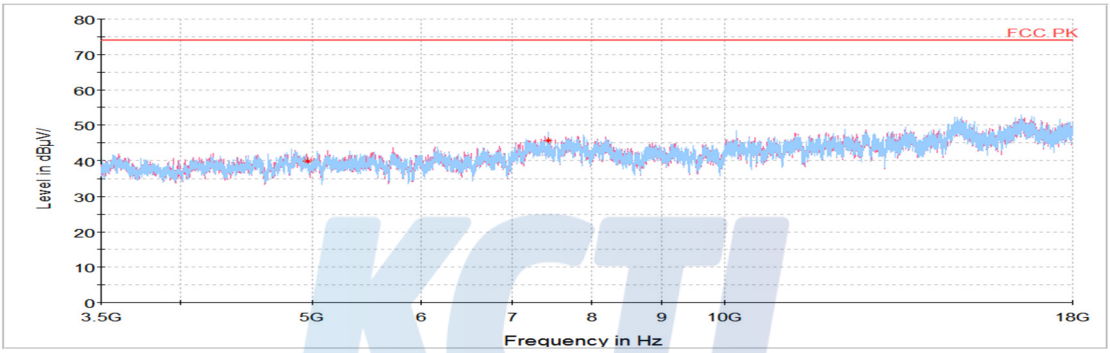
BLE 2 MBit/s(255 Bytes) / Harmonic

39 Channel

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
7 439.92[1)]	H	61.07	35.40	-50.87	-	45.60	74.00	28.40
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

Horizontal/Vertical for 3.5 ㎓ ~ 18 ㎓

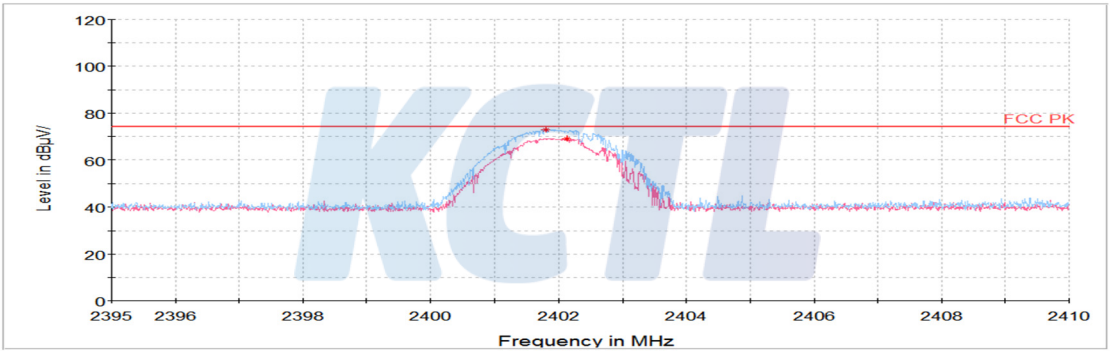


Test results (ANT+)
ANT+ / Fundamental

0 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								
2 401.82[1)]	H	69.90	31.90	-28.99	-	72.81	113.98	41.17
2 402.12[1)]	V	66.14	31.90	-28.99	-	69.05	113.98	44.93
Average Data								
2 401.82[1)]	H	69.90	31.90	-28.99	-33.17	39.65	93.98	54.33
2 402.12[1)]	V	66.14	31.90	-28.99	-33.17	35.88	93.98	58.10

Horizontal/Vertical for 2 402 MHz



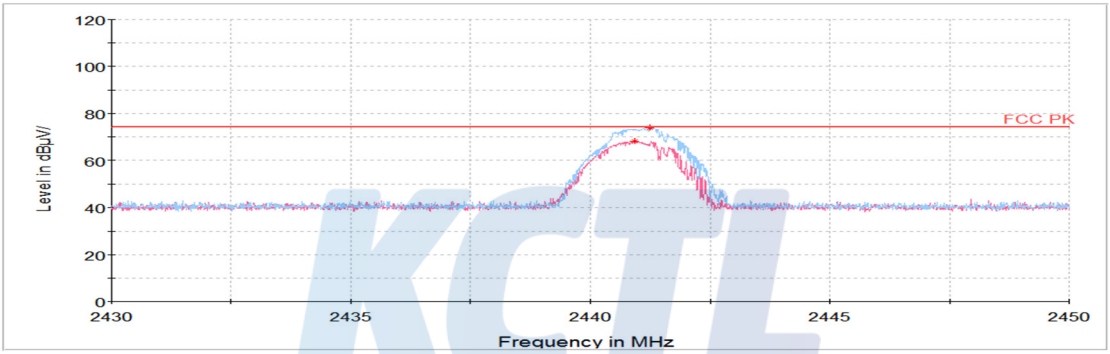
Notes:

DCCF = 20log10 (number of pulses in 100 ms x (on time / 100 ms))
= 20log10 (13 x (0.168 96 ms/100 ms)) = -33.17 dB

39 Channel

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
2 441.24[1)]	H	70.84	31.98	-29.10	-	73.72	113.98	40.26
2 440.91[1)]	V	65.10	31.98	-29.10	-	67.98	113.98	46.00
Average Data								
2 441.24[1)]	H	70.84	31.98	-29.10	-33.17	40.56	93.98	53.42
2 440.91[1)]	V	65.10	31.98	-29.10	-33.17	34.81	93.98	59.17

Horizontal/Vertical for 2 441 ㎒



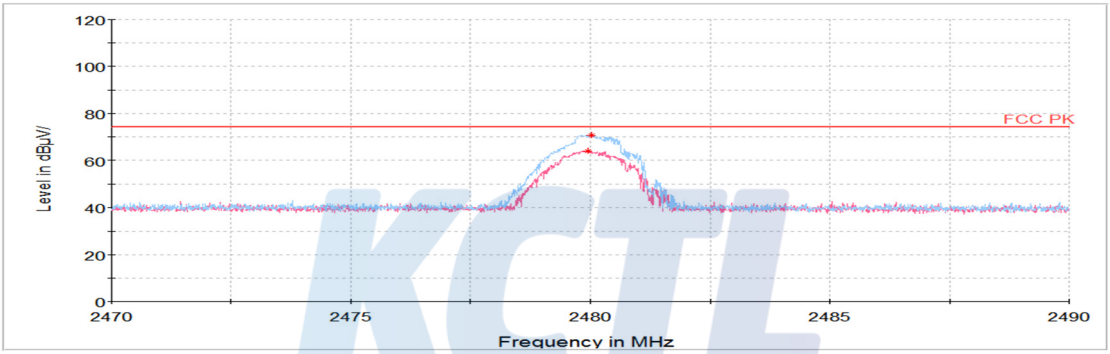
Notes:

DCCF = 20log10 (number of pulses in 100 ㎳ x (on time / 100 ㎳))
= 20log10 (13 x (0.168 96 ㎳/100 ㎳)) = -33.17 ㏈

78 Channel

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
2 480.00[1)]	H	67.66	32.06	-29.20	-	70.52	113.98	43.46
2 479.93[1)]	V	60.92	32.06	-29.20	-	63.78	113.98	50.20
Average Data								
2 480.00[1)]	H	67.66	32.06	-29.20	-33.17	37.36	93.98	56.62
2 479.93[1)]	V	60.92	32.06	-29.20	-33.17	30.61	93.98	63.37

Horizontal/Vertical for 2 480 ㎒



Notes:

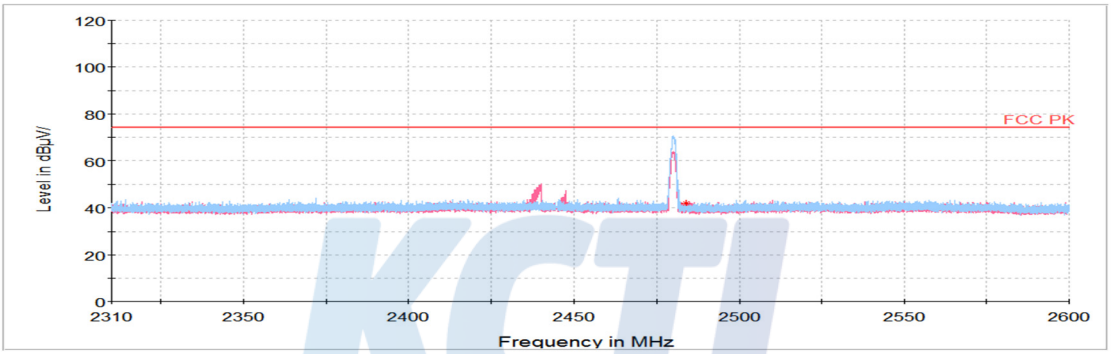
DCCF = 20log10 (number of pulses in 100 ㎳ x (on time / 100 ㎳))
= 20log10 (13 x (0.168 96 ㎳/100 ㎳)) = -33.17 ㏈

ANT+ / Band-edge

39 Channel

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
2 483.86[1)]	H	39.31	32.07	-29.21	-	42.17	74.00	31.83
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

Horizontal/Vertical for Band-edge

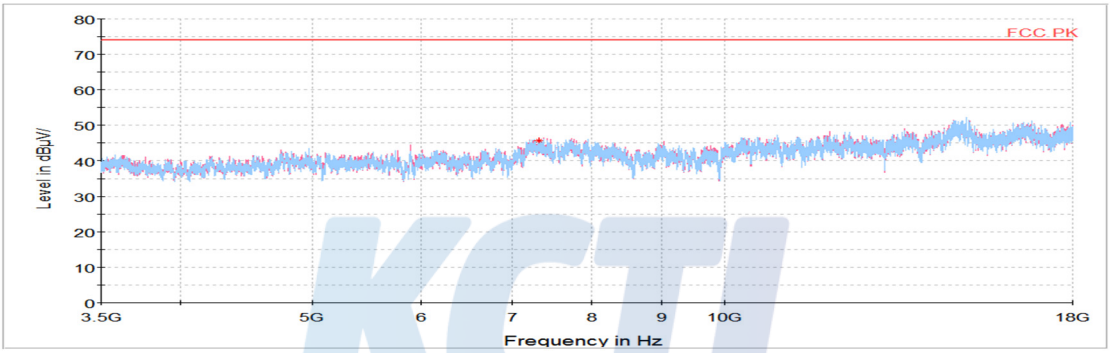


ANT+ / Harmonic

39 Channel

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
7 323.47[1)]	H	61.55	35.40	-51.44	-	45.51	74.00	28.49
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

Horizontal/Vertical for 3.5 ㎓ ~ 18 ㎓

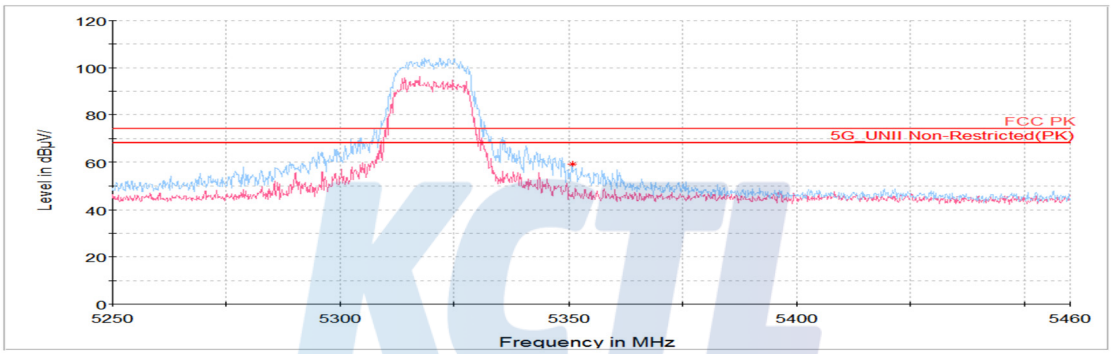


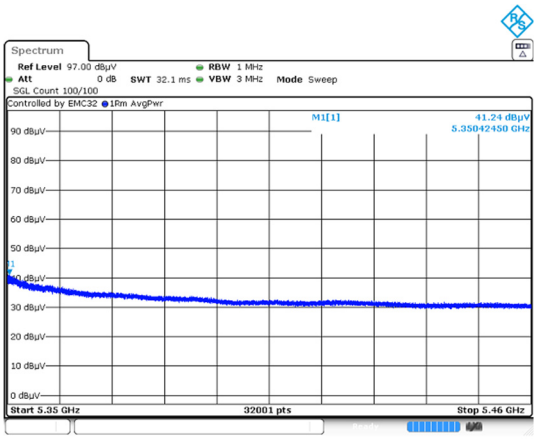
Test results (5G WIFI)
802.11a / Band-edge

64 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								
5 350.42[1)]	H	51.37	34.56	-26.84	-	59.09	74.00	14.91
Average Data								
5 350.42[1)]	H	41.24	34.56	-26.84	0.30	49.26	54.00	4.74

Horizontal/Vertical for Band-edge



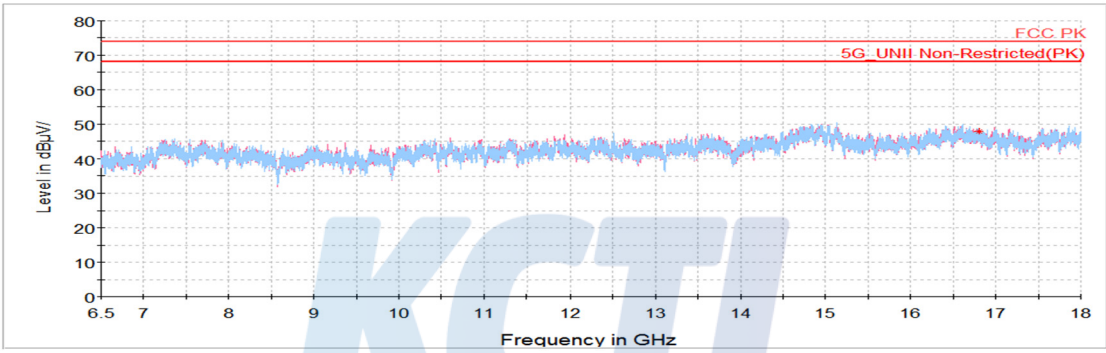
Average data	
	Blank

802.11a / Harmonic

120 Channel

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
16 800.77[1)]	V	52.81	41.80	-46.85	-	47.76	74.00	26.24
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

Horizontal/Vertical for 3.5 ㎓ ~ 18 ㎓

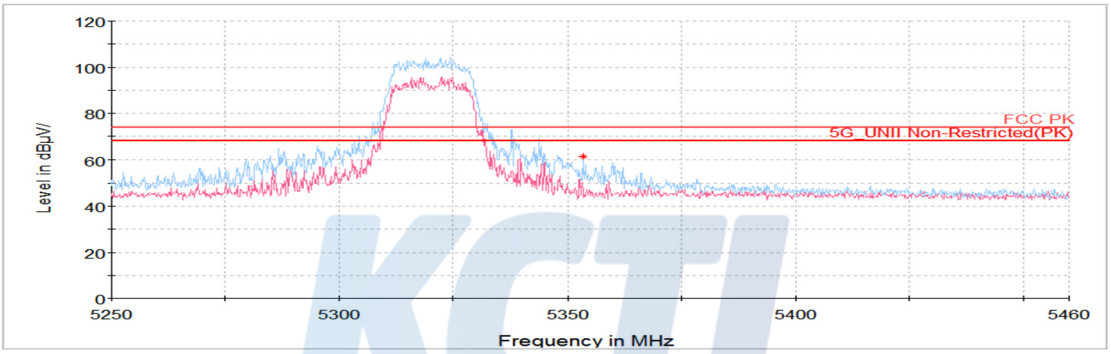


802.11n HT20 / Band-edge

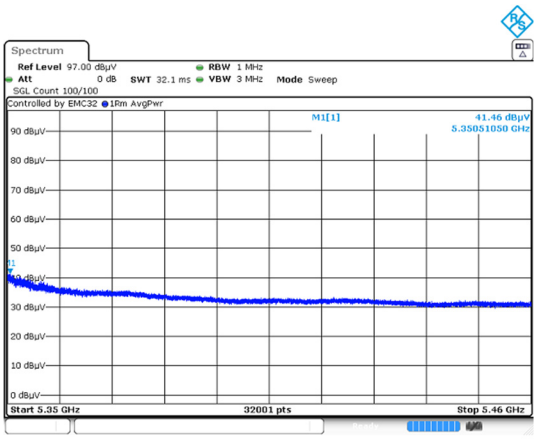
64 Channel

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								
5 350.51[1)]	H	53.49	34.56	-26.84	-	61.21	74.00	12.79
Average Data								
5 350.51[1)]	H	41.46	34.56	-26.84	0.35	49.53	54.00	4.47

Horizontal/Vertical for Band-edge



Average data



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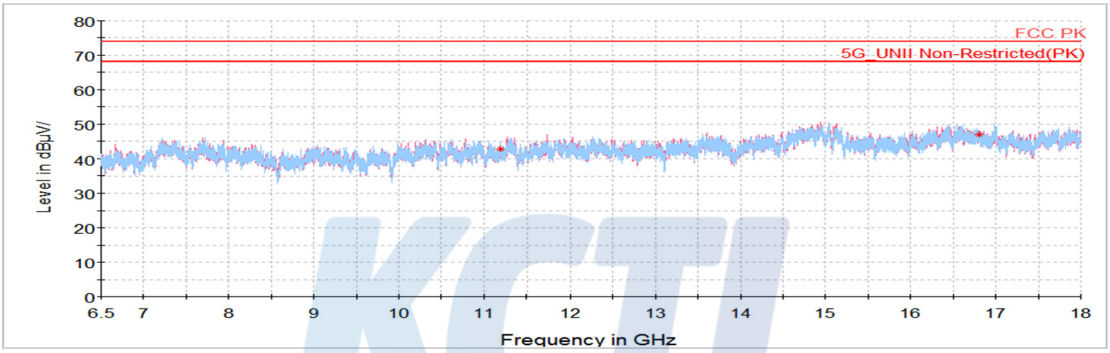
802.11n HT20 / Harmonic

120 Channel

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
16 800.41[1)]	H	51.94	41.80	-46.85	-	46.89	74.00	27.11
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

Horizontal/Vertical for 3.5 ㎓ ~ 18 ㎓

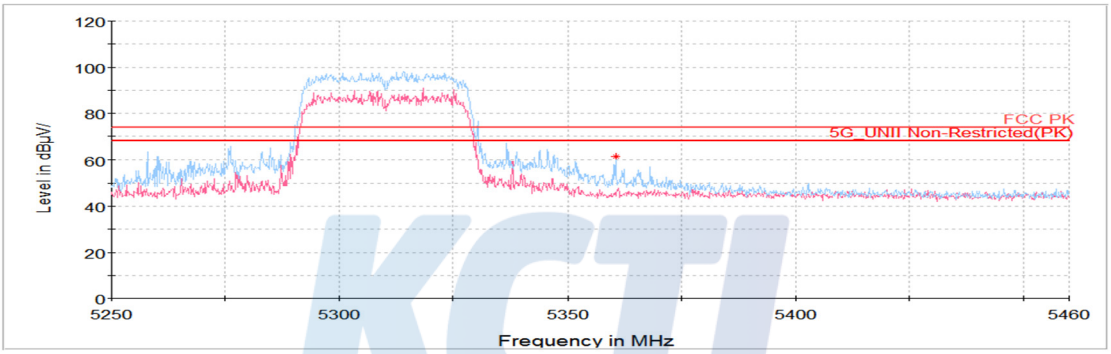


802.11n HT40 / Band-edge

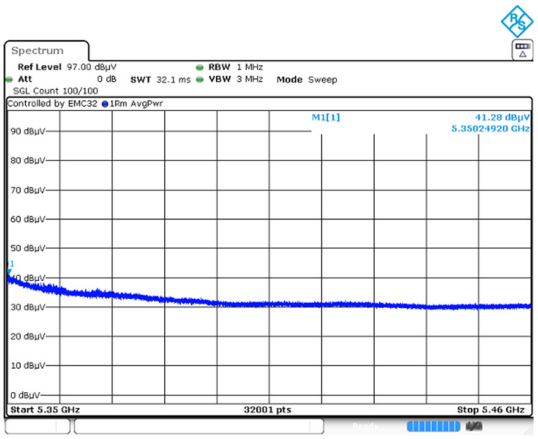
62 Channel

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								
5 350.25[1)]	H	53.41	34.56	-26.84	-	61.13	74.00	12.87
Average Data								
5 350.25[1)]	H	41.28	34.56	-26.84	0.66	49.66	54.00	4.34

Horizontal/Vertical for Band-edge



Average data



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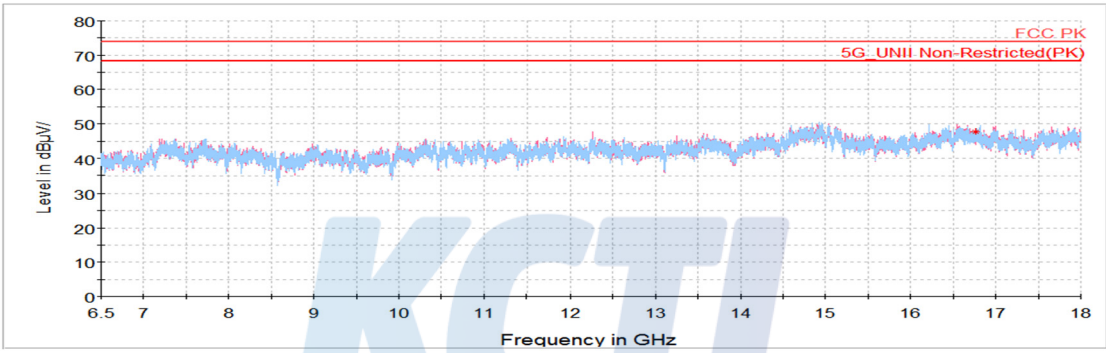
802.11n HT40 / Harmonic

118 Channel

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
16 769.86[1)]	H	52.86	41.77	-46.84	-	47.79	74.00	26.21
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

Horizontal/Vertical for 3.5 ㎓ ~ 18 ㎓

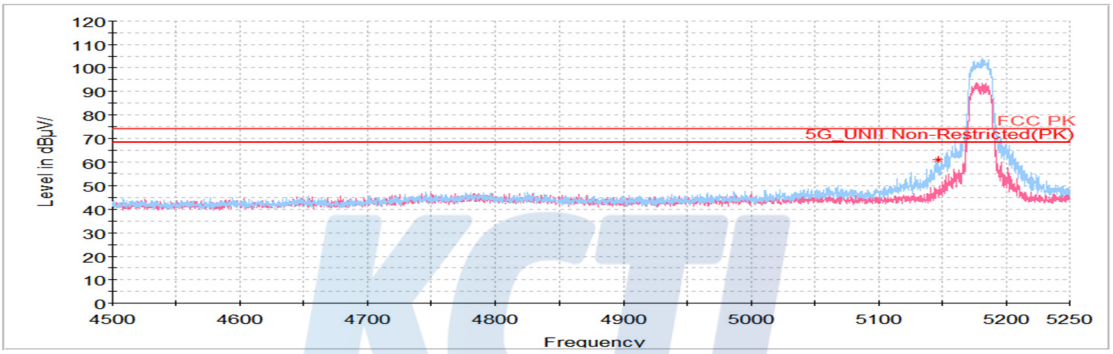


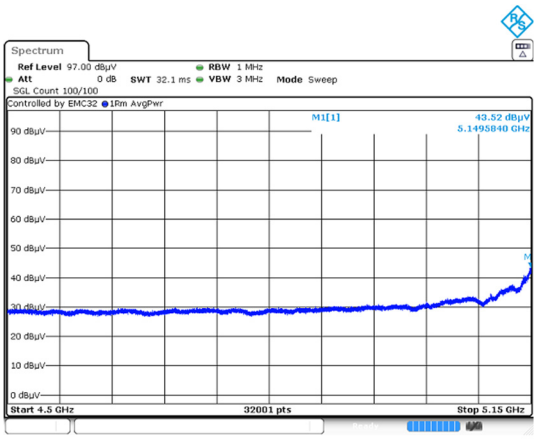
802.11ac VHT20 / Band-edge

36 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								
5 149.58[1)]	H	53.80	34.24	-27.12	-	60.92	74.00	13.08
Average Data								
5 149.58[1)]	H	43.52	34.24	-27.12	0.31	50.95	54.00	3.05

Horizontal/Vertical for Band-edge



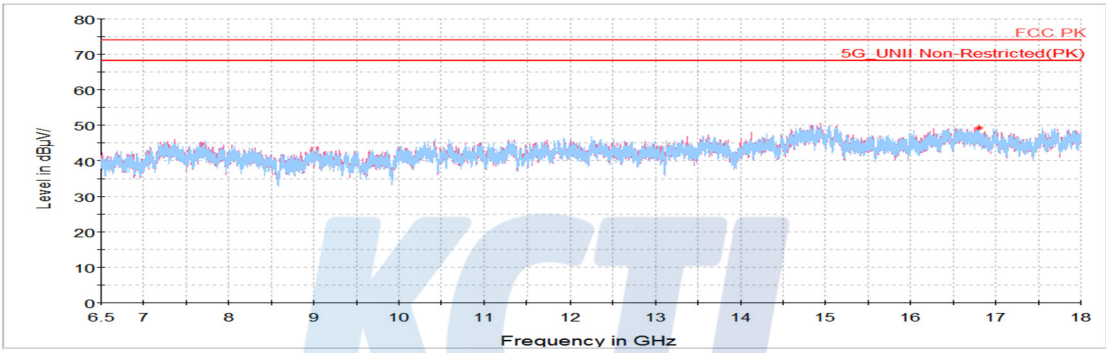
Average data	
	Blank

802.11ac VHT20 / Harmonic

120 Channel

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
16 801.48[1)]	H	54.19	41.80	-46.85	-	49.14	74.00	24.86
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

Horizontal/Vertical for 3.5 ㎓ ~ 18 ㎓

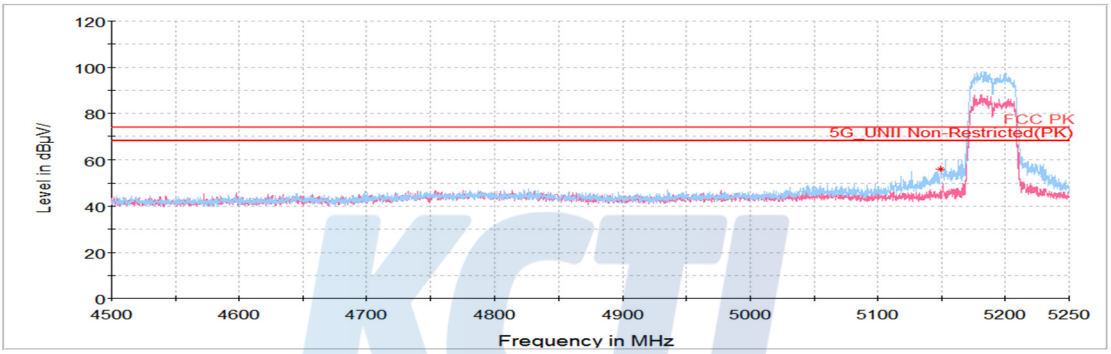


802.11ac VHT40 / Band-edge

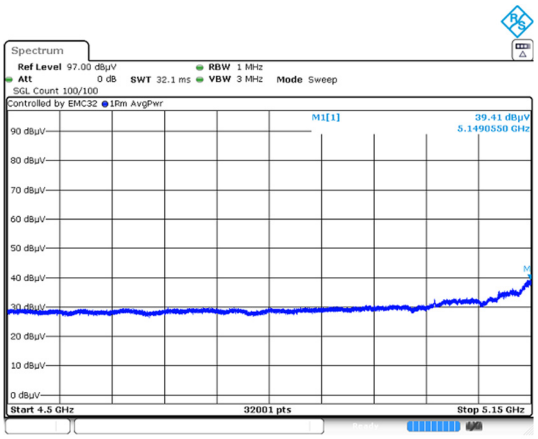
38 Channel

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								
5 149.06[1)]	H	48.65	34.24	-27.11	-	55.78	74.00	18.22
Average Data								
5 149.06[1)]	H	39.41	34.24	-27.11	0.61	47.15	54.00	6.85

Horizontal/Vertical for Band-edge



Average data



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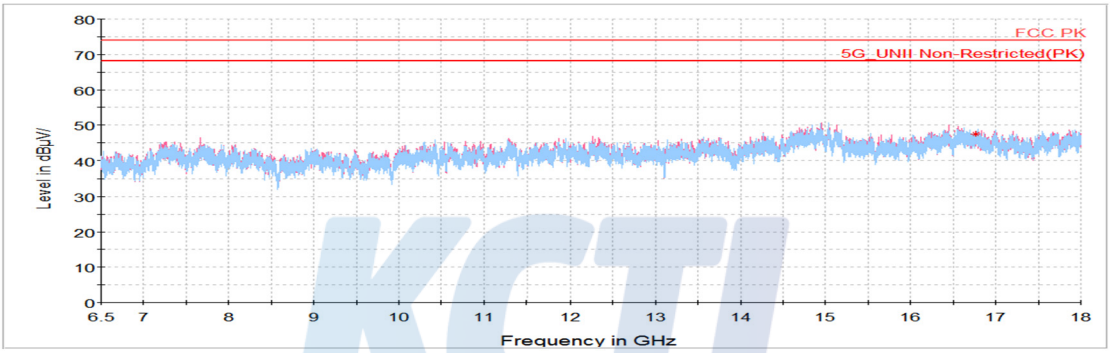
802.11ac VHT40 / Harmonic

118 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								
16 771.30[1)]	V	52.44	41.77	-46.84	-	47.37	74.00	26.63
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Horizontal/Vertical for 3.5 GHz ~ 18 GHz

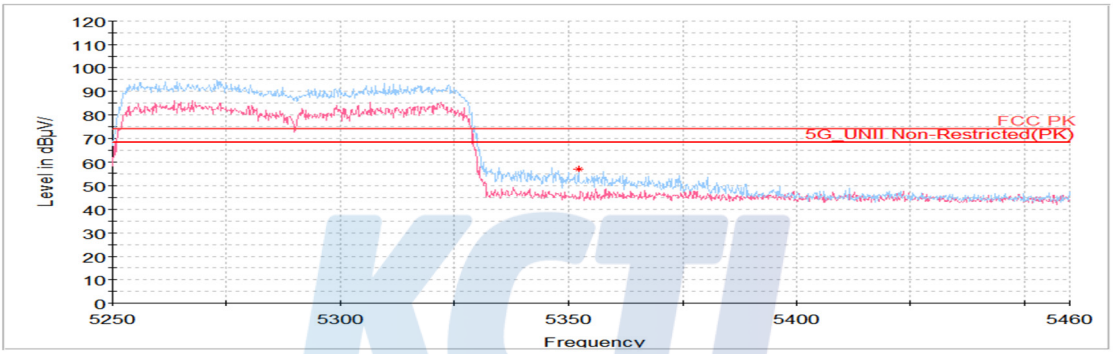


802.11ac VHT80 / Band-edge

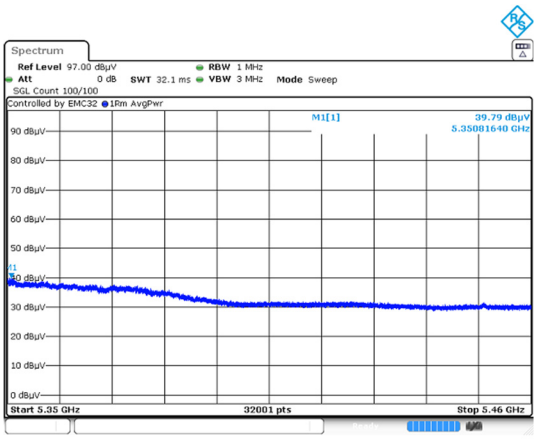
58 Channel

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								
5 350.82[1)]	H	49.09	34.56	-26.84	-	56.81	74.00	17.19
Average Data								
5 350.82[1)]	H	39.79	34.56	-26.84	1.25	48.76	54.00	5.24

Horizontal/Vertical for Band-edge



Average data



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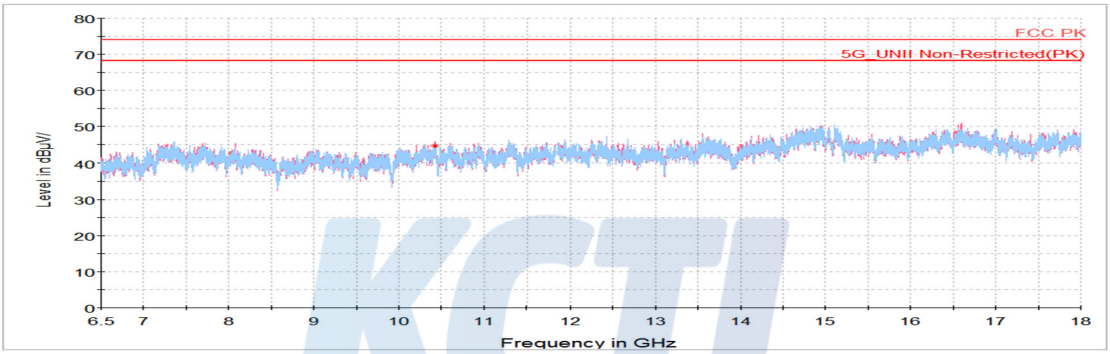
802.11ac VHT80 / Harmonic

42 Channel

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 420.06[1)]	H	57.24	37.32	-50.01	-	44.55	74.00	29.45
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

Horizontal/Vertical for 3.5 ㎓ ~ 18 ㎓



4. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
Spectrum Analyzer	R&S	FSV40	100988	20.01.04
Bluetooth Tester	TESCOM	TC-3000B	3000B640056	20.01.25
COAXIAL FIXED ATTENUATOR	Agilent	8491B-003	2708A18758	20.05.04
Horn antenna	ETS.lindgren	3117	155787	20.10.24
Broadband PreAmplifier	SCHWARZBECK	BBV9718	216	20.07.30
AMPLIFIER	L-3 Narda-MITEQ	AMF-7D-01001800 -22-10P	2031196	20.02.21
LOOP Antenna	R&S	HFH2-Z2	100355	20.08.24
Antenna Mast	Innco Systems	MA4640-XP-ET	-	-
Turn Table	Innco Systems	DT2000	79	-
Highpass Filter	WT	WT-A1698-HS	WT160411001	20.05.14
Highpass Filter	WT	WT-A1699-HS	WT160411002	20.05.14
Vector Signal Generator	R&S	SMBV100A	257566	20.01.04
Signal Generator	R&S	SMR40	100007	20.05.13
Cable Assembly	RadiAll	2301761768000PJ	1724.659	-
Cable Assembly	gigalane	RG-400	-	-
Cable Assembly	HUER+SUHNER	SUCOFLEX 104	MY4342/4	-
Biconical VHF-UHF Broadband Antenna	SCHWARZBECK	VUBA9117	275	20.04.13
Bilog Antenna	Teseq GmbH	CBL 6143A	35039	21.05.21
Horn Antenna	ETS.lindgren	3117	00161083	20.09.18
Horn Antenna	ETS.lindgren	3117	161225	20.05.22
Horn Antenna	ETS.lindgren	3116	00086632	20.02.15
Horn Antenna	ETS.lindgren	3116	00086635	20.05.09
High pass Filter	Wainwright Instruments GmbH	WHKX3.0/18G-12SS	44	20.01.25
High pass Filter	Wainwright Instruments GmbH	WHKX1.0/1.5S-10SS	14	20.01.25
Attenuator	Weinschel ENGINEERING	10	AJ1239	20.05.14
Attenuator	API Inmet	40AH2W-10	12	20.05.15
Amplifier	SONOMA INSTRUMENT	310N	186402	20.01.04
Amplifier	L-3 Narda-MITEQ	AMF-7D-01001800-22-10P	2031196	20.02.21
Amplifier	L-3 Narda-MITEQ	JS44-18004000-33-8P	2000997	20.08.01
Spectrum Analyzer	AGILENT	N9040B	MY57010132	20.07.31
Signal Generator	R&S	SMB100A	176206	20.01.25
Widebnad Radio Communication Tester	R & S	CMW500	141780	20.04.18

Antenna Mast	MATURO	EAS 1.5	042/8941211	N/A
Antenna Mast	MATURO	EAS 1.5	043/8941211	N/A
Turn Table	MATURO	TT 0.8 PF	041/8941211	N/A
Cable Assembly	Radiall	R286303620	1649.241	-
Cable Assembly	Radiall	TESTPRO 3	-	-

End of test report

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