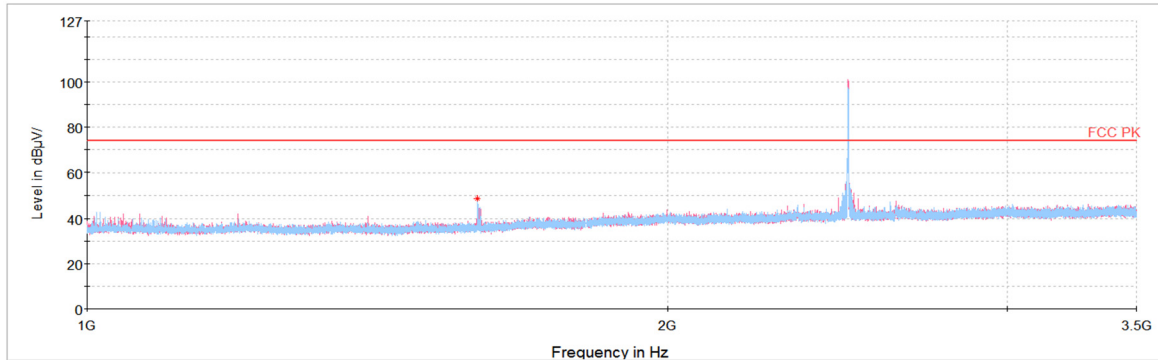
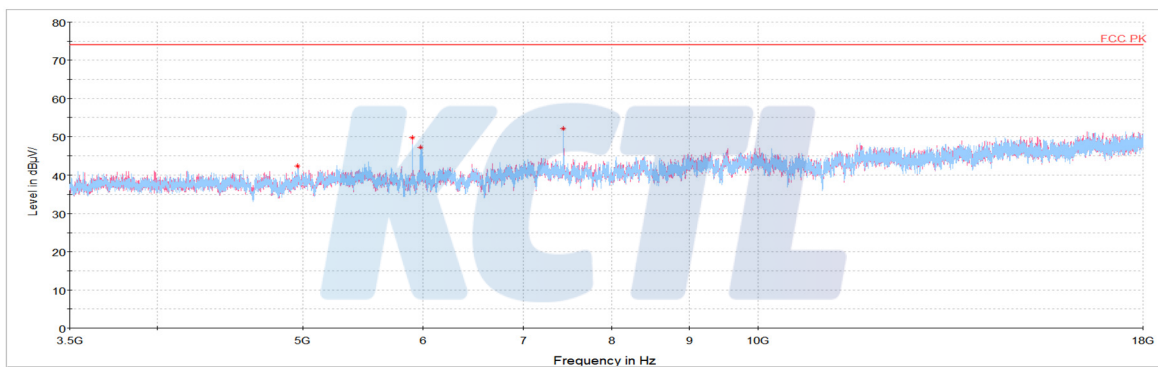
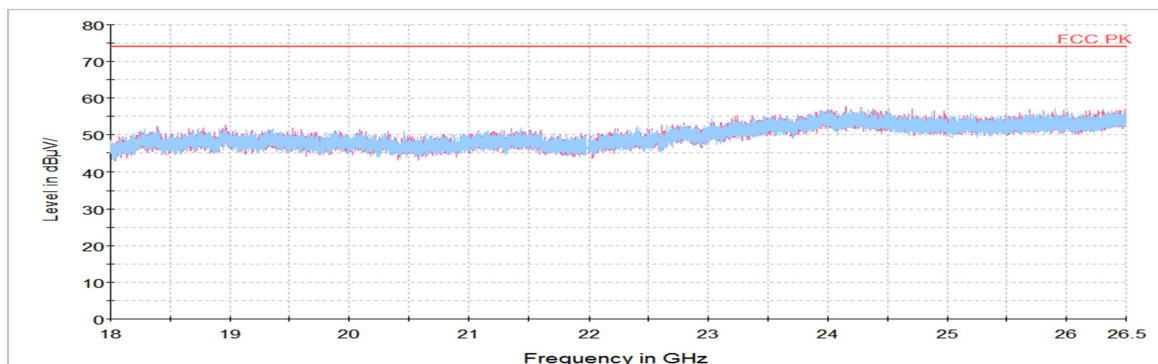
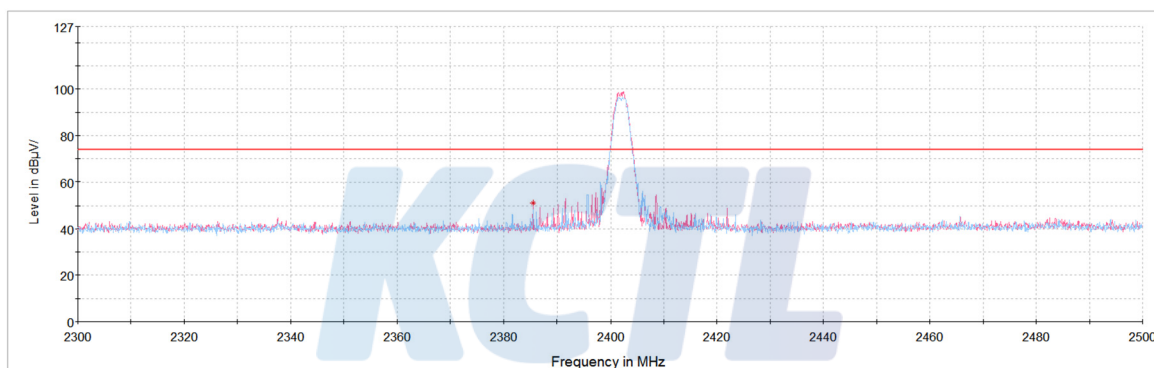
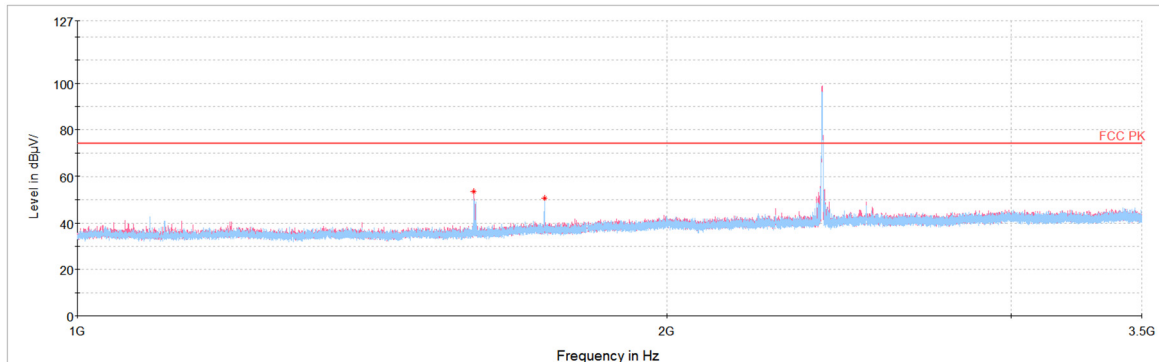
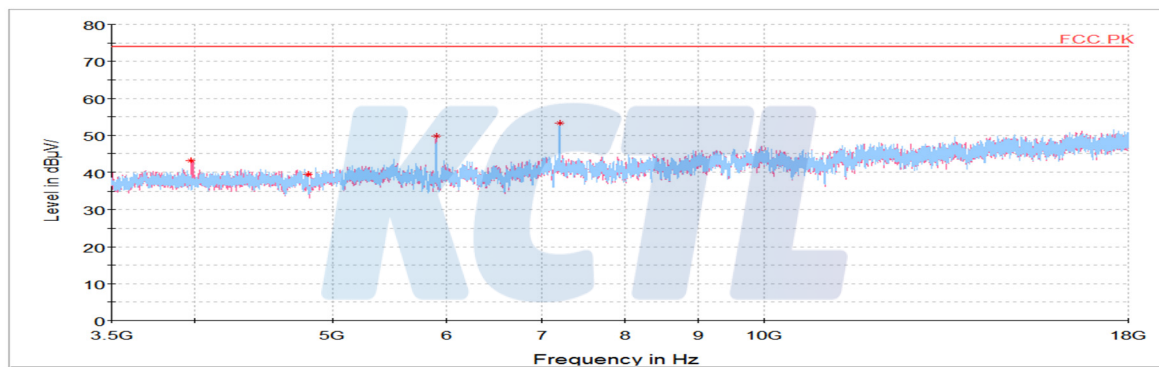
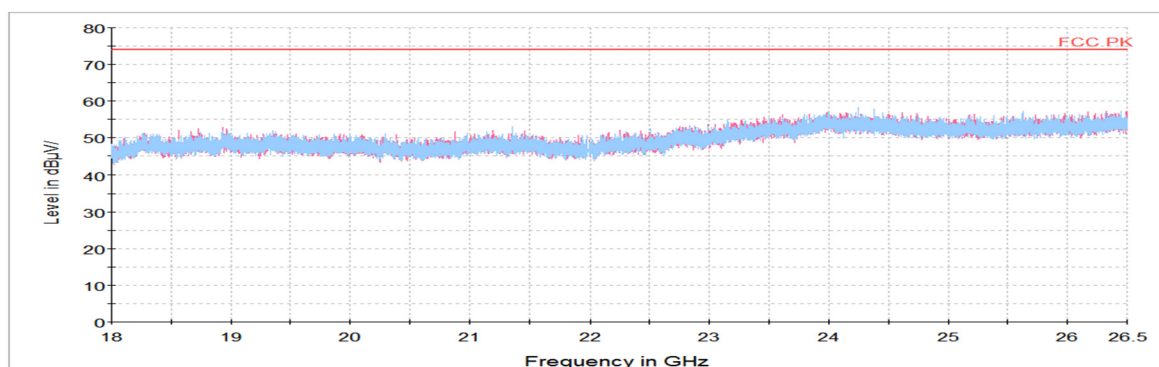


Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

Test results (Above 1 000 MHz)_BLE_2 MBit/s(37 Bytes)**Low Channel**

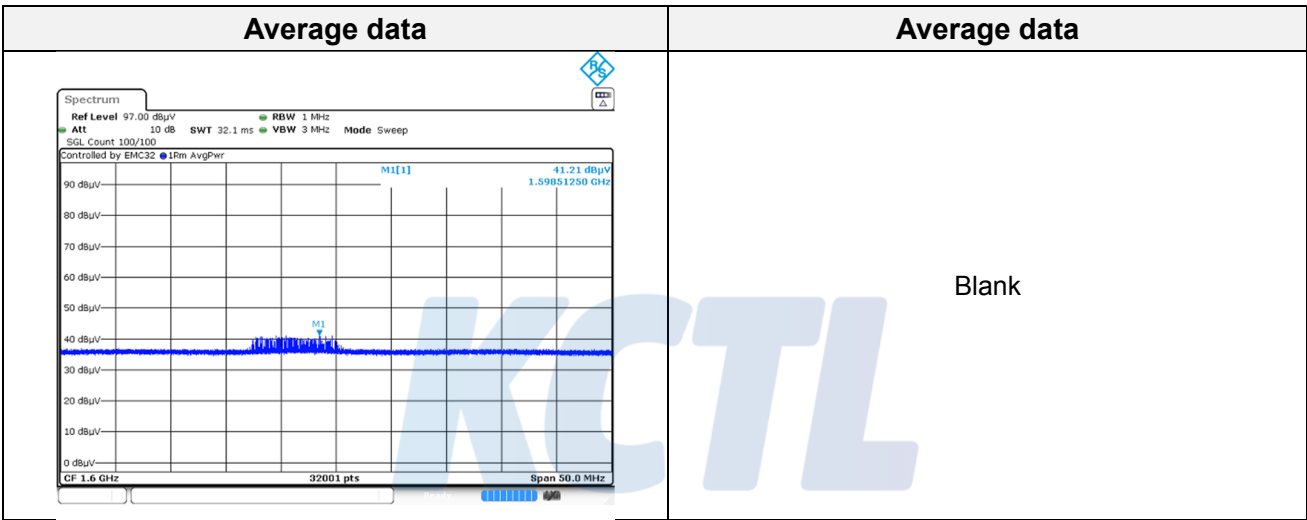
Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
2 385.55 ¹⁾	V	55.31	32.01	-36.01	-	51.31	74.00	22.69
4 804.09 ¹⁾	H	62.03	33.78	-56.47	-	39.34	74.00	34.66
7 204.33	H	71.94	35.50	-54.25	-	53.19	74.00	20.81
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

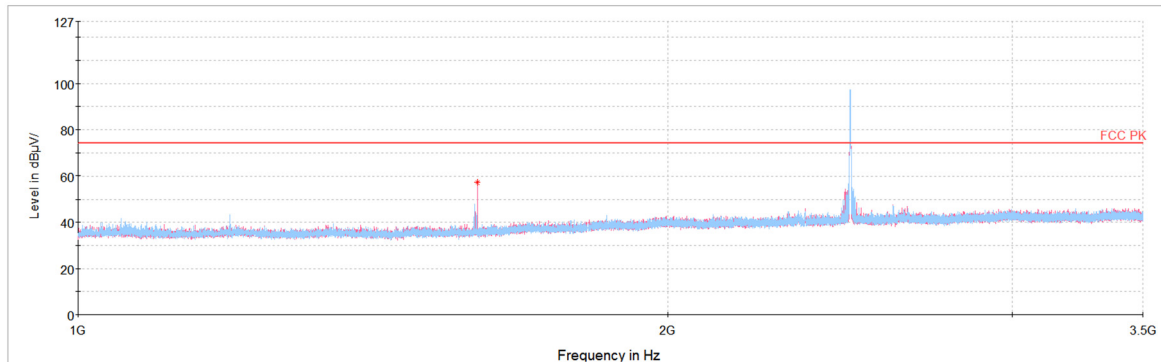
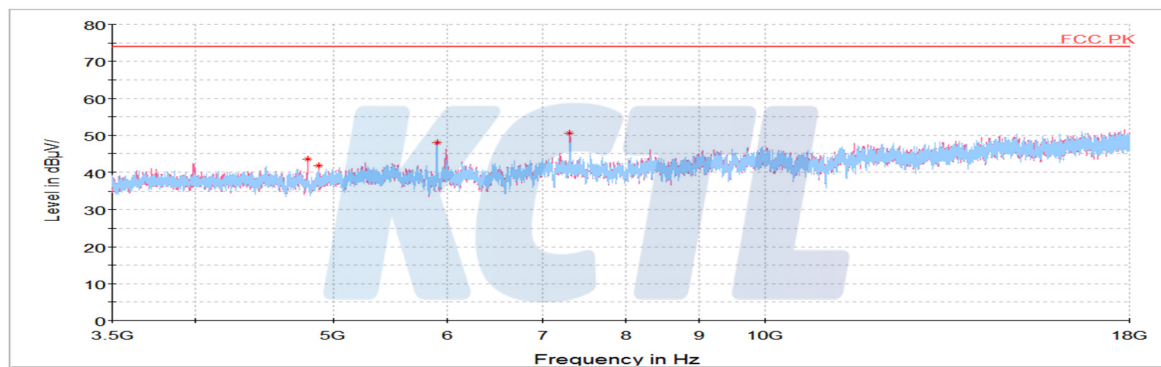
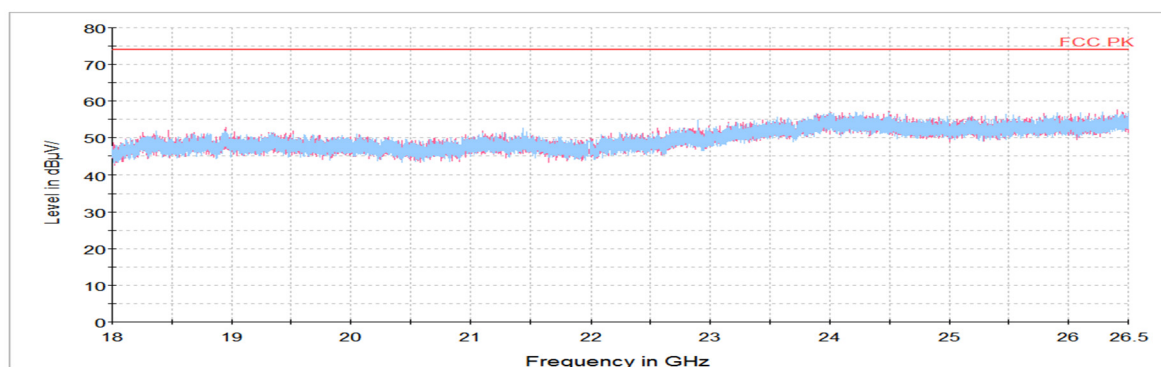
Horizontal/Vertical for Band-edge

Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

Middle Channel

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
1 598.51 ¹⁾	V	65.22	28.73	-36.91	-	57.04	74.00	16.96
4 879.77 ¹⁾	V	64.49	33.83	-56.66	-	41.66	74.00	32.34
7 318.48 ¹⁾	V	69.32	35.50	-54.30	-	50.52	74.00	23.48
Average Data								
1 598.51 ¹⁾	V	41.21	28.73	-36.91	-	33.03	54.00	20.97



Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

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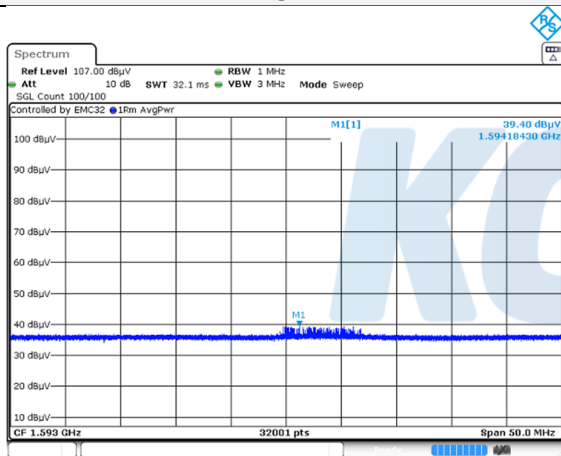
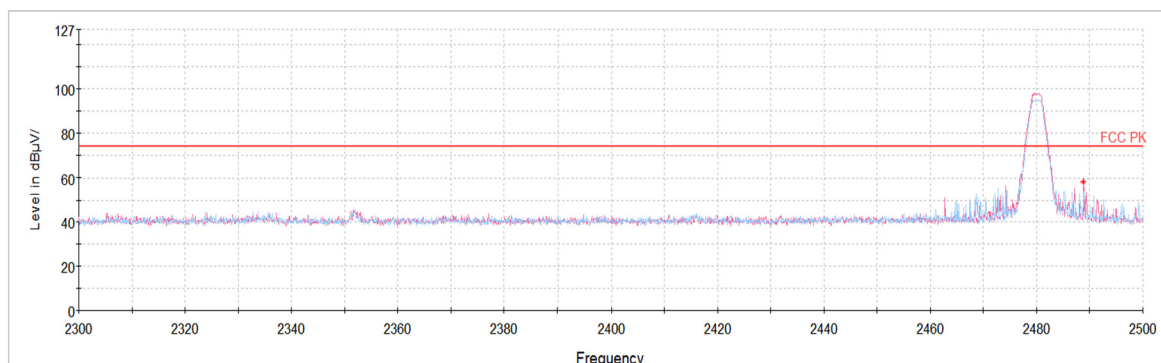
65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
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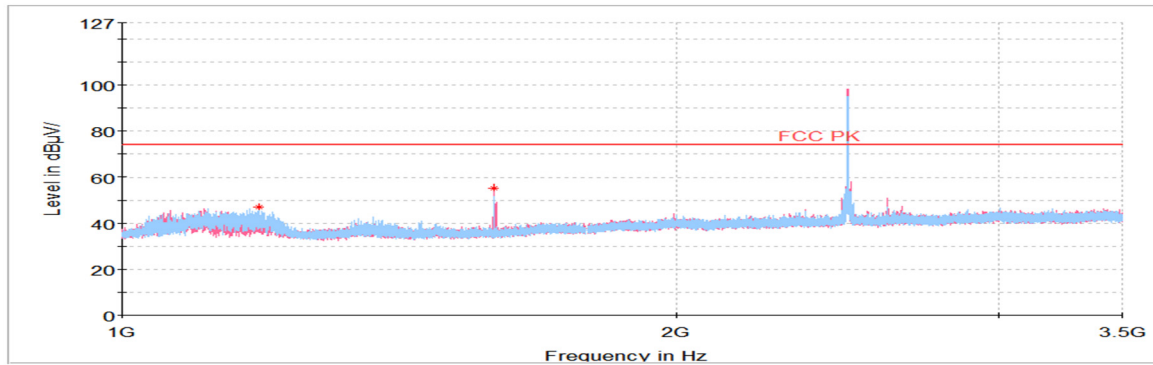
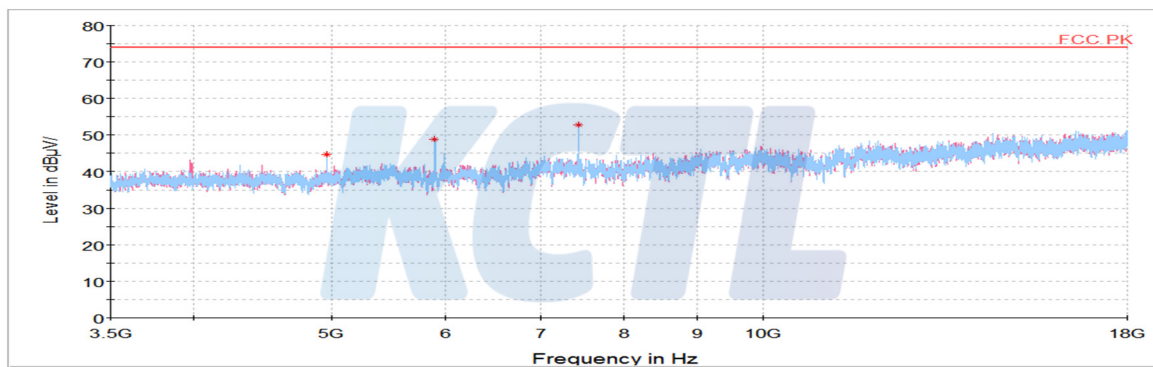
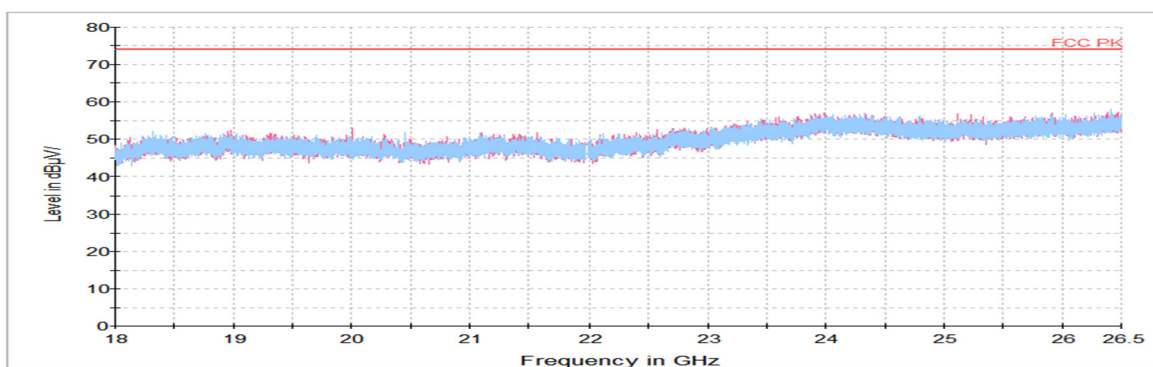
**High Channel**

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
1 594.18 ¹⁾	V	63.45	28.70	-36.90	-	55.25	74.00	18.75
2 483.54 ¹⁾	V	61.20	32.09	-35.52	-	57.77	74.00	16.23
4 959.06 ¹⁾	H	67.04	33.88	-56.28	-	44.64	74.00	29.36
7 438.53 ¹⁾	H	71.50	35.50	-54.35	-	52.65	74.00	21.35
Average Data								
1 594.18 ¹⁾	V	39.40	28.70	-36.90	-	31.20	54.00	22.80
2 483.54 ¹⁾	V	40.03	32.09	-35.52	-	36.60	54.00	17.40

Average data**Average data****Horizontal/Vertical for Band-edge**

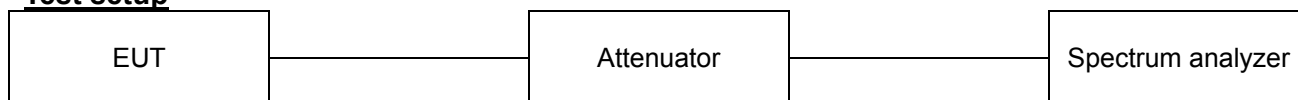
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Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

7.5. Conducted Spurious Emission

Test setup



Limit

According to §15.247(d), RSS-247(5.5), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operation, 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 averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation specified in §15.209(a) is not required. In addition, radiated emission limits specified in §15.209(a) (see §15.205(c)).

Limit : 20 dBc

Test procedure

ANSI C63.10-2013 - Section 11.11.3, 14.3.3

KDB 558074 D01 v05 - Section 8.5

KDB 662911 D01 v02r01 – section (E)(3)(b)

Test settings

Establish an emission level by using the following procedure:

- 1) Set the center frequency and span to encompass frequency range to be measured.
- 2) Set the RBW = 100 kHz
- 3) Set the VBW $\geq [3 \times \text{RBW}]$
- 4) Detector = peak
- 5) Sweep time = auto couple
- 6) Trace mode = max hold
- 7) Allow trace to fully stabilize.
- 8) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

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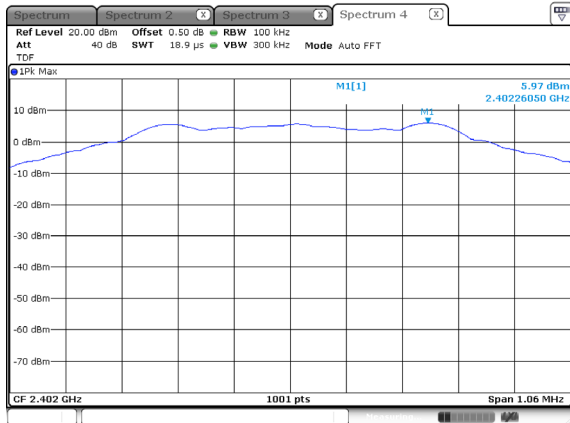


Test results

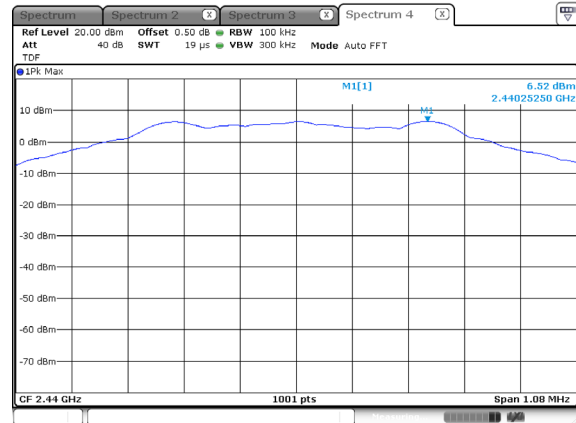
Test mode : BLE_1 MBit/s(37 Bytes)

Reference

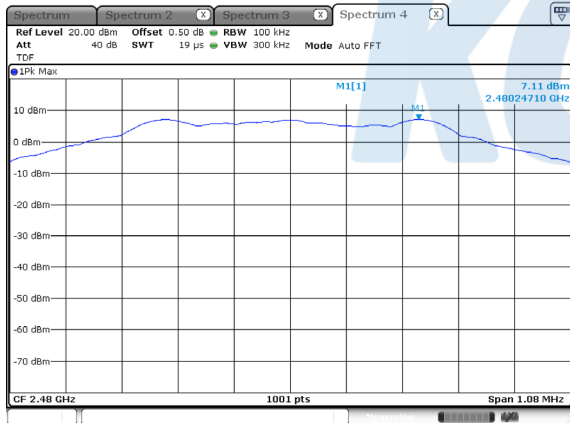
Low ch.



Mid ch.



High ch.



Blank

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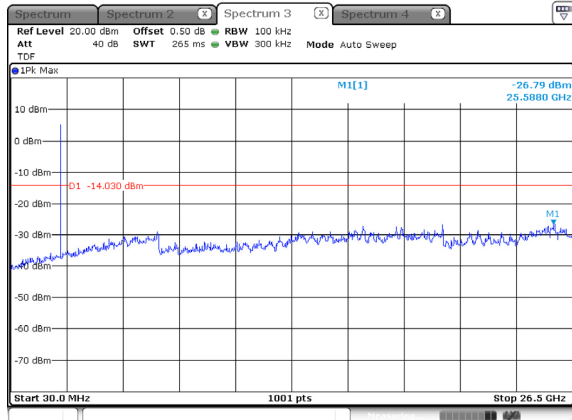
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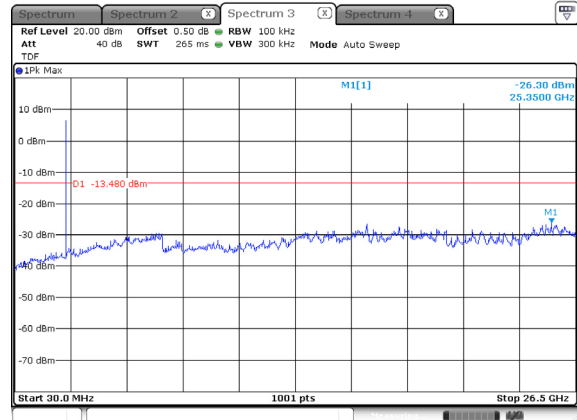
KCTL

Conducted Emissions

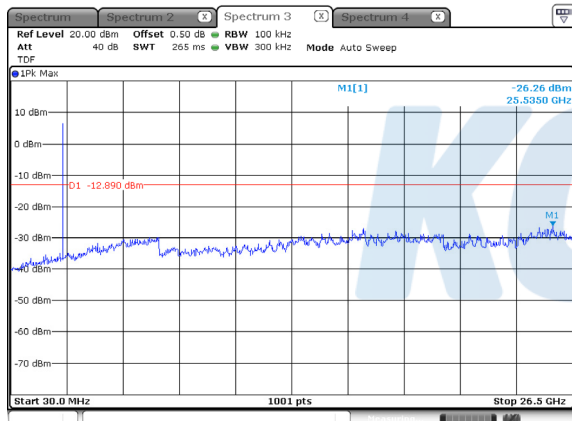
Low ch.



Mid ch.



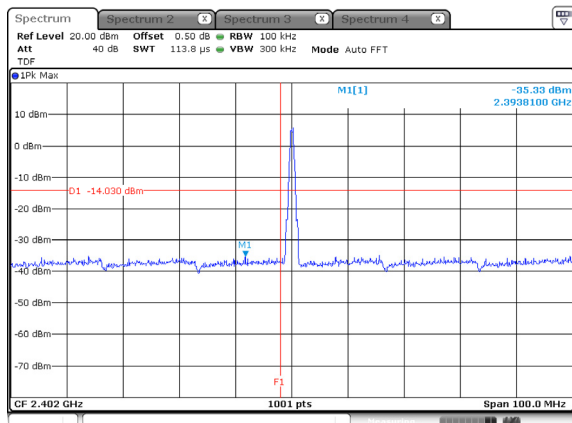
High ch.



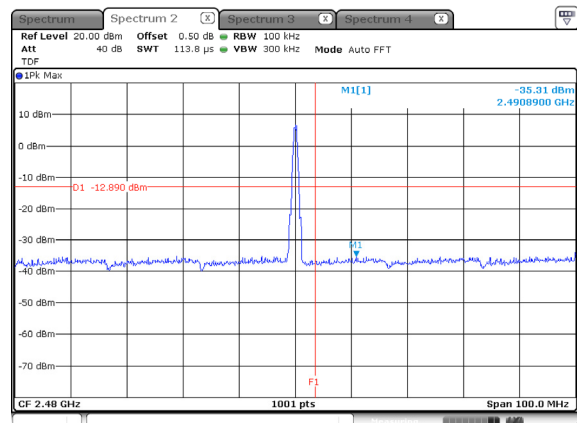
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Band edge

Low ch.



High ch.



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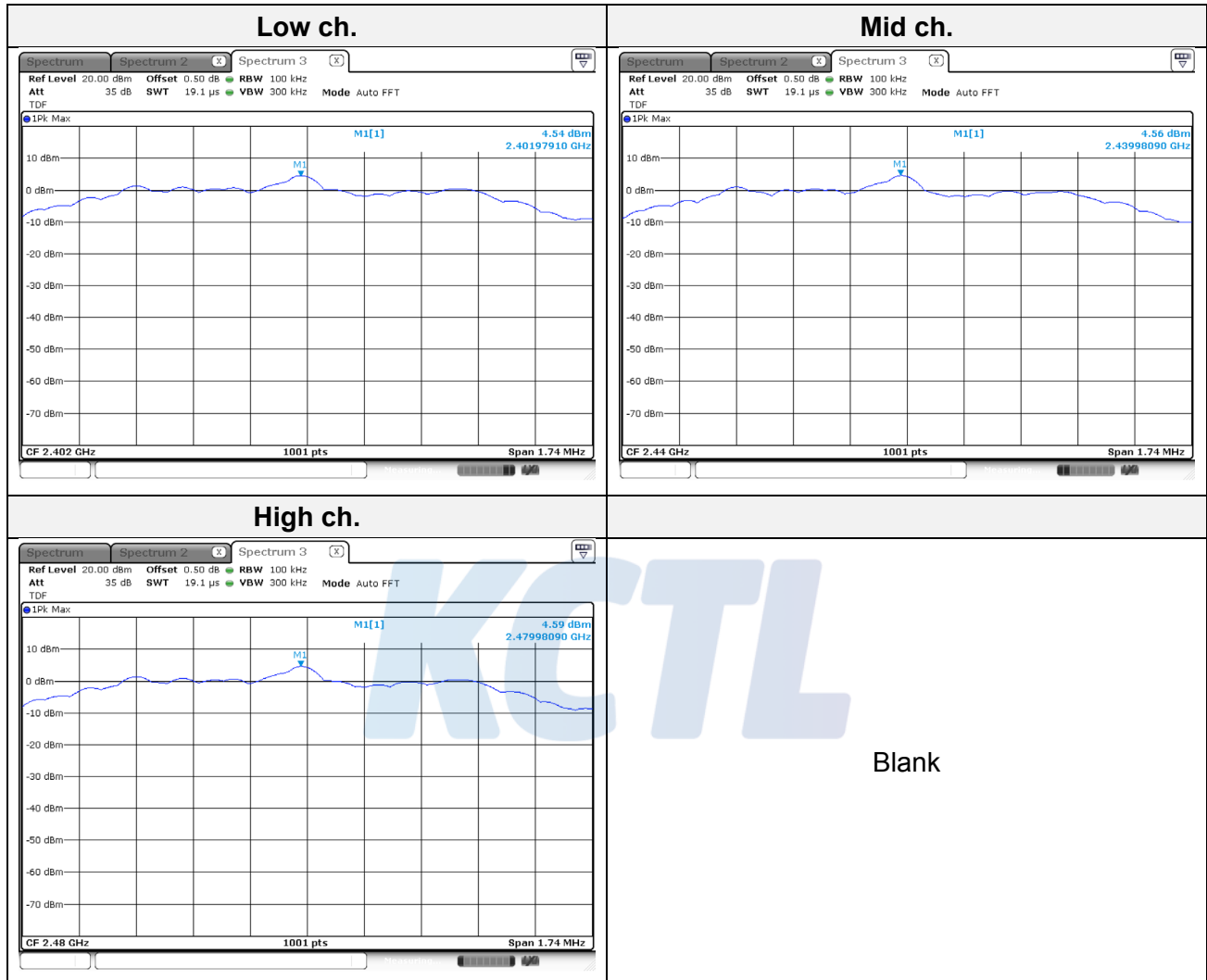
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Test mode : BLE_2 MBit/s(37 Bytes)

Reference



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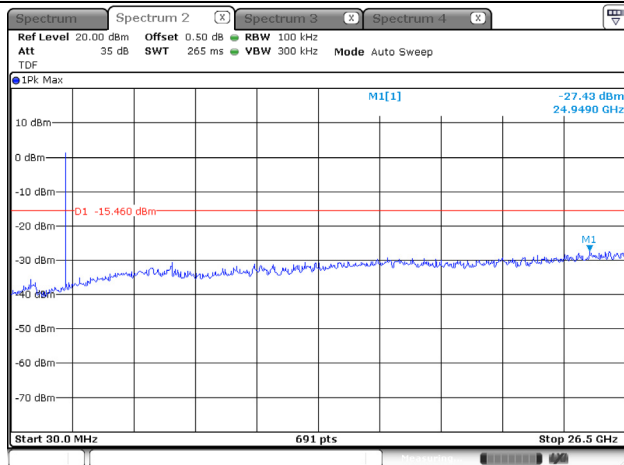
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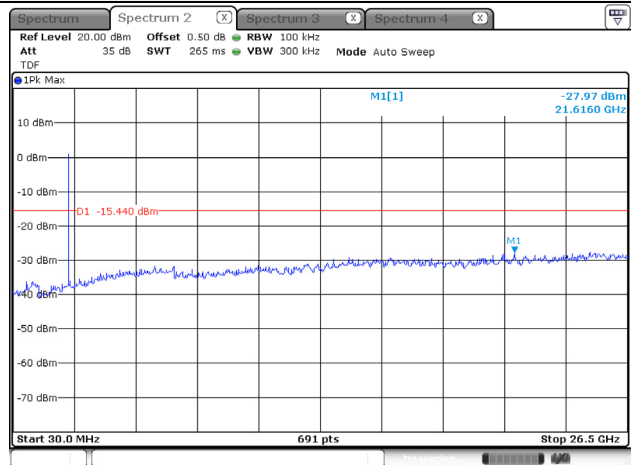
KCTL

Conducted Emissions

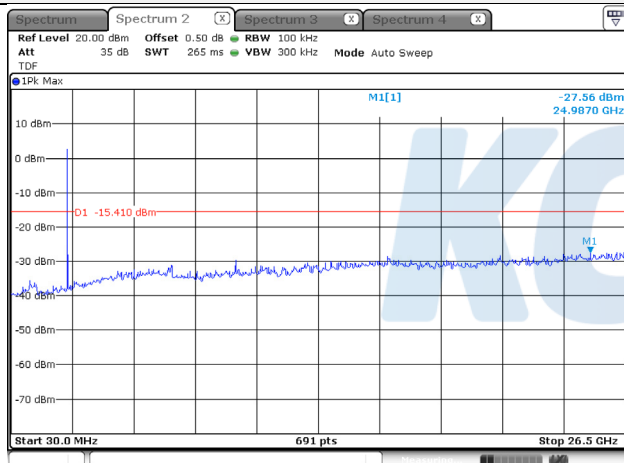
Low ch.



Mid ch.



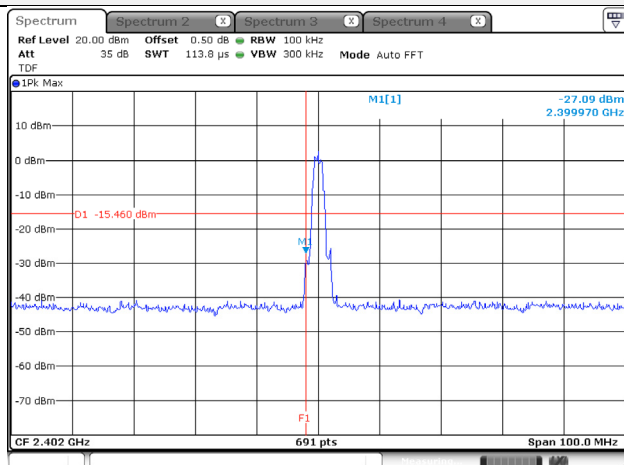
High ch.



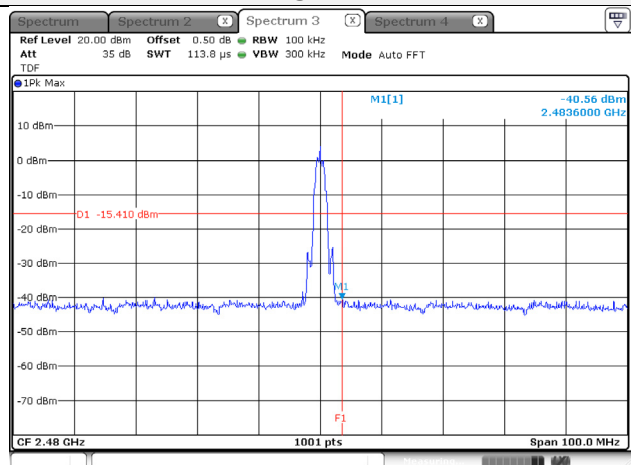
Blank

Band edge

Low ch.



High ch.



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KCTL-TIR001-003/2

8. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	R&S	FSV30	101437	19.07.30	20.07.30
Wideband Power Sensor	R&S	NRP-Z81	102398	19.01.25	20.01.25
Coaxial Attenuator	Weinschel ENGINEERING	56-10	53206	19.01.28	20.01.28
ATTENUATOR	R&S	DNF Dämpfungsglied 10 dB in N-50 Ohm	31212	19.05.13	20.05.13
EMI TEST RECEIVER	R&S	ESCI7	100732	19.08.22	20.08.22
Bi-Log Antenna	SCHWARZBECK	VULB 9168	583	19.05.04	20.05.04
Amplifier	SONOMA INSTRUMENT	310N	284608	19.08.22	20.08.22
COAXIAL FIXED ATTENUATOR	Agilent	8491B-003	2708A18758	19.05.04	20.05.04
Horn antenna	ETS.lindgren	3116	00086632	19.02.15	20.02.15
Horn antenna	ETS.lindgren	3117	155787	18.10.23	19.10.23
AMPLIFIER	L-3 Narda-MITEQ	AMF-7D-01001800-22-10P	2031196	19.02.21	20.02.21
AMPLIFIER	L-3 Narda-MITEQ	JS44-18004000-33-8P	2000997	19.01.28	20.01.28
LOOP Antenna	R&S	HFH2-Z2	100355	19.08.24	20.08.24
Antenna Mast	Innco Systems	MA4640-XP-ET	-	-	-
Turn Table	Innco Systems	DT2000	79	-	-
Antenna Mast	Innco Systems	MA4000-EP	303	-	-
Turn Table	Innco Systems	DT2000	79	-	-
Highpass Filter	WT	WT-A1698-HS	WT160411001	19.05.14	20.05.14
Spectrum Analyzer	R&S	FSV40	100988	19.01.04	20.01.04
Vector Signal Generator	R&S	SMBV100A	257566	19.07.16	20.07.16
Signal Generator	R&S	SMB100A	176206	19.01.25	20.01.25
Cable Assembly	RadiAll	2301761768000PJ	1724.659	-	-
Cable Assembly	gigalane	RG-400	-	-	-
Cable Assembly	HUER+SUHNER	SUCOFLEX 104	MY4342/4	-	-

End of test report