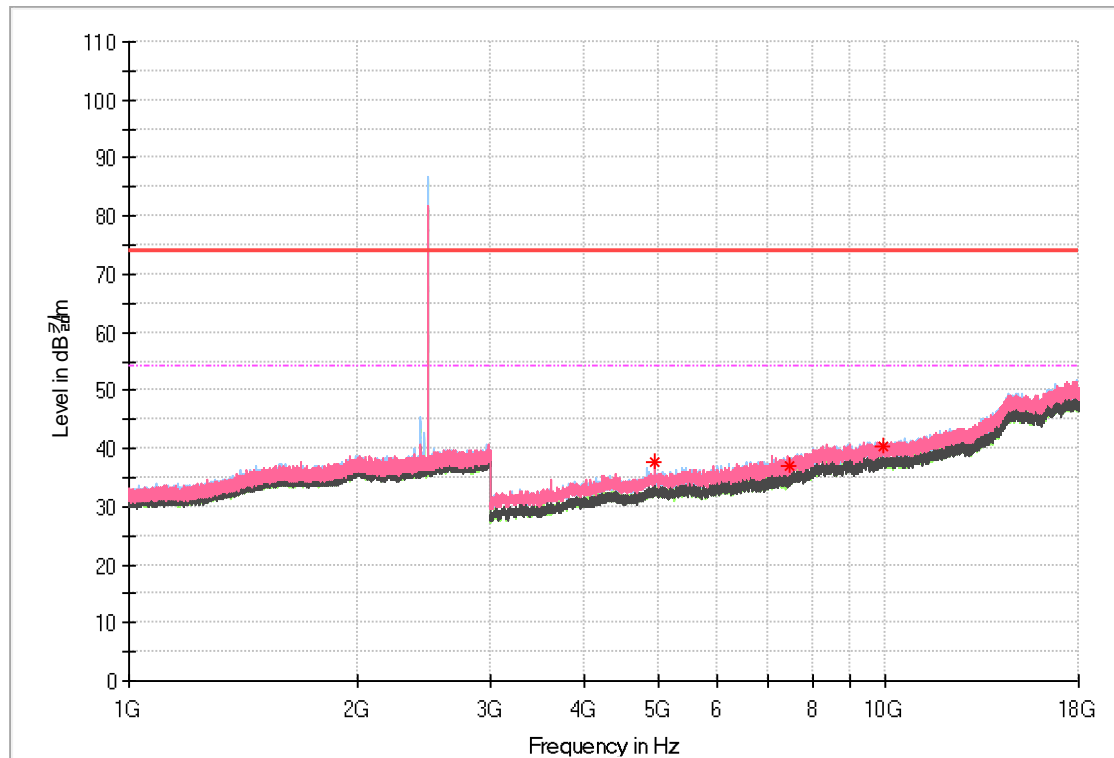


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
* 4 882.50	32.58	35.78	---	---	---	200	H	358	3.20	38.22	74.00	---	---
* 7 323.28	29.94	37.44	---	---	---	200	H	260	7.50	36.56	74.00	---	---
9 760.78	30.35	40.95	---	---	---	300	V	182	10.60	33.05	74.00	---	---

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = Peak Result(dBuV/m) + DCCF
3. DCCF(Duty Cycle Correction Factor) = 20 x Log(worst dwell time/100 ms)
4. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
5. Margin(dB) = (Peak/AVG) Limit (dBuV/m) – (Peak/AVG) Result (dBuV/m)
6. * - indicates frequency in Restricted Band.

RSE EDR_8DPSK_2 480 MHz



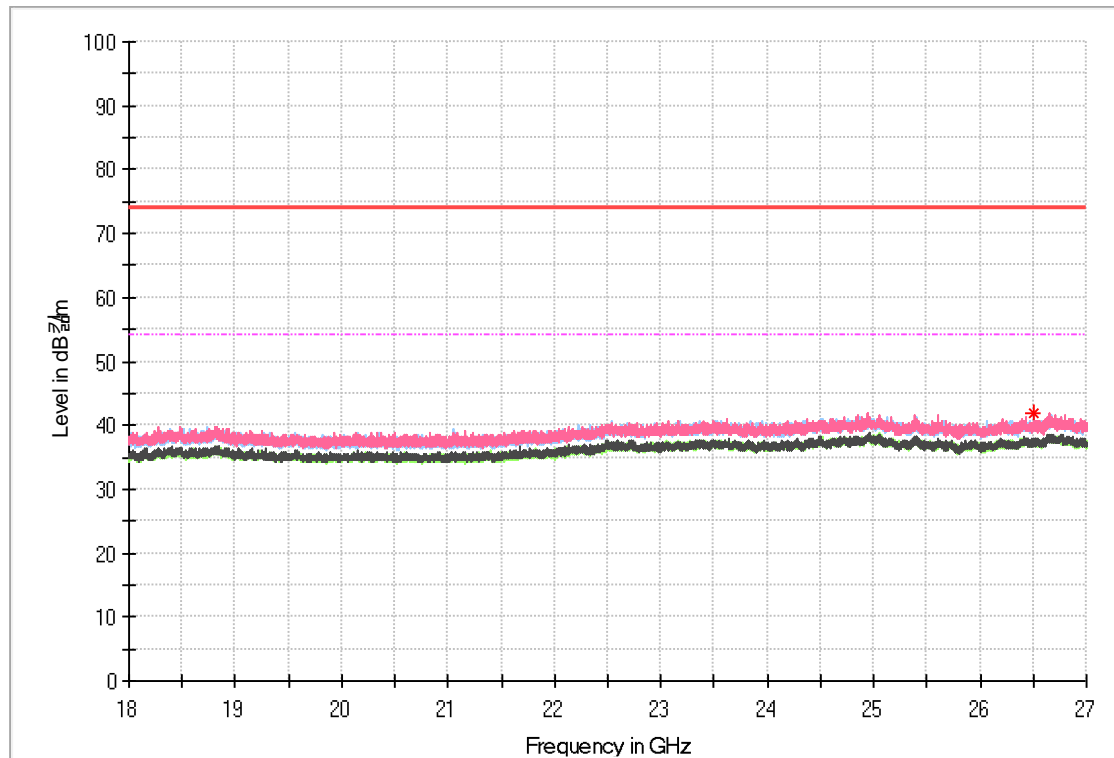
Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
* 4 950.00	34.24	37.64	---	---	---	300	V	207	3.40	36.36	74.00	---	---
* 7 442.81	29.09	36.89	---	---	---	200	H	91	7.80	37.11	74.00	---	---
9 919.69	29.39	40.39	---	---	---	200	H	209	11.00	33.61	74.00	---	---

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = Peak Result(dBuV/m) + DCCF
3. DCCF(Duty Cycle Correction Factor) = 20 x Log(worst dwell time/100 ms)
4. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
5. Margin(dB) = (Peak/AVG) Limit (dBuV/m) – (Peak/AVG) Result (dBuV/m)
6. * - indicates frequency in Restricted Band.

3.6.5.4 Radiated Emissions (Above 18 GHz)

Worst Case - RSE(Above 18 GHz)_BDR_GFSK_2 441 MHz



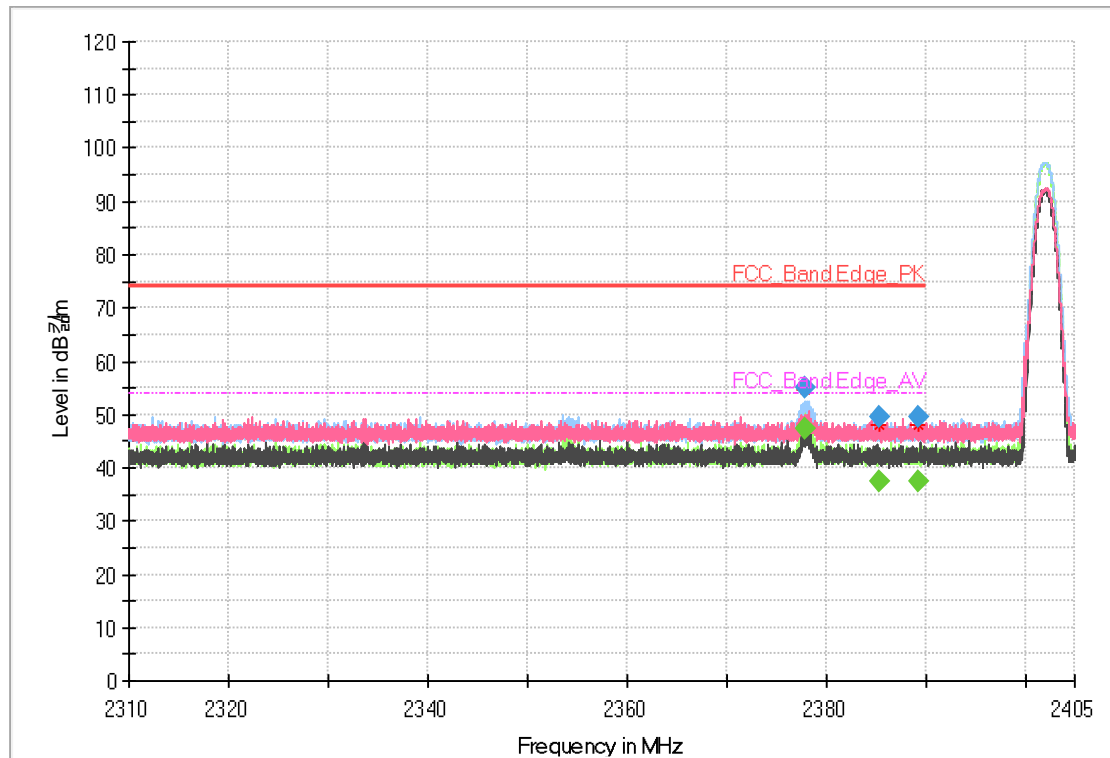
Frequency [MHz]	Peak Reading Value [dBμV]	Peak Result [dBμV/m]	AVG Reading Value [dBμV]	AVG Result [dBμV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBμV/m]	AVG Margin [dB]	AVG Limit [dBμV/m]
26 499.56	40.98	41.88	-	-	-	300	H	0	0.90	32.12	74.00	-	-

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = Peak Result(dBuV/m) + DCCF
3. DCCF(Duty Cycle Correction Factor) = 20 x Log(worst dwell time/100 ms)
4. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
5. Margin(dB) = (Peak/AVG) Limit (dBuV/m) – (Peak/AVG) Result (dBuV/m)
6. * - indicates frequency in Restricted Band.

3.6.5.5 Restricted Band Edge Measurements

Band Edge_BDR_GFSK_2 402 MHz

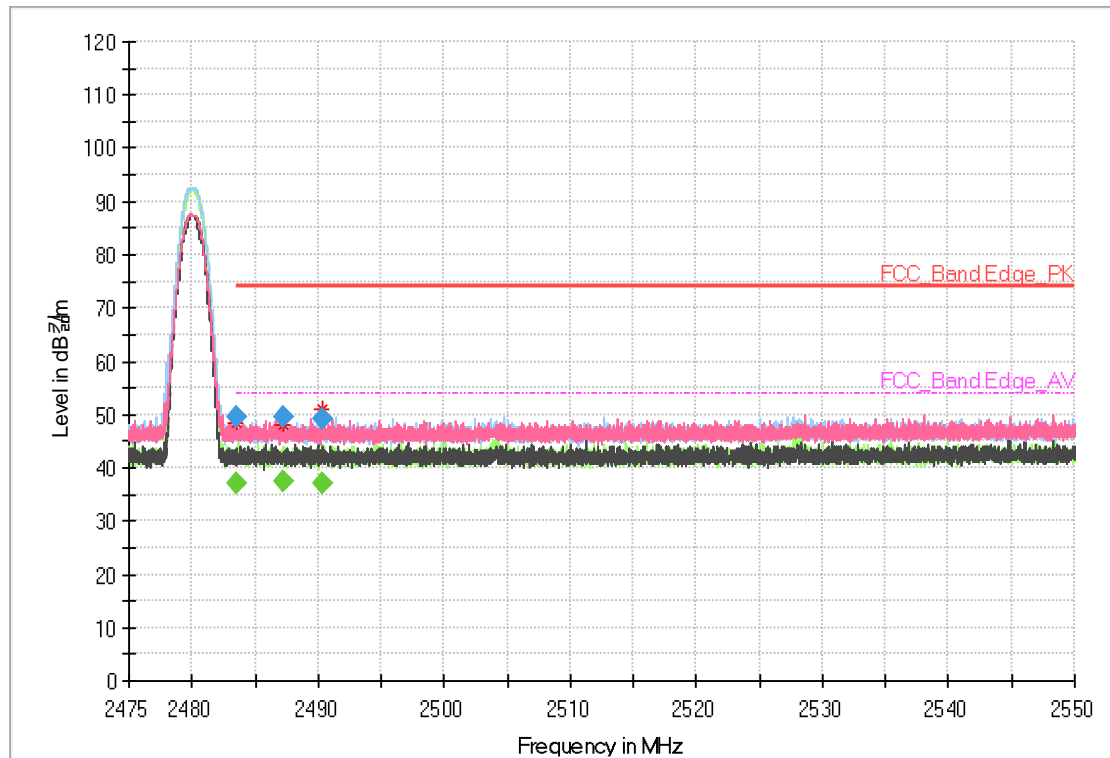


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 377.91	51.57	54.97	---	---	---	151	H	326	3.40	19.03	74.00	---	---
2 377.91	---	---	---	32.47	-22.50	151	H	326	3.40	---	---	21.53	54.00
2 385.31	46.01	49.41	---	---	---	253	V	104	3.40	24.59	74.00	---	---
2 385.31	---	---	---	26.91	-22.50	253	V	104	3.40	---	---	27.09	54.00
2 389.27	46.31	49.71	---	---	---	288	V	235	3.40	24.29	74.00	---	---
2 389.27	---	---	---	27.21	-22.50	288	V	235	3.40	---	---	26.79	54.00

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = Peak Result(dBuV/m) + DCCF
3. DCCF(Duty Cycle Correction Factor) = 20 x Log(worst dwell time/100 ms)
4. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
5. Margin(dB) = (Peak/AVG) Limit (dBuV/m) – (Peak/AVG) Result (dBuV/m)

Band Edge_BDR_GFSK_2 480 MHz

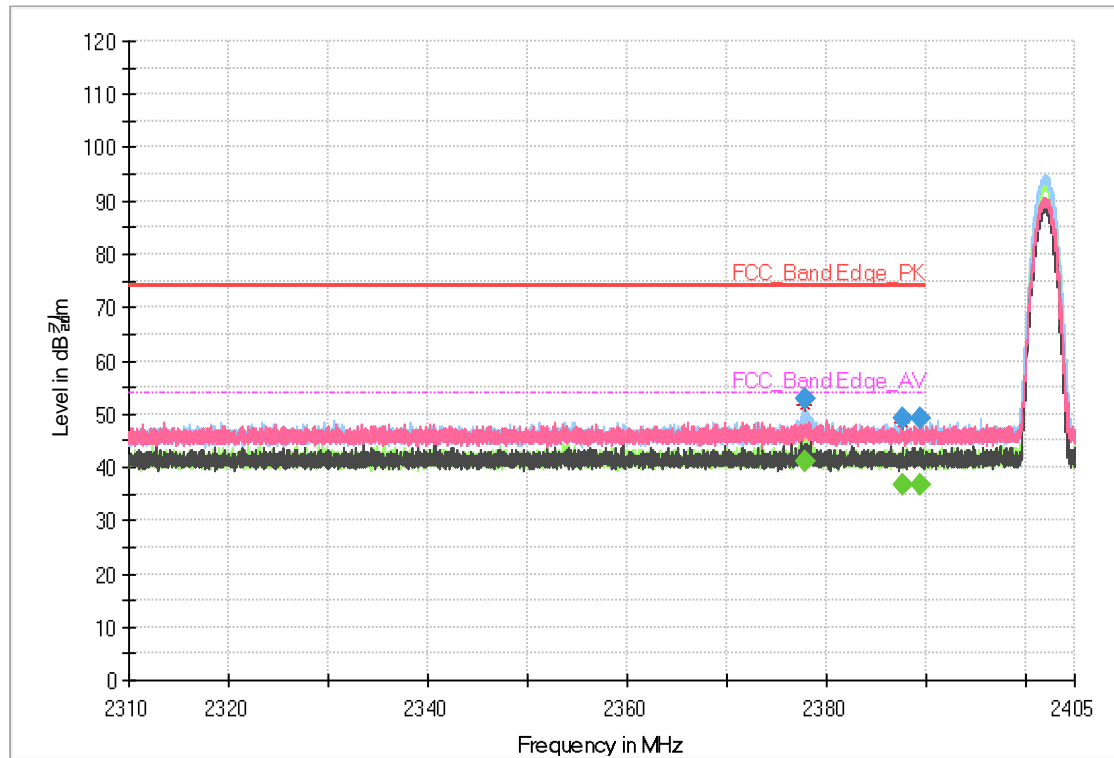


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 483.58	45.73	49.53	---	---	---	250	V	312	3.80	24.47	74.00	---	---
2 483.58	---	---	---	27.03	-22.50	250	V	312	3.80	---	---	26.97	54.00
2 487.27	45.90	49.70	---	---	---	250	H	350	3.80	24.30	74.00	---	---
2 487.27	---	---	---	27.20	-22.50	250	H	350	3.80	---	---	26.80	54.00
2 490.38	45.53	49.33	---	---	---	241	H	178	3.80	24.67	74.00	---	---
2 490.38	---	---	---	26.83	-22.50	241	H	178	3.80	---	---	27.17	54.00

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = Peak Result(dBuV/m) + DCCF
3. DCCF(Duty Cycle Correction Factor) = 20 x Log(worst dwell time/100 ms)
4. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
5. Margin(dB) = (Peak/AVG) Limit (dBuV/m) – (Peak/AVG) Result (dBuV/m)

Band Edge_ EDR_8DPSK _2 402 MHz

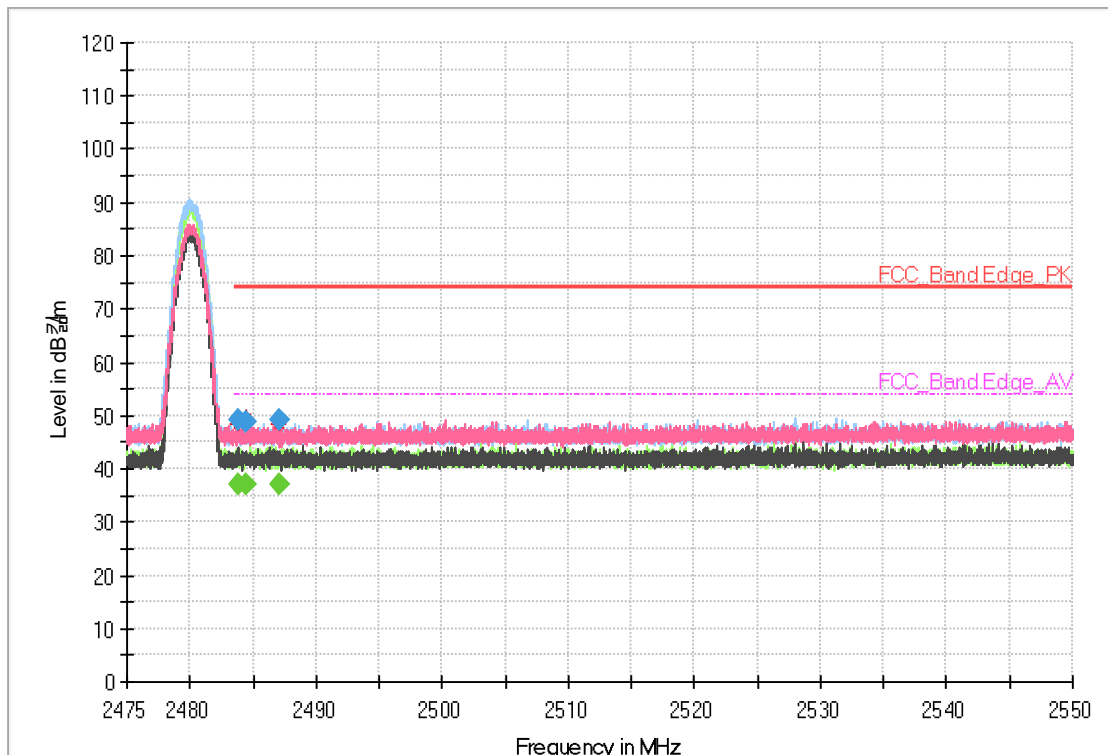


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 377.91	49.31	52.71	---	---	---	150	H	174	3.40	21.29	74.00	---	---
2 377.91	---	---	---	30.21	-22.50	150	H	174	3.40	---	---	23.79	54.00
2 387.66	45.66	49.06	---	---	---	159	V	250	3.40	24.94	74.00	---	---
2 387.66	---	---	---	26.56	-22.50	159	V	250	3.40	---	---	27.44	54.00
2 389.56	45.63	49.03	---	---	---	350	V	347	3.40	24.97	74.00	---	---
2 389.56	---	---	---	26.53	-22.50	350	V	347	3.40	---	---	27.47	54.00

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = Peak Result(dBuV/m) + DCCF
3. DCCF(Duty Cycle Correction Factor) = 20 x Log(worst dwell time/100 ms)
4. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
5. Margin(dB) = (Peak/AVG) Limit (dBuV/m) – (Peak/AVG) Result (dBuV/m)

Band Edge_ EDR_8DPSK _2 480 MHz

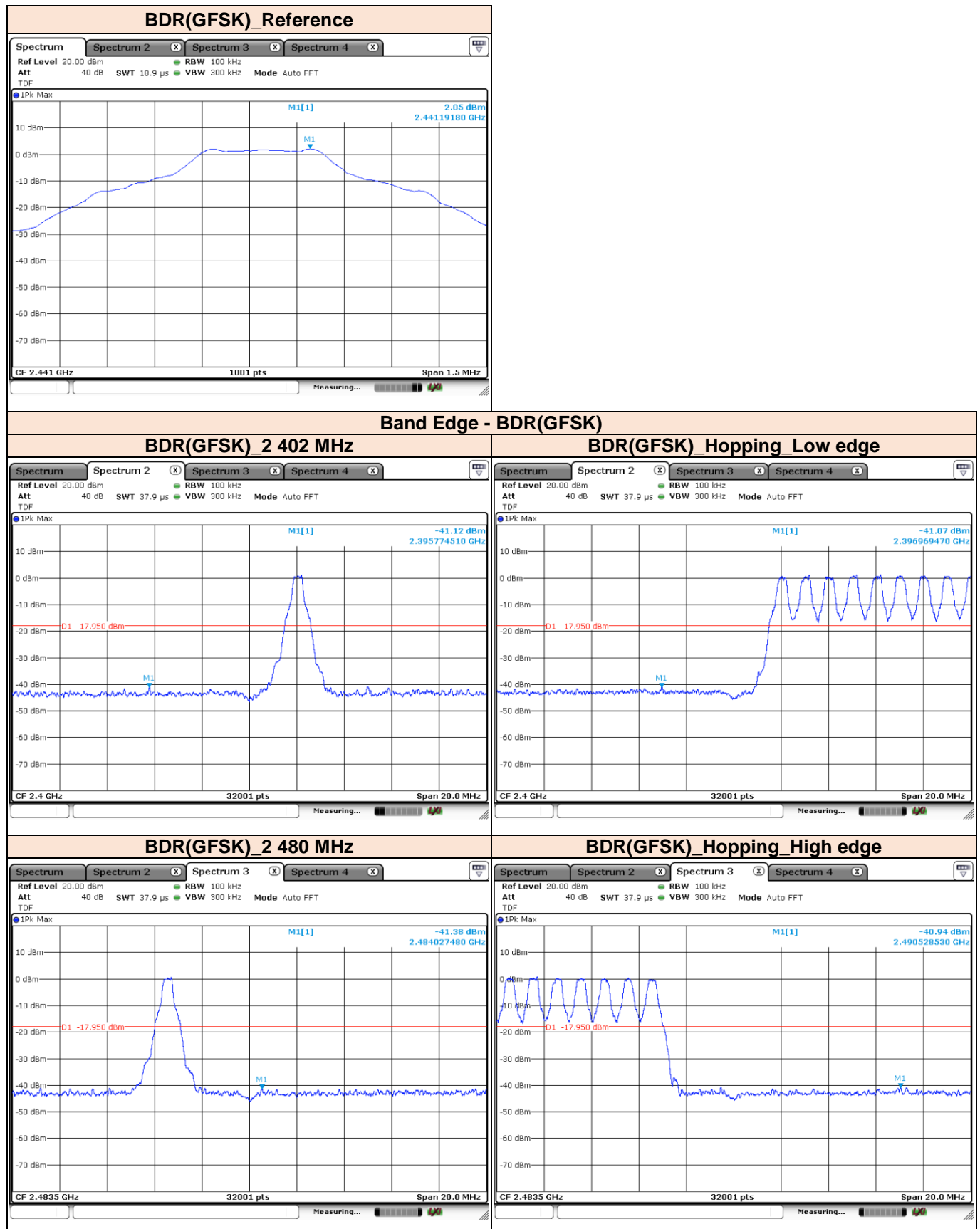


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 483.85	45.26	49.06	---	---	---	230	V	12	3.80	24.94	74.00	---	---
2 483.85	---	---	---	26.56	-22.50	230	V	12	3.80	---	---	27.44	54.00
2 484.51	45.09	48.89	---	---	---	333	H	172	3.80	25.11	74.00	---	---
2 484.51	---	---	---	26.39	-22.50	333	H	172	3.80	---	---	27.61	54.00
2 487.14	45.29	49.09	---	---	---	230	V	174	3.80	24.91	74.00	---	---
2 487.14	---	---	---	26.59	-22.50	230	V	174	3.80	---	---	27.41	54.00

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = Peak Result(dBuV/m) + DCCF
3. DCCF(Duty Cycle Correction Factor) = 20 x Log(worst dwell time/100 ms)
4. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
5. Margin(dB) = (Peak/AVG) Limit (dBuV/m) – (Peak/AVG) Result (dBuV/m)

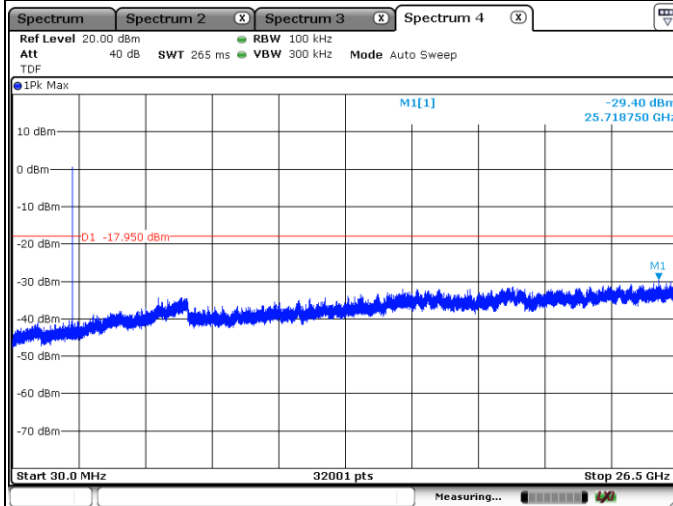
3.6.6 Test Result of Conducted Spurious Emission



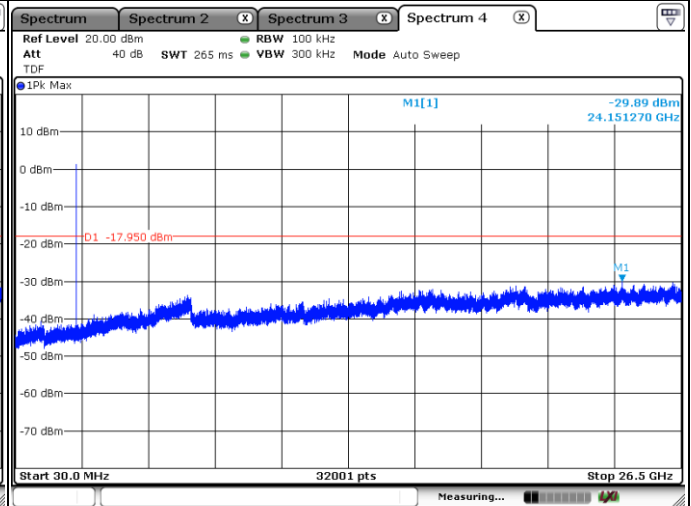


Spurious - BDR(GFSK)

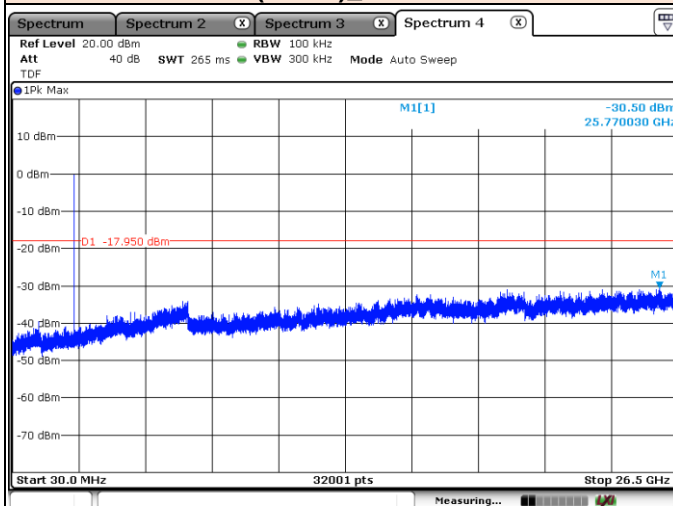
BDR(GFSK)_2 402 MHz



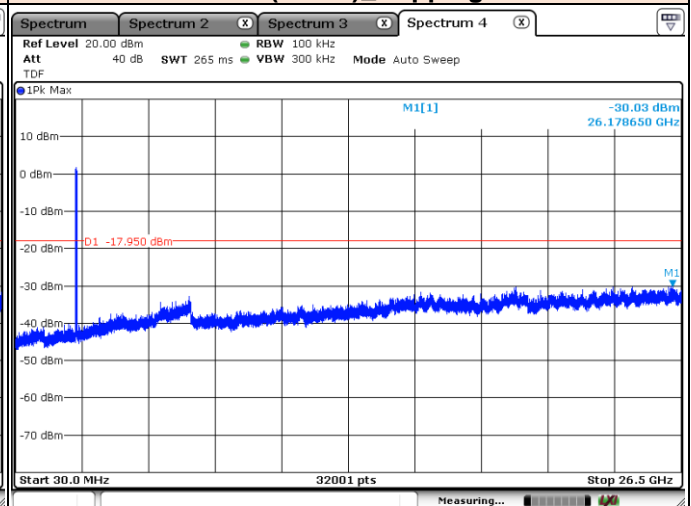
BDR(GFSK)_2 441 MHz



BDR(GFSK)_2 480 MHz

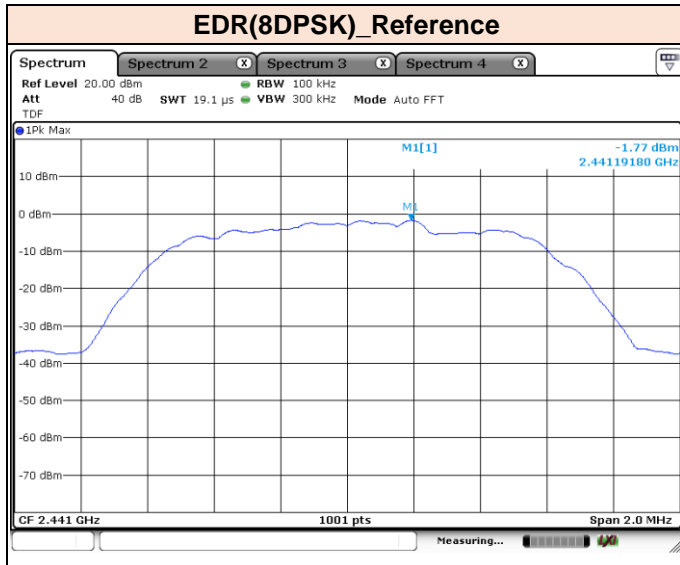


BDR(GFSK)_Hopping

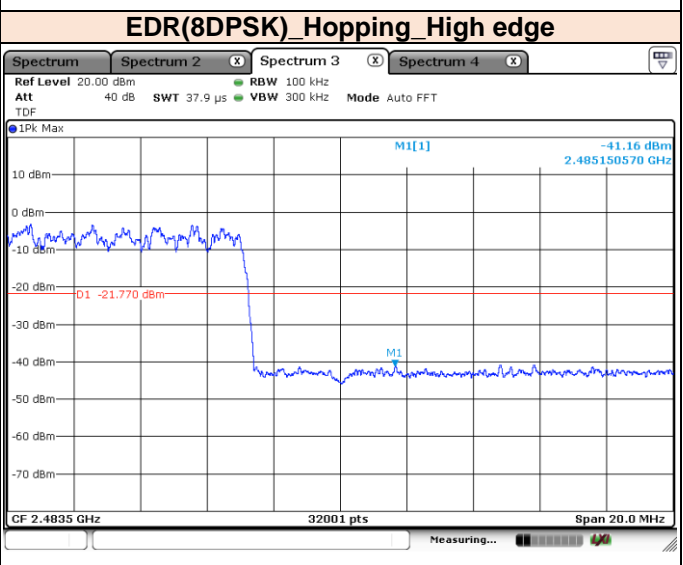
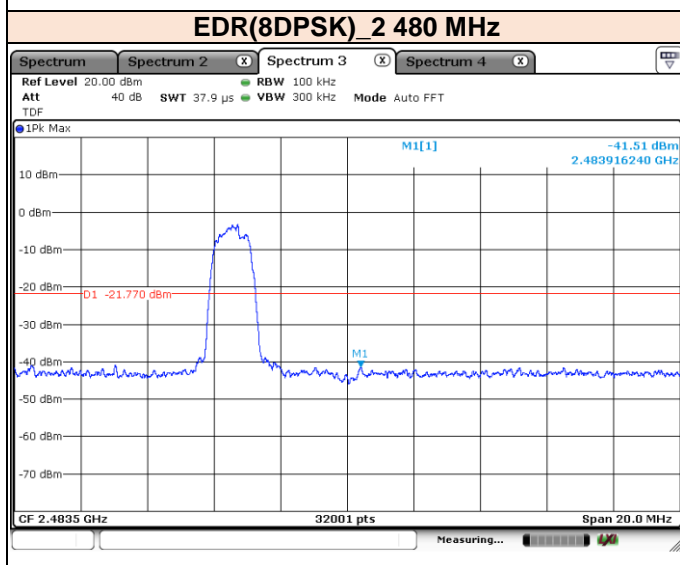
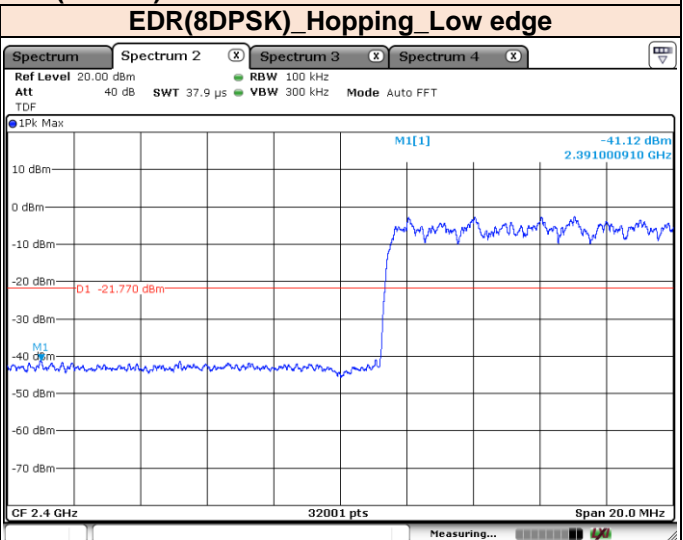
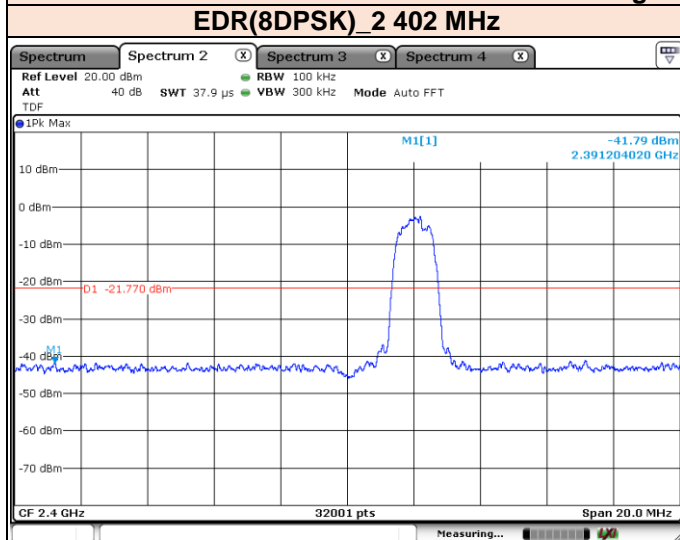




BUREAU
VERITAS

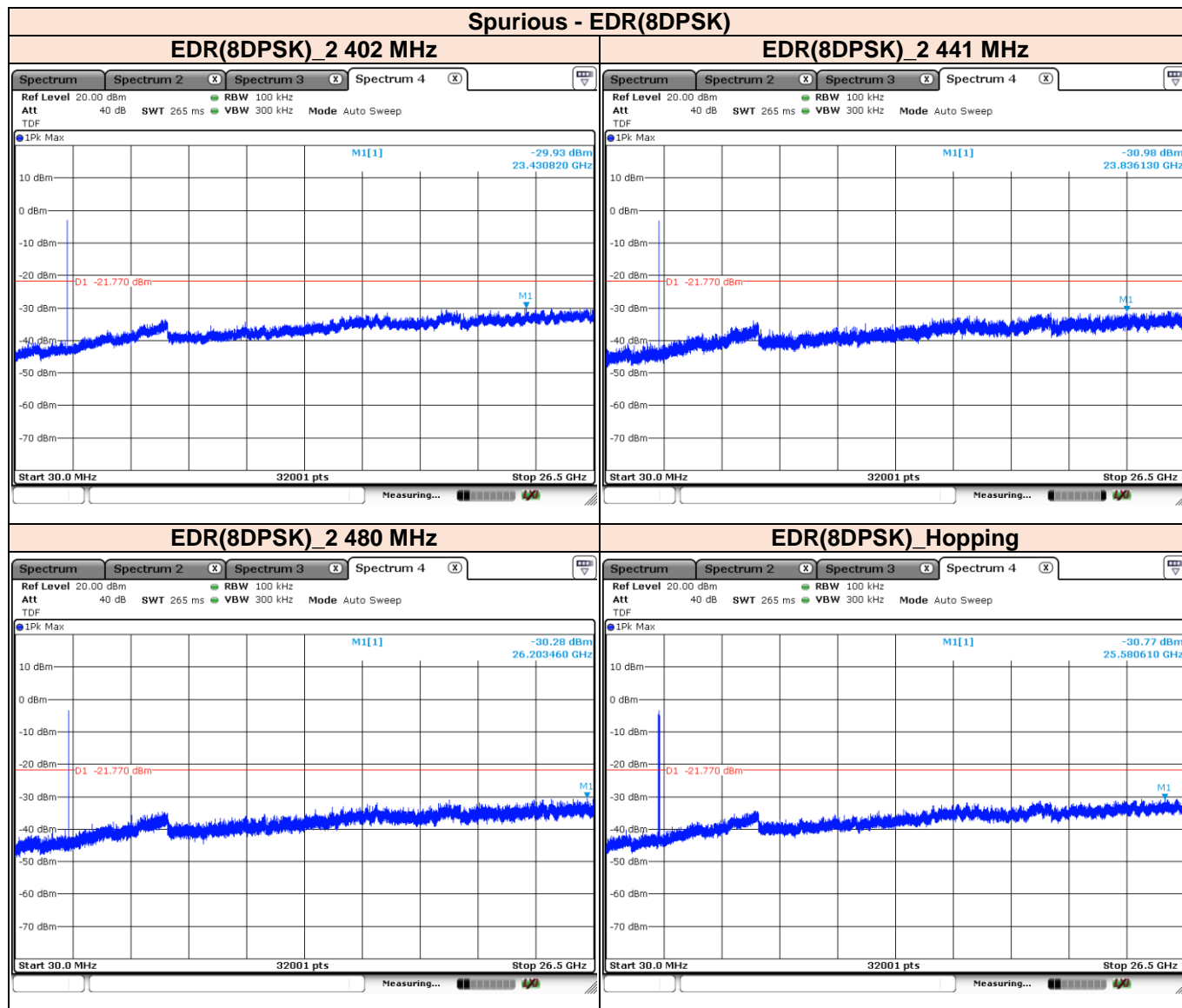


Band Edge - EDR(8DPSK)





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VERITAS



3.7 AC Conducted Emissions (150 kHz to 30 MHz)

3.7.1 Regulation

§15.207(a) : Except as shown in paragraphs (b) and (c) of this section, 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)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

3.7.2 Test Procedure

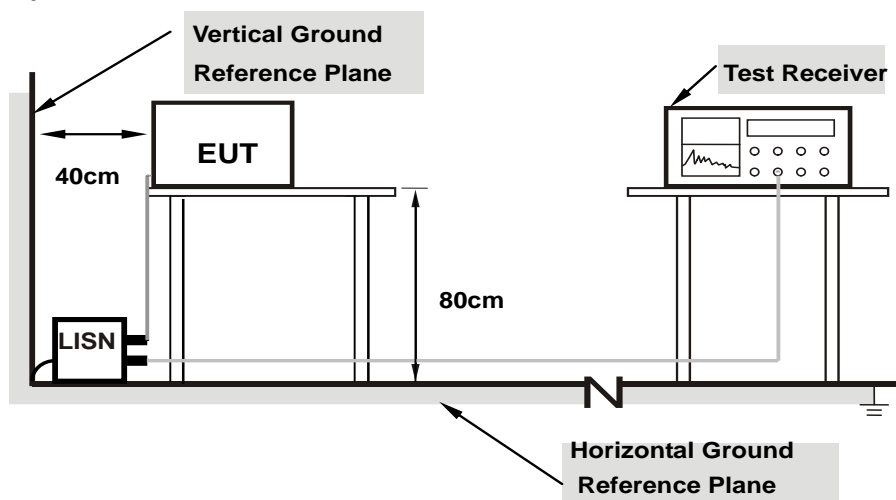
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm / 50 μ H of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Remark : The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz – 30 MHz.

3.7.3 Deviation from Test Standard

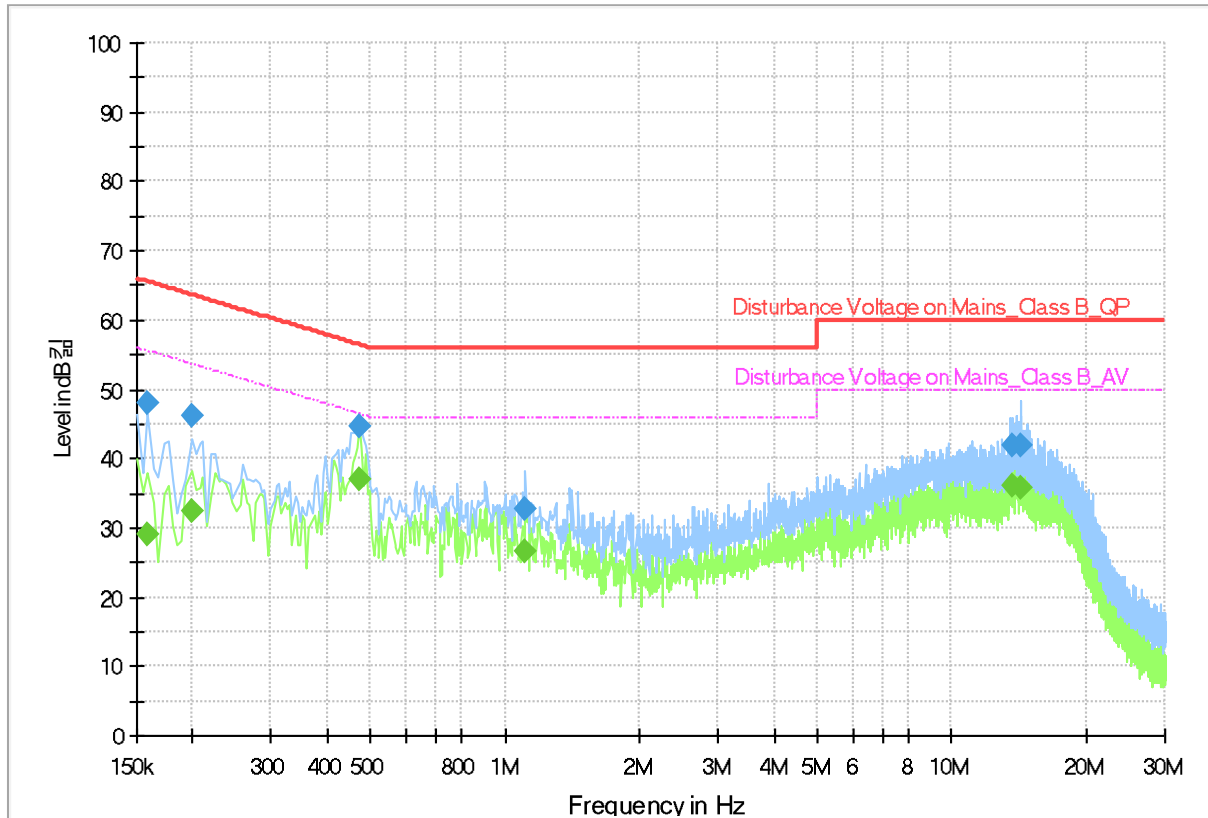
No deviation.

3.7.4 Test Setup



3.7.5 Test Result

Worst Case - BDR_GFSK_2 441 MHz



Frequency [MHz]	Quasi Peak Reading Value [dBuV]	Quasi Peak Result [dBuV]	CAV Reading Value [dBuV]	CAV Result [dBuV]	Line	Correction Factor [dB/m]	Quasi Peak Margin [dBuV]	Quasi Peak Limit [dBuV]	CAV Margin [dBuV]	CAV Limit [dBuV]
0.16	38.24	47.94	---	---	N	9.70	16.61	64.55	---	---
0.16	---	---	19.49	29.19	N	9.70	---	---	25.47	54.66
0.20	36.39	46.19	---	---	L1	9.80	9.81	56.00	---	---
0.20	---	---	22.54	32.34	L1	9.80	---	---	13.66	46.00
0.47	34.93	44.63	---	---	N	9.70	11.37	56.00	---	---
0.47	---	---	27.41	37.11	N	9.70	---	---	8.89	46.00
1.11	23.01	32.81	---	---	L1	9.80	23.19	56.00	---	---
1.11	---	---	16.86	26.66	L1	9.80	---	---	19.34	46.00
13.73	31.90	42.00	---	---	N	10.10	14.00	56.00	---	---
13.73	---	---	25.92	36.02	N	10.10	---	---	9.98	46.00
14.32	31.75	41.85	---	---	N	10.10	14.15	56.00	---	---
14.32	---	---	25.70	35.80	N	10.10	---	---	10.20	46.00

Remarks

1. Final Value (QP and/or CAV) = Reading Value (QP and/or CAV) + Corr. (LISN Insertion Loss + Cable Loss)

Margin (QP and/or CAV) = Limit – Final Value (QP and/or CAV)

QP = Quasi-Peak, CAV = CISPR-Average, Corr. = Correction Factor

2. Two graphs measured for both Live (L1) and Neutral (N) of the LISN are combined into one graph.

Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services Korea. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

Test Firm Name : BV CPS ADT Korea Ltd.

Address : Innoplex No.2 106, Sinwon-ro 306, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 KOREA

FCC

Designation Number : KR0158

Test Firm Registration Number : 666061

ISED

Designation Number : KR0158

Test Firm Registration Number : 25944

If you have any comments, please feel free to contact us at the following:

Email: Meyer.Shin@bureauveritas.com

Web Site: www.bureauveritas.co.kr/cps/eaw

The address and road map of all our labs can be found in our web site also.

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