

**CTK Co., Ltd.**

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2025-02084
Page (27) / (87) Pages

4.3 OUTPUT POWER

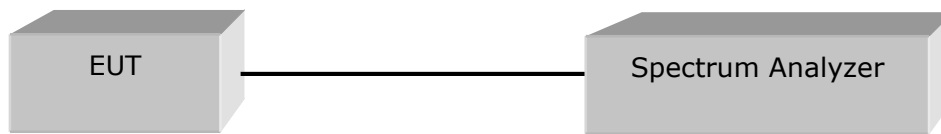
Test Procedures

KDB 789033 – Section E.2.b (Method SA-1, Maximum Conducted Output Power)

ANSI C63.10-2013 – Section 12.3.2.4

RSS-247 – Section 6.2.1.1, 6.2.4.2

The transmitter output is connected to a spectrum analyzer and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99 % bandwidth.



Test Settings :

Center frequency = the highest, middle and the lowest channels

a) RBW = 1 MHz

b) VBW $\geq 3 \times$ RBW

c) Sweep time = auto

d) Detector = power averaging (rms)

e) Trace mode = Average at least 100

f) Duty cycle $\geq 98 \%$

Limit :

Mode	Band	ANT Gain (dBi)	Conducted Output Power for FCC	EIRP for ISSED
			Limit (dBm)	Limit (dBm)
802.11a/n/ac	UNII 1	1.46	24.00	Note
	UNII 3	1.73	30.00	

Note :

Band	Limit (dBm)
UNII 1	For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or $1.76 + 10 \log_{10}B$, dBm, whichever is less, where B is the 99% emission bandwidth in megahertz. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.
UNII 3	The maximum conducted output power shall not exceed 1 W.

**CTK Co., Ltd.**

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2025-02084
Page (28) / (87) Pages

Test Data : Output Power

Test Mode	Frequency (MHz)	Measured Output Power (dBm)	Result (dBm)		Limit (dBm)	
			Conducted Output Power	EIRP	Conducted Output Power	EIRP
802.11a	5 180	5.38	5.38	6.84	24.00	13.94
	5 200	5.89	5.89	7.35	24.00	13.94
	5 240	5.45	5.45	6.91	24.00	13.94
	5 745	7.26	7.26	8.99	30.00	30.00
	5 785	5.68	5.68	7.41	30.00	30.00
	5 825	6.84	6.84	8.57	30.00	30.00
802.11n _HT20	5 180	2.14	2.14	3.60	24.00	14.22
	5 200	3.11	3.11	4.57	24.00	14.22
	5 240	2.92	2.92	4.38	24.00	14.21
	5 745	4.51	4.51	6.24	30.00	30.00
	5 785	4.12	4.12	5.85	30.00	30.00
	5 825	4.57	4.57	6.30	30.00	30.00
802.11ac _VHT20	5 180	3.50	3.50	4.96	24.00	14.22
	5 200	4.71	4.71	6.17	24.00	14.22
	5 240	4.95	4.95	6.41	24.00	14.22
	5 745	6.68	6.68	8.41	30.00	30.00
	5 785	6.05	6.05	7.78	30.00	30.00
	5 825	6.00	6.00	7.73	30.00	30.00
802.11n _HT40	5 190	-2.75	-2.75	-1.29	24.00	14.77
	5 230	-1.26	-1.26	0.20	24.00	14.77
	5 755	1.86	1.86	3.59	30.00	30.00
	5 795	1.43	1.43	3.16	30.00	30.00
802.11ac _VHT40	5 190	-1.87	-1.87	-0.41	24.00	14.77
	5 230	-0.27	-0.27	1.19	24.00	14.77
	5 755	1.12	1.12	2.85	30.00	30.00
	5 795	0.99	0.99	2.72	30.00	30.00
802.11ac _VHT80	5 210	-2.71	-2.71	-1.25	24.00	14.77
	5 775	-0.53	-0.53	1.20	30.00	30.00

See next pages for actual measured spectrum plots.

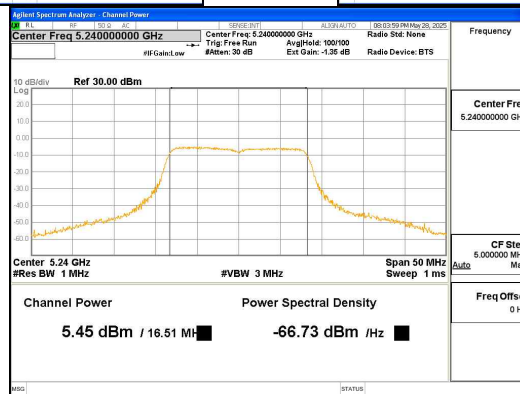
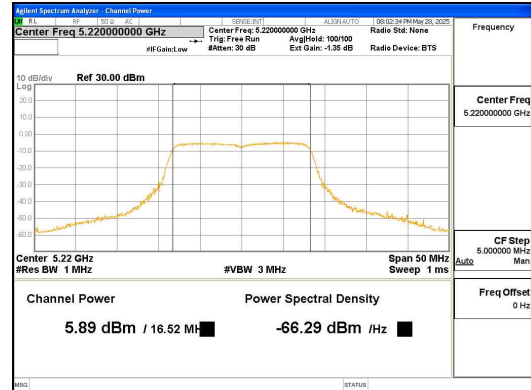
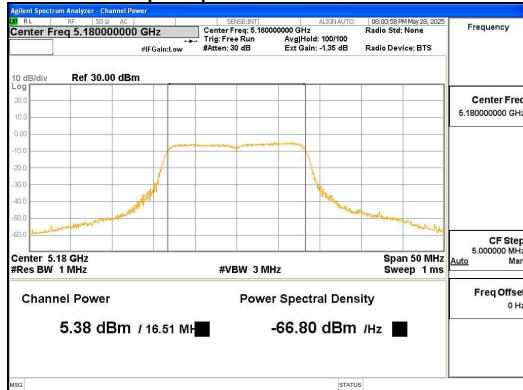


CTK Co., Ltd.

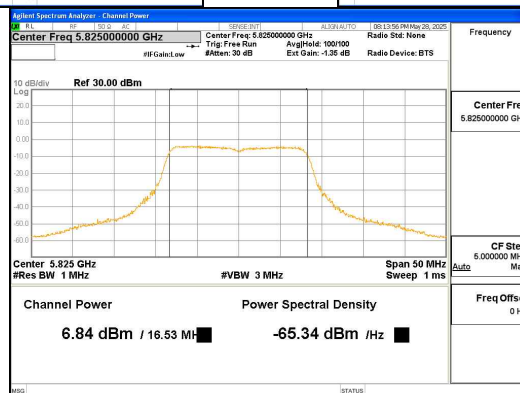
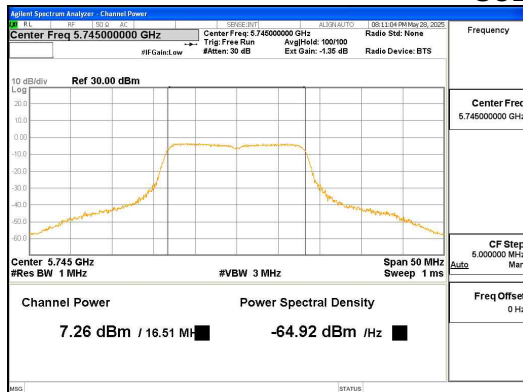
(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2025-02084
Page (29) / (87) Pages

Test Plot : Output power



802.11a_UNII-1



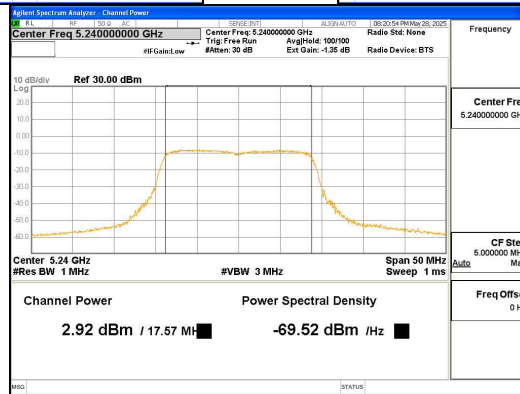
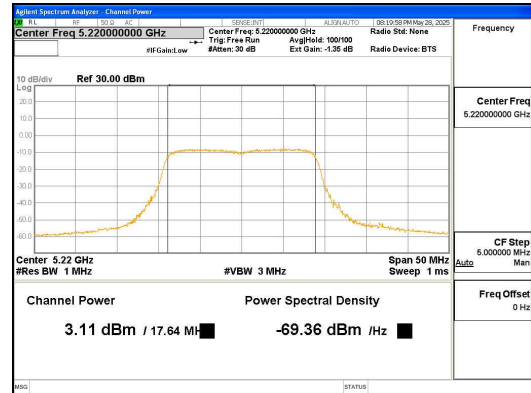
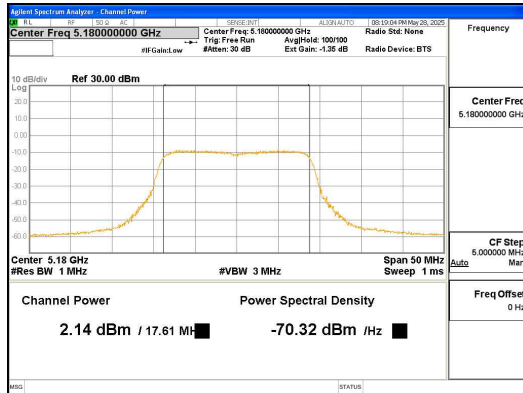
802.11a_UNII-3



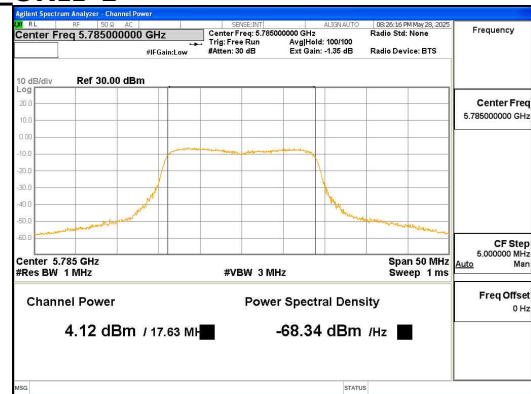
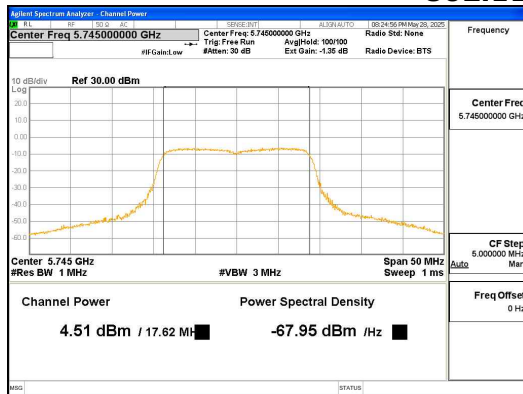
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2025-02084
Page (30) / (87) Pages



802.11n_HT20_UNII-1



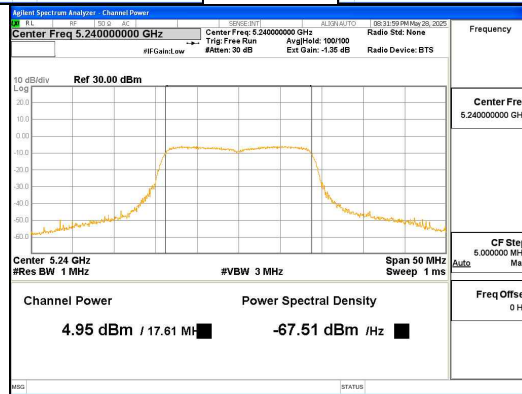
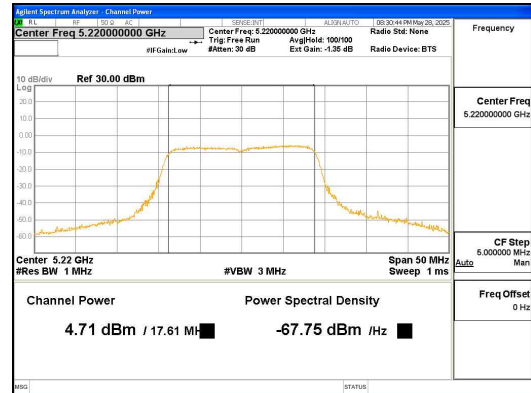
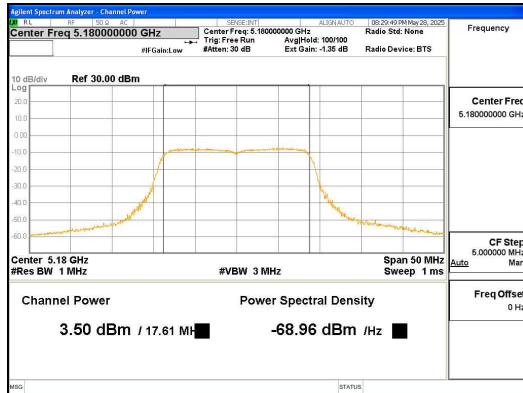
802.11n_HT20_UNII-3



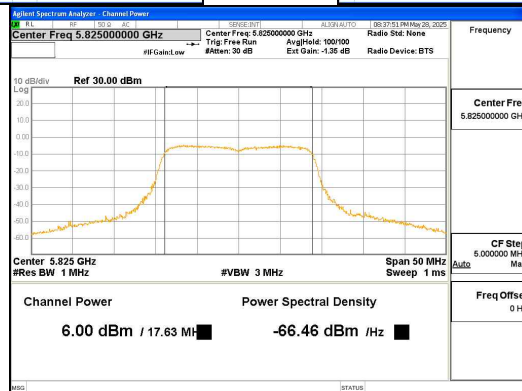
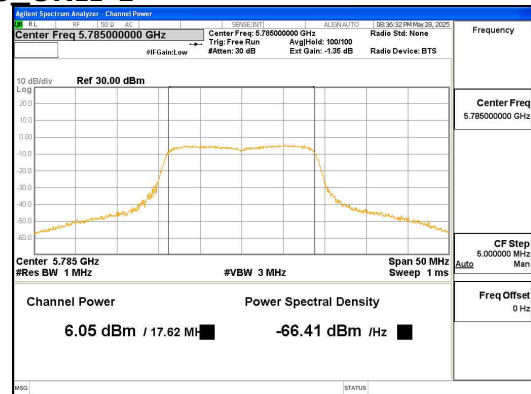
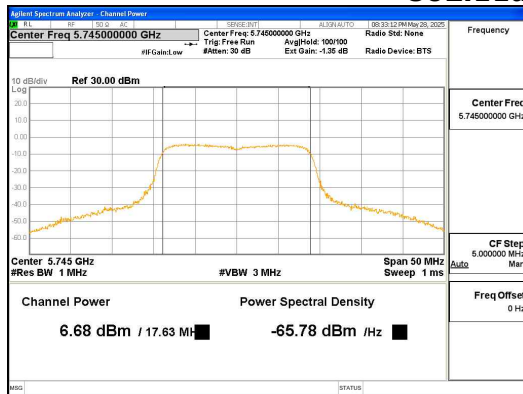
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2025-02084
Page (31) / (87) Pages



802.11ac_VHT20_UNII-1



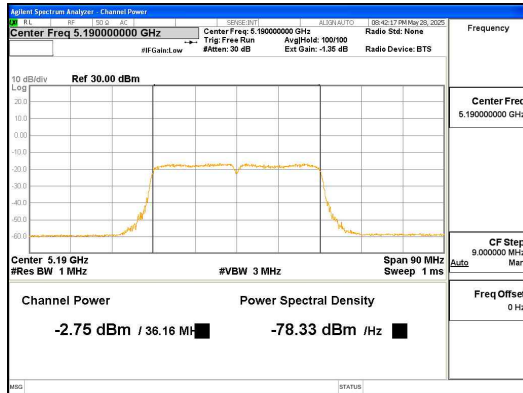
802.11ac_VHT20_UNII-3



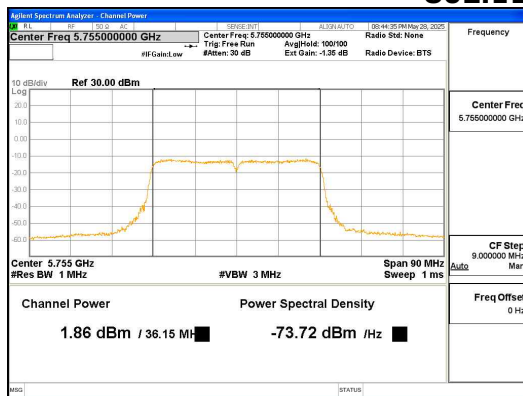
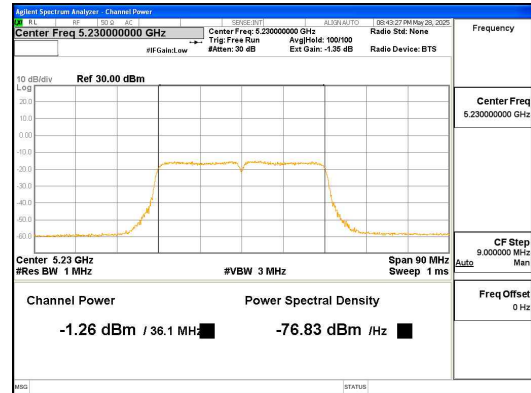
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

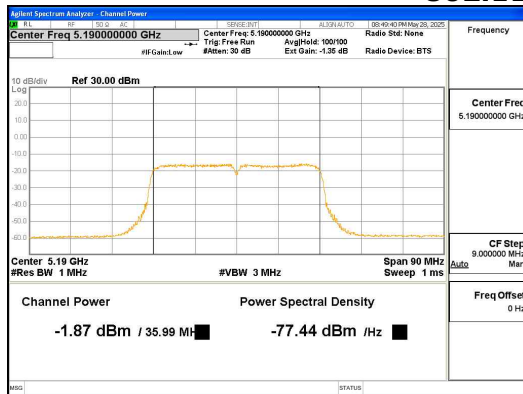
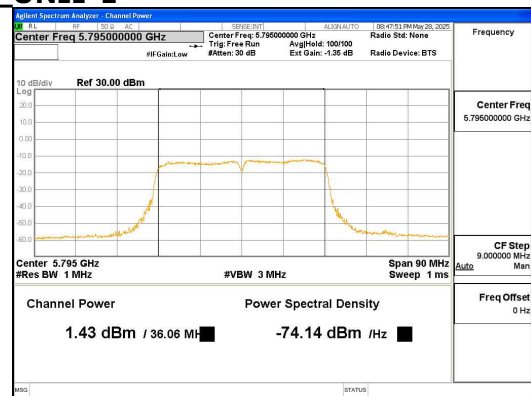
Report No.:
CTK-2025-02084
Page (32) / (87) Pages



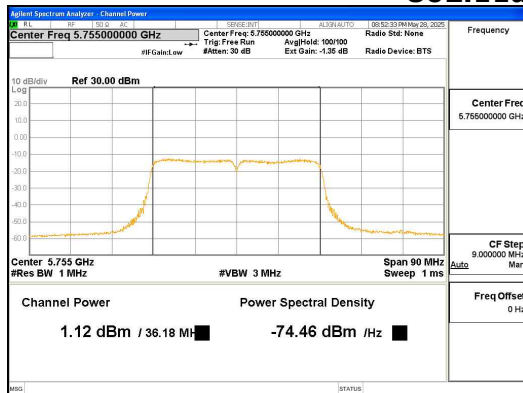
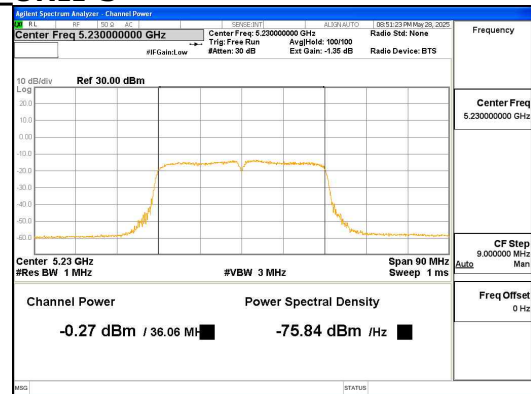
802.11n_HT40_UNII-1



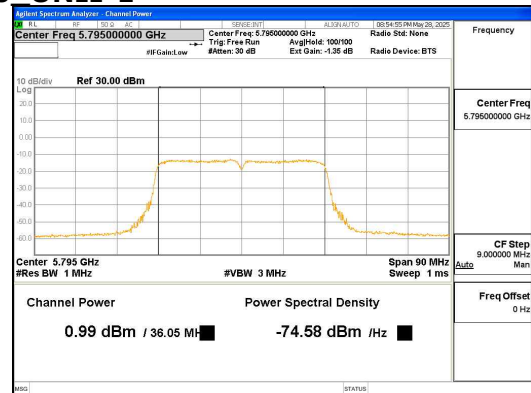
802.11n_HT40_UNII-3



802.11ac_VHT40_UNII-1



802.11ac_VHT40_UNII-3

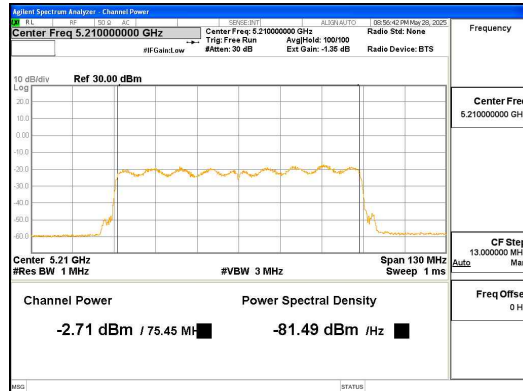




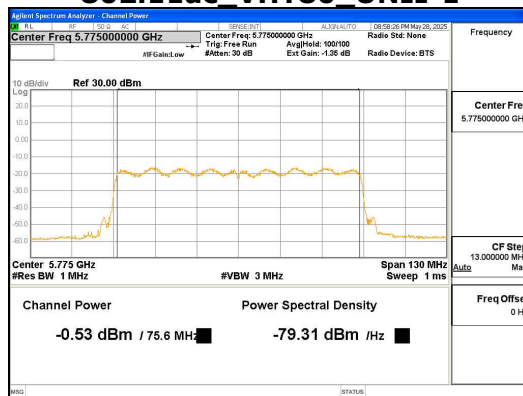
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2025-02084
Page (33) / (87) Pages



802.11ac_VHT80_UNII-1



802.11ac_VHT80_UNII-3

**CTK Co., Ltd.**

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2025-02084
Page (34) / (87) Pages

4.4 Power Spectral Density

Test Procedures

KDB 789033 – Section F (Method SA-2, Maximum Power Spectral Density)

ANSI C63.10-2013 – Section 12.5

RSS-247 – Section 6.2.1.1, 6.2.4.2

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) RBW = 1 MHz, 500 KHz (UNII 3)
- b) VBW = 3 MHz, 1.5 MHz (UNII 3)
- c) Sweep time = auto
- d) Detector = power averaging (rms)
- e) Trace mode = Average at least 100
- f) Duty cycle factor = $10\log(1/x)$

Test mode	Duty Cycle Factor
802.11a	2.40 dB
802.11n_HT20	2.52 dB
802.11n_HT40	4.11 dB
802.11ac_VHT20	2.54 dB
802.11ac_VHT40	4.12 dB
802.11ac_VHT80	6.18 dB

Limit :

Mode	Band	ANT Gain (dBi)	Limit for FCC (dBm)	Limit for ISSED (dBm)
802.11a/n/ac	UNII 1	1.46	11.00	10.00 (EIRP)
	UNII 3	1.73	30.00	

**CTK Co., Ltd.**

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2025-02084
Page (35) / (87) Pages

Test Data

Test Mode	Frequency (MHz)	Measured Power Density (dBm)	Duty cycle Factor (dB)	Result (dBm)		Limit (dBm)	
				Power Density	EIRP	Power Density	EIRP
802.11a	5 180	-5.24	2.40	-2.84	-1.38	11.00	10.00
	5 220	-5.44	2.40	-3.04	-1.58	11.00	10.00
	5 240	-5.27	2.40	-2.87	-1.41	11.00	10.00
	5 745	-7.10	2.40	-4.70	-	30.00	
	5 785	-7.26	2.40	-4.86	-	30.00	
	5 825	-6.92	2.40	-4.52	-	30.00	
802.11n _HT20	5 180	-8.58	2.52	-6.06	-4.6	11.00	10.00
	5 220	-7.87	2.52	-5.35	-3.89	11.00	10.00
	5 240	-7.40	2.52	-4.88	-3.42	11.00	10.00
	5 745	-9.06	2.52	-6.54	-	30.00	
	5 785	-9.40	2.52	-6.88	-	30.00	
	5 825	-8.76	2.52	-6.24	-	30.00	
802.11ac _VHT20	5 180	-7.01	2.54	-4.47	-3.01	11.00	10.00
	5 220	-5.77	2.54	-3.23	-1.77	11.00	10.00
	5 240	-5.24	2.54	-2.70	-1.24	11.00	10.00
	5 745	-7.17	2.54	-4.63	-	30.00	
	5 785	-7.44	2.54	-4.90	-	30.00	
	5 825	-7.57	2.54	-5.03	-	30.00	
802.11n _HT40	5 190	-15.97	4.11	-11.86	-10.4	11.00	10.00
	5 230	-14.96	4.11	-10.85	-9.39	11.00	10.00
	5 755	-15.24	4.11	-11.13	-	30.00	
	5 795	-15.16	4.11	-11.05	-	30.00	
802.11ac _VHT40	5 190	-15.56	4.12	-11.44	-9.98	11.00	10.00
	5 230	-14.29	4.12	-10.17	-8.71	11.00	10.00
	5 755	-15.40	4.12	-11.28	-	30.00	
	5 795	-15.08	4.12	-10.96	-	30.00	
802.11ac _VHT80	5 210	-18.41	6.18	-12.23	-8.71	11.00	10.00
	5 775	-19.04	6.18	-12.86	-	30.00	

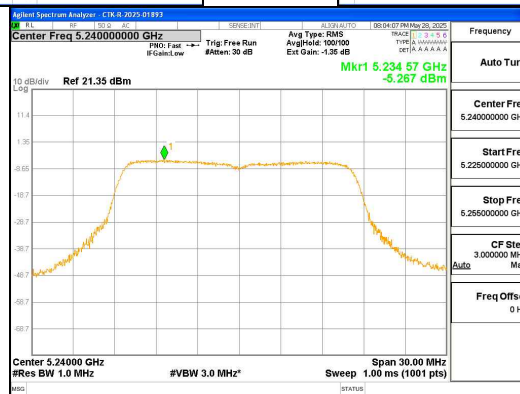
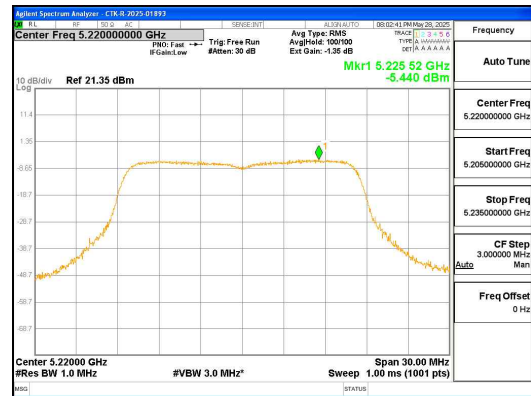
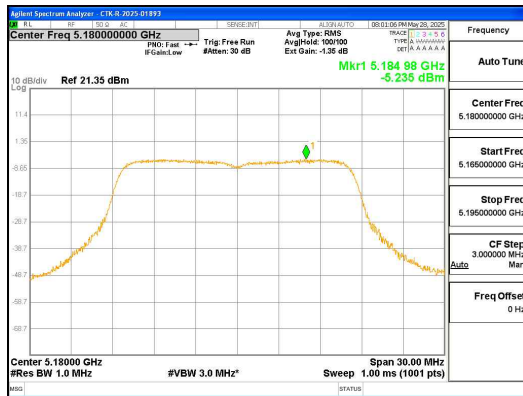
See next pages for actual measured spectrum plots.



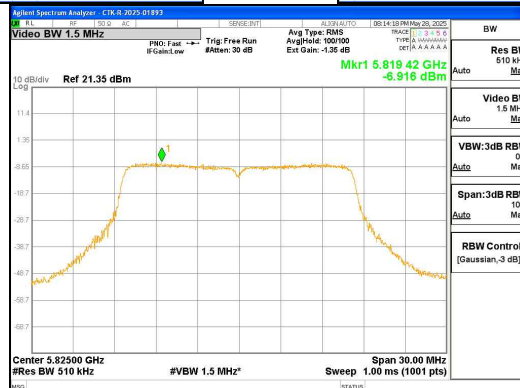
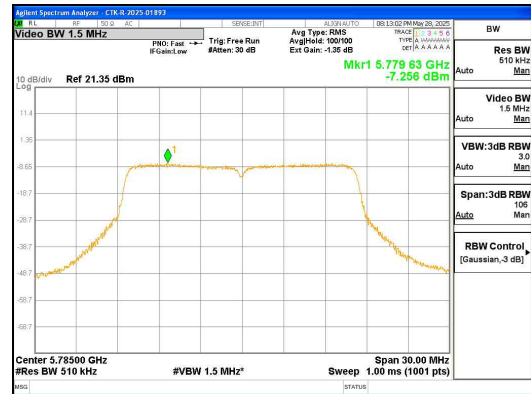
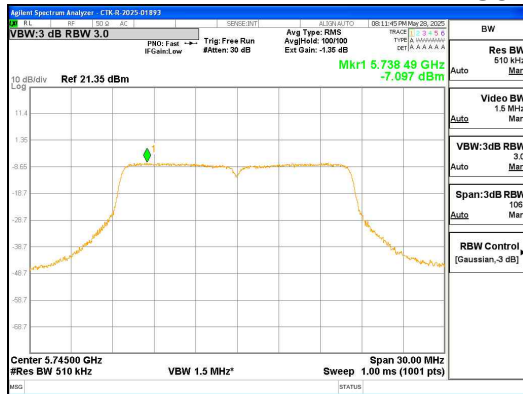
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2025-02084
Page (36) / (87) Pages



802.11a_UNII-1



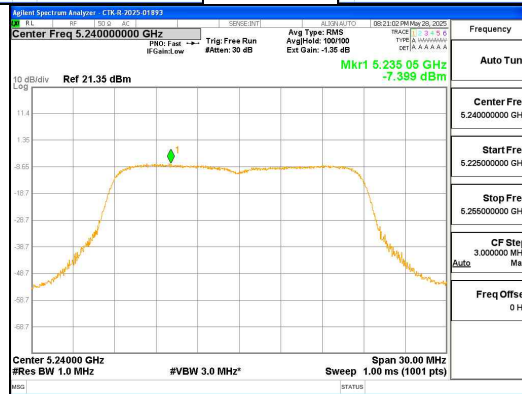
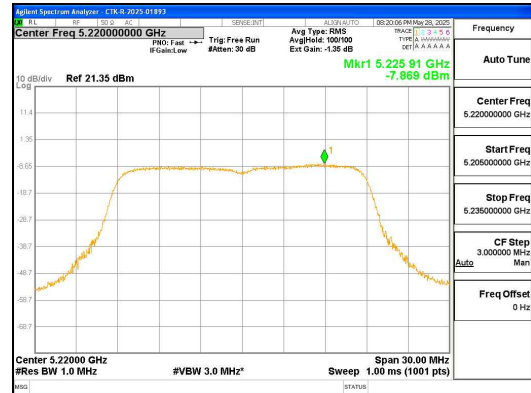
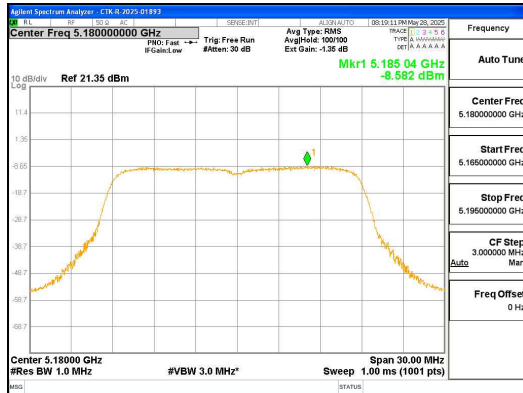
802.11a_UNII-3



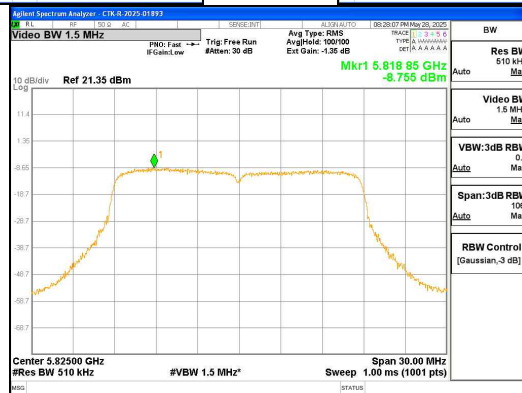
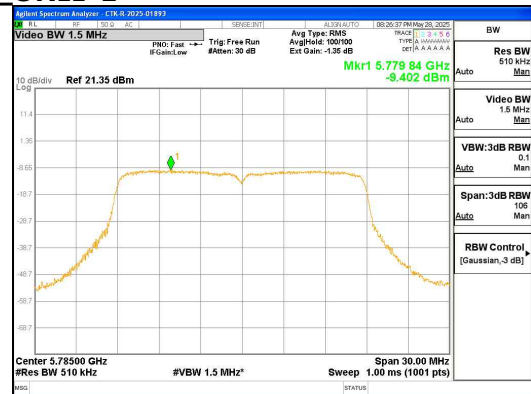
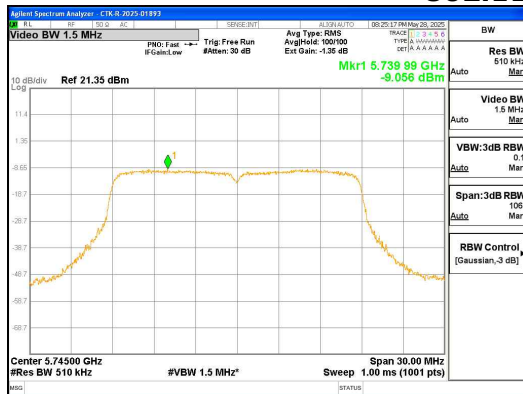
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2025-02084
Page (37) / (87) Pages



802.11n_HT20_UNII-1



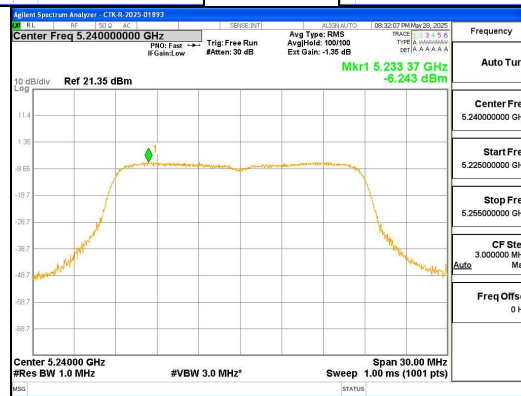
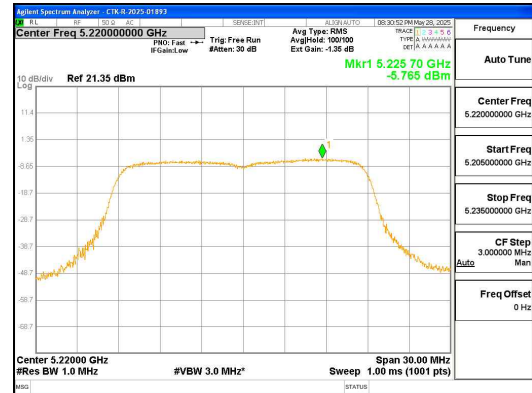
802.11n_HT20_UNII-3



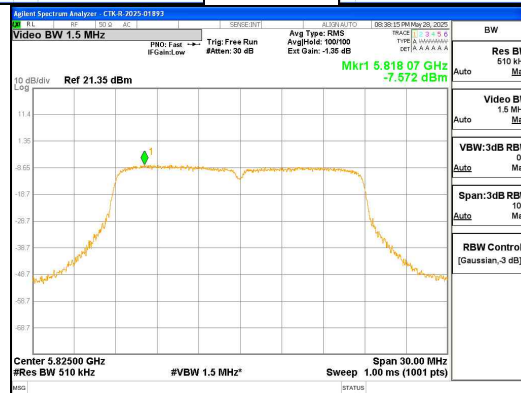
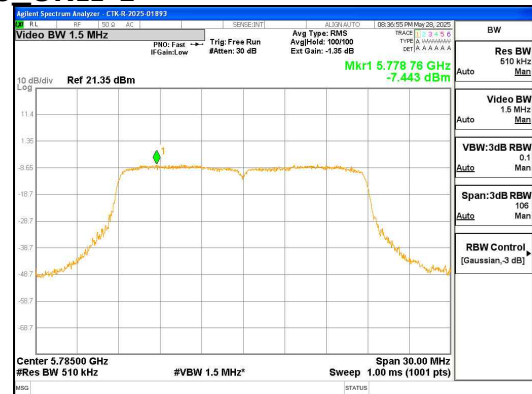
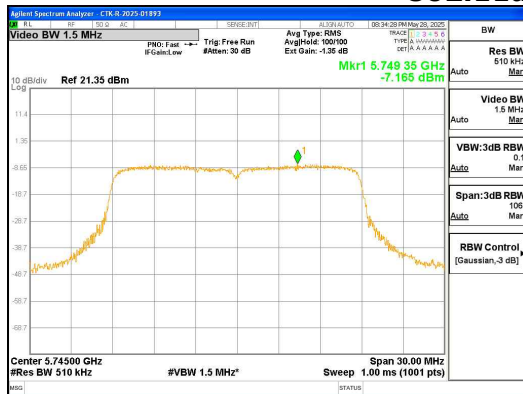
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2025-02084
Page (38) / (87) Pages



802.11ac_VHT20_UNII-1



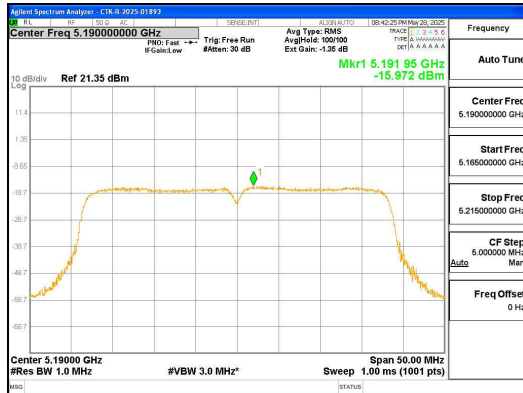
802.11ac_VHT20_UNII-3



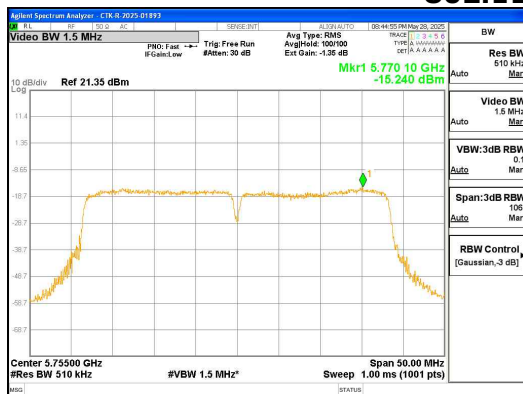
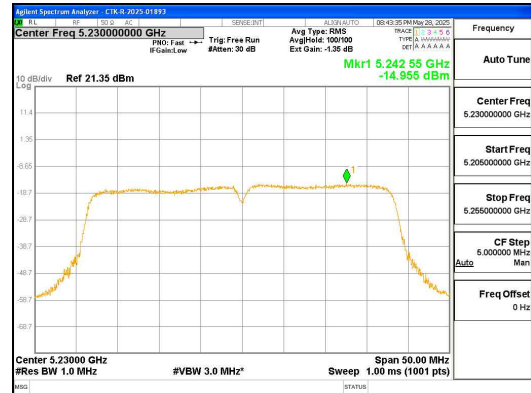
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

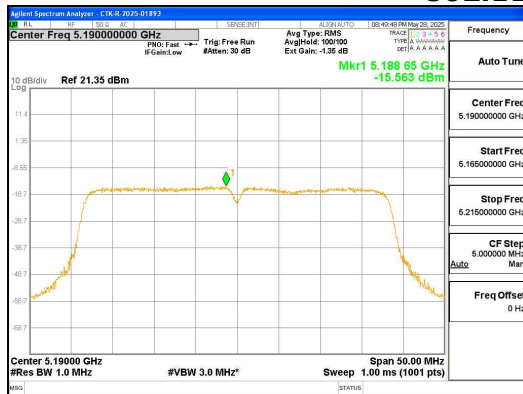
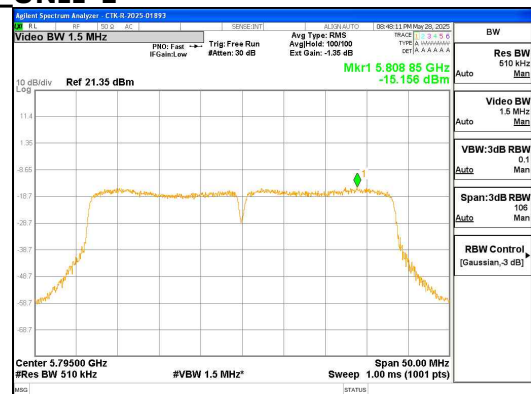
Report No.:
CTK-2025-02084
Page (39) / (87) Pages



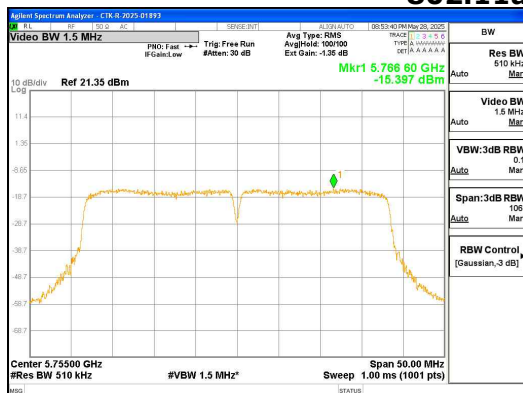
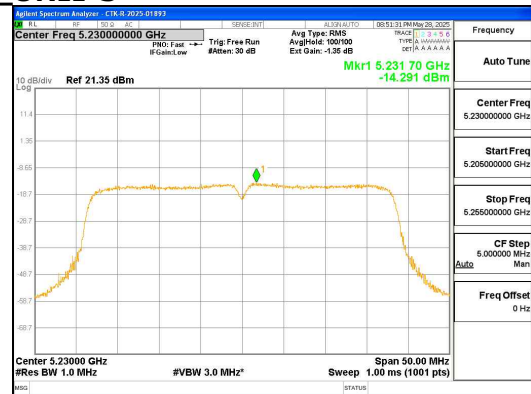
802.11n_HT40_UNII-1



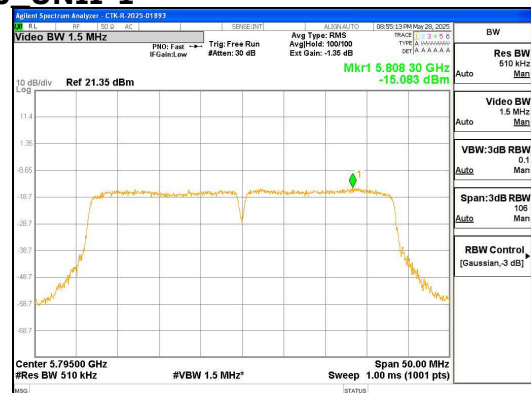
802.11n_HT40_UNII-3



802.11ac_VHT40_UNII-1



802.11ac_VHT40_UNII-3

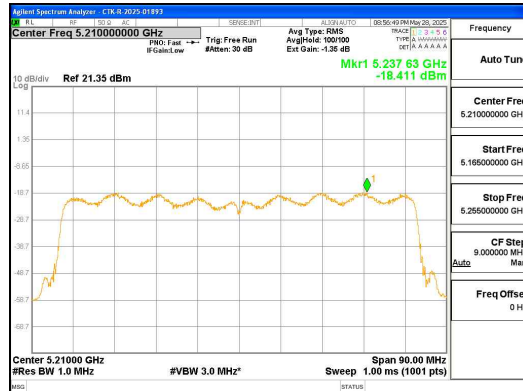




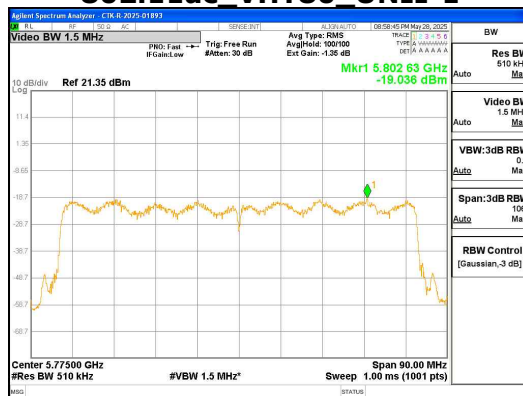
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2025-02084
Page (40) / (87) Pages



802.11ac_VHT80_UNII-1



802.11ac_VHT80_UNII-3

**CTK Co., Ltd.**

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2025-02084
Page (41) / (87) Pages

4.5 Frequency Stability

Test Procedures

KDB 789033 – Section A.3

RSS-Gen – Section 6.11

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -20 °C and +60 °C (Declaration by the Manufacturer). The temperature was incremented by 10 °C intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded.

Data for the worst case channel is shown below.

Temperature (°C)	-20	-10	0	10	20	30	40	50	60
Frequency	Measured Frequency Error (Hz)								
5 180 MHz	9 173	3 298	-1 700	-11 717	-26 241	-42 756	-47 840	-48 720	-45 459
5 220 MHz	9 282	3 254	-2 360	-13 428	-35 807	-43 228	-48 609	-48 637	-45 541
5 240 MHz	14 390	2 807	-2 940	-14 977	-37 055	-43 906	-48 936	-48 868	-45 416
5 745 MHz	10 693	3 561	-3 991	-18 056	-41 156	-48 538	-53 739	-53 496	-49 455
5 785 MHz	12 816	4 591	-5 137	-18 969	-42 169	-49 398	-54 201	-53 792	-49 345
5 825 MHz	13 810	3 417	-5 914	-20 746	-44 908	-50 050	-54 587	-54 077	-49 200

Note :

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature range as tested.