TEST REPORT

KCTL KCTL Inc.
65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
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KCTL

1. Client

- Name : Samsung Electronics Co., Ltd.
- Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
- Date of Receipt : 2020-04-24

2. Use of Report : Certification

3. Name of Product / Model : Tablet PC / SM-T976B

4. Manufacturer / Country of Origin : Samsung Electronics Co., Ltd. / Vietnam

5. FCC ID : A3LSMT976B

6. Date of Test : 2020-05-09 to 2020-06-22

7. Location of Test : ■ Permanent Testing Lab □ On Site Testing (Address: Address of testing location)

8. Test method used : FCC Part 15 Subpart E, 15.407

9. Test Results : Refer to the test result in the test report

Affirmation	Tested by Name : Taeyoung Kim (signature)	Technical Manager Name : Seungyong Kim (signature)

2020-06-30

KCTL Inc.

REPORT REVISION HISTORY

Date	Revision	Page No
2020-06-24	Originally issued	-
2020-06-30	Updated data	4, 5, 17, 34

Note. The report No. KR20-SRF0152 is superseded by the report No. KR20-SRF0152-A.

General remarks for test reports

Nothing significant to report.

CONTENTS

1. General information

Client	:	Samsung Electronics Co., Ltd.
Address	:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Manufacturer	:	Samsung Electronics Co., Ltd.
Address	:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Factory	:	Samsung Electronics Vietnam Thai Nguyen Co., Ltd
Address	:	Yen binh Industrial Zone Pho Ten Dist., Thai Nguyen Province, Vietnam
Laboratory	:	KCTL Inc.
Address	:	65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
Accreditations	:	FCC Site Designation No: KR0040, FCC Site Registration No: 687132 VCCI Registration No. : R-20080, G-20078, C-20059, T-20056 Industry Canada Registration No. : 8035A KOLAS No.: KT231

2. Device information

Equipment under test	:	Tablet PC
Model	:	SM-T976B
Modulation technique	:	Bluetooth(BDR/EDR)_ GFSK, π/4DQPSK, 8DPSK Bluetooth(BLE)_GFSK WIFI(802.11a/b/g/n/ac/ax)_DSSS, OFDM, OFDMA WPT_AM LTE_QPSK, 16QAM, 64QAM, 256QAM WCDMA_QPSK GSM_GMSK, 8-PSK
Number of channels	:	Bluetooth(BDR/EDR)_79 ch / Bluetooth(BLE)_40 ch 802.11b/g/n/ac/ax_HT20/VHT20/HE20 : 13 ch UNII-1: 4 ch (20 ㎒), 2 ch (40 ㎒), 1 ch (80 ㎒) UNII-2A: 4 ch (20 ㎒), 2 ch (40 ㎒), 1 ch (80 ㎒) UNII-2C: 12 ch (20 ㎒), 6 ch (40 ㎒), 3 ch (80 ㎒) UNII-3: 5 ch (20 ㎒), 2 ch (40 ㎒), 1 ch (80 ㎒) WPT_1 ch
Power source	:	DC 3.86 Ⅴ
Antenna specification	:	LTE/WCDMA_Metal Antenna WIFI/Bluetooth(BDR/EDR/BLE)_ Metal Antenna Loop Coil Antenna_Flat type (WPT)

Antenna gain	:	WIFI/Bluetooth(BDR/EDR/BLE)_ ANT 1 : -5.71 dBi, ANT 2 : -6.52 dBi
		UNII-1 ANT 1 : -8.45 dBi, ANT 2 : -8.84 dBi
		UNII-2A ANT 1 : -6.15 dBi, ANT 2 : -8.46 dBi
		UNII-2C ANT 1 : -6.05 dBi, ANT 2 : -8.57 dBi
		UNII-3 ANT 1 : -8.65 dBi, ANT 2 : -7.70 dBi
Frequency range	:	Bluetooth(BDR/EDR/BLE)_2 402 ㎒ ~ 2 480 ㎒
		2 412 ㎒ ~ 2 472 ㎒ (802.11b/g/n/ac/ax_HT20/VHT20/HE20)
		UNII-1: 5 180 ㎒ ~ 5 240 ㎒ (802.11a/n/ac/ax_HT20/VHT20/HE20)
		UNII-1: 5 190 ㎒ ~ 5 230 ㎒ (802.11n/ac/ax_HT40/VHT40/HE40)
		UNII-1: 5 210 ㎒ (802.11ac/ax_VHT80/HE80)
		UNII-2A: 5 260 ㎒ ~ 5 320 ㎒ (802.11a/n/ac/ax_HT20/VHT20/HE20)
		UNII-2A: 5 270 ㎒ ~ 5 310 ㎒ (802.11n/ac/ax_HT40/VHT40/HE40)
		UNII-2A: 5 290 ㎒ (802.11ac/ax_VHT80/HE80)
		UNII-2C: 5 500 ㎒ ~ 5 720 ㎒ (802.11a/n/ac/ax_HT20/VHT20/HE20)
		UNII-2C: 5 510 ㎒ ~ 5 710 ㎒ (802.11n/ac/ax_HT40/VHT40/HE40)
		UNII-2C: 5 530 ㎒ ~ 5 690 ㎒ (802.11ac/ax_VHT80/HE80)
		UNII-3: 5 745 ㎒ ~ 5 825 ㎒ (802.11a/n/ac/ax_HT20/VHT20/HE20)
		UNII-3: 5 755 ㎒ ~ 5 795 ㎒ (802.11n/ac/ax_HT40/VHT40/HE40)
		UNII-3: 5 775 ㎒ (802.11ac/ax_VHT80/HE80)
		LTE Band 2_1 850.7 ㎒ ~ 1909.3 ㎒
		LTE Band 4_1 710.7 ㎒ ~ 1754.3 ㎒
		LTE Band 5_824.7 ㎒ ~ 848.3 ㎒
		LTE Band 12_699.7 ㎒ ~ 715.3 ㎒
		LTE Band 13_779.5 ㎒ ~ 784.5 ㎒
		LTE Band 25_1850.7 ㎒ ~ 1914.3 ㎒
		LTE Band 26_824.7 ㎒ ~ 848.3 ㎒, 814.7 ㎒ ~ 824.0 ㎒
		LTE Band 41_2 498.5 ㎒ ~ 2 687.5 ㎒
		LTE Band 66_1 710.7 ㎒ ~ 1779.3 ㎒
		GSM 850_824.2 ㎒ ~ 848.8 ㎒
		GSM 1900_1 850.2 ㎒ ~ 1 909.8 ㎒
		WCDMA 850_826.4 ㎒ ~ 846.6 ㎒
		WCDMA 1700_1 712.4 ㎒ ~ 1752.6 ㎒
		WCDMA 1900_1 852.4 ㎒ ~ 1907.6 ㎒
		WPT_530 ㎑ ~ 600 ㎑
Software version	:	T976B.001
Hardware version	:	REV0.4
Test device serial No.	:	Conducted(R32N400F37D, R32N4006KBV, 42d9c794931f7ece)
		Radiated(R32N400EZHV, R32N406LHH)
Operation temperature	:	-30 ℃ ~ 50 ℃

2.1. Accessory information

Equipment	Manufacturer	Model	Serial No.	Power source	FCC ID
Travel Adapter	Samsung Electronics Co., Ltd	EP-TA800	-	Input : 100-240V, 50-60㎐ Output : (PDO) 5.0V, 3A or 9.0V, 2.77A (PPS) 3.3-5.9V, 3A or 3.3-11.0V, 2.25A	-
Data Cable	Samsung Electronics Co., Ltd	EP-DT725BBE	-	-	-
Stylus Pen	Samsung Electronics Co., Ltd	EJ-PT870	-	DC 2.75 Ⅴ	A3LEJPT870
Earphone	Samsung Electronics Co., Ltd	EHS64	-	-	-
External Keyboard	Samsung Electronics Co., Ltd	EF-DT970	-	DC 3.30 Ⅴ	-

2.2. Frequency/channel operations

This device contains the following capabilities:
WIFI(802.11a/b/g/n/ac/ax), Bluetooth(BDR/EDR/BLE), WPT,
LTE Band 2, LTE Band 4, LTE Band 5, LTE Band 12, LTE Band 13, LTE Band 25, LTE Band 26, LTE Band 41, LTE Band 66, GSM 850, GSM 1900, WCDMA 850, WCDMA 1700, WCDMA 1900

UNII-1		UNII-2A		UNII-2C		UNII-3	
Ch.	Frequency (㎒)	Ch.	Frequency (㎒)	Ch.	Frequency (㎒)	Ch.	Frequency (㎒)
36	5 180	52	5 260	100	5 500	149	5 745
40	5 200	56	5 280	120	5 580	157	5 785
48	5 240	64	5 320	140	5 700	165	5 825
				144	5 720		

Table 2.2-1. 802.11a/n/ac_HT20/VHT20 mode

UNII-1		UNII-2A		UNII-2C		UNII-3	
Ch.	Frequency (㎒)	Ch.	Frequency (㎒)	Ch.	Frequency (㎒)	Ch.	Frequency (㎒)
38	5 190	54	5 270	102	5 510	151	5 755
46	5 230	62	5 310	118	5 590	159	5 795
				134	5 670		
				142	5 710		

Table 2.2-2. 802.11n/ac_HT40/VHT40 mode

UNII-1		UNII-2A		UNII-2C		UNII-3	
Ch.	Frequency (㎒)	Ch.	Frequency (㎒)	Ch.	Frequency (㎒)	Ch.	Frequency (㎒)
42	5 210	58	5 290	106	5 530	155	5 775
				122	5 610		
				138	5 690		

Table 2.2-3. 802.11ac_VHT80 mode

2.3. Simultaneous Tx Condition

For Simultaneous mode (Bluetooth, WLAN), please refer to
Test report #KR20-SRF0158_02161_Samsung Electronics_SM-T976B_WiFi(P15.407)_ax.

2.4. Duty Cycle Factor

SISO

Test mode	T_{on} time (ms)	Period (ms)	Duty cycle		Duty cycle factor (dB)
			(Linear)	(%)	
802.11a	1.481 5	1.463 0	0.987 5	98.75	0.05
802.11n_HT20	5.435 4	5.417 4	0.996 7	99.67	0.01
802.11n_HT40	5.435 4	5.417 4	0.996 7	99.67	0.01
802.11ac_VHT20	5.435 4	5.417 4	0.996 7	99.67	0.01
802.11ac_VHT40	5.433 7	5.417 4	0.997 0	99.70	0.01
802.11ac_VHT80	5.435 4	5.417 4	0.996 7	99.67	0.01

MIMO

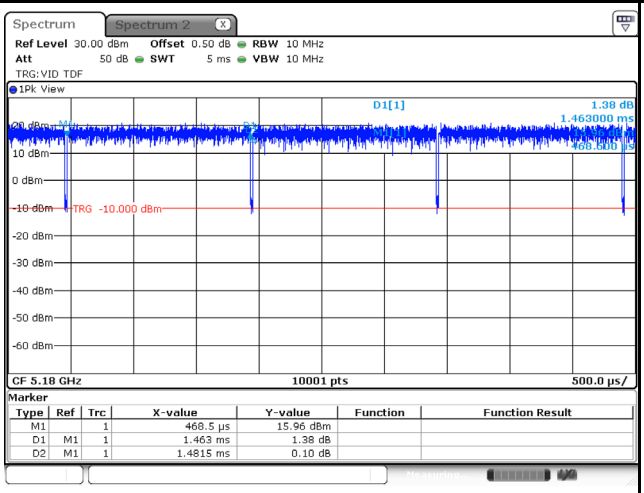
Test mode	T_{on} time (ms)	Period (ms)	Duty cycle		Duty cycle factor (dB)
			(Linear)	(%)	
802.11a	1.481 5	1.464 0	0.988 2	98.82	0.05
802.11n_HT20	5.437 1	5.417 4	0.996 4	99.64	0.02
802.11n_HT40	5.435 4	5.417 4	0.996 7	99.67	0.01
802.11ac_VHT20	5.437 1	5.419 1	0.996 7	99.67	0.01
802.11ac_VHT40	5.435 4	5.417 4	0.996 7	99.67	0.01
802.11ac_VHT80	5.433 7	5.417 4	0.997 0	99.70	0.01

Notes.

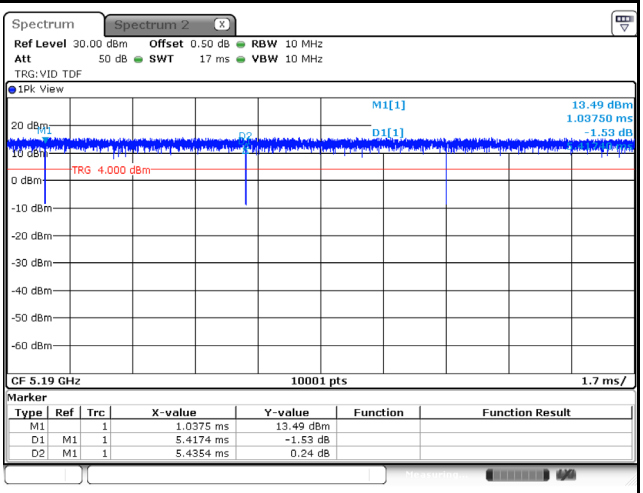
1. Duty cycle (Linear) = T_{on} time / Period
2. DCF(Duty cycle factor) = 10log(1/duty cycle)
3. DCF is not compensated to Average result because duty cycle is more than 98%

SISO

802.11a



802.11n_HT20



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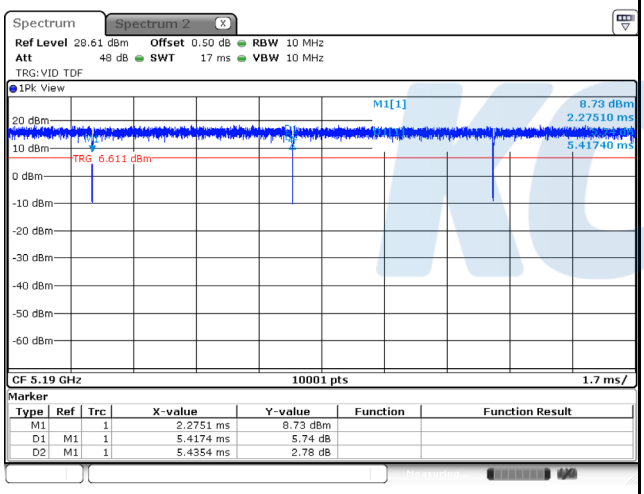
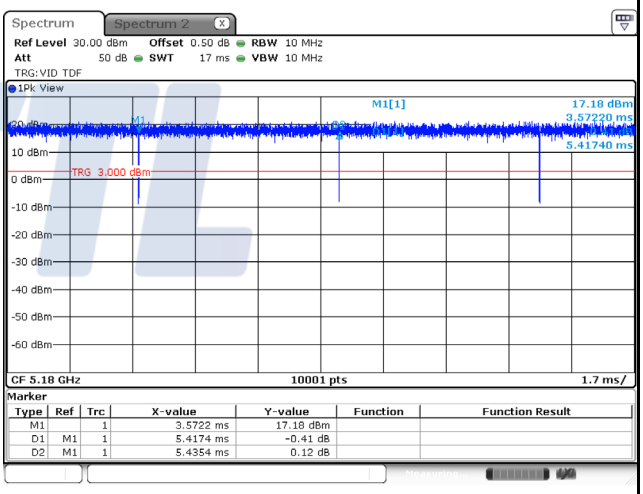


802.11ac_VHT20



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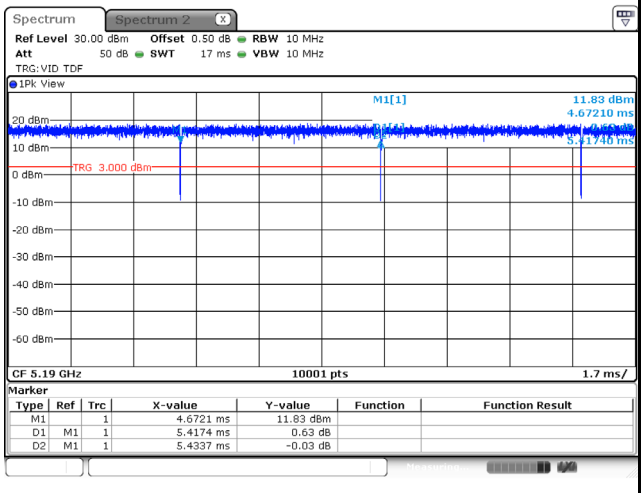
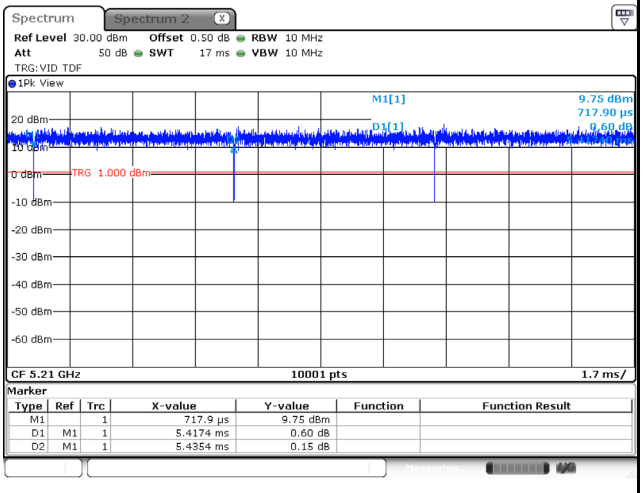
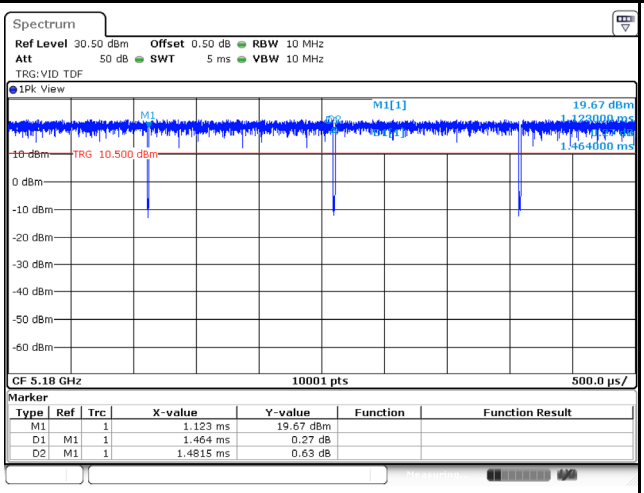


802.11ac_VHT80

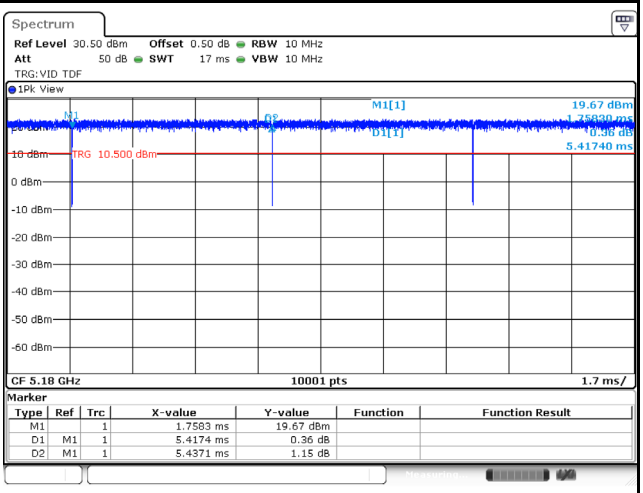


MIMO

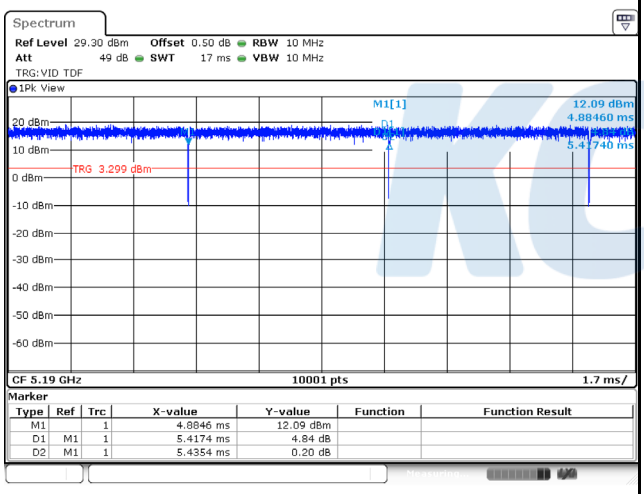
802.11a



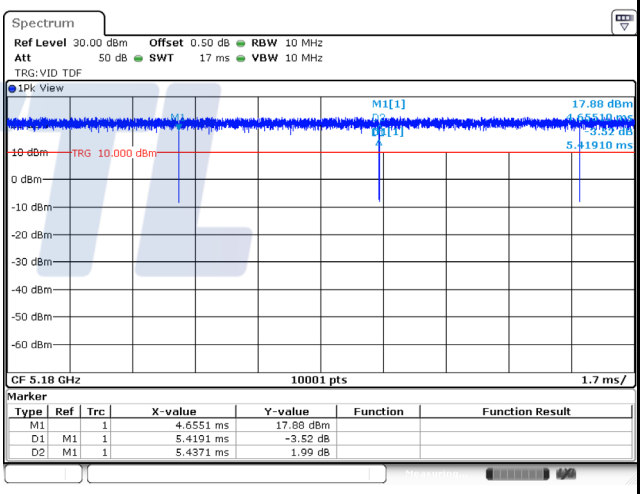
802.11n_HT20



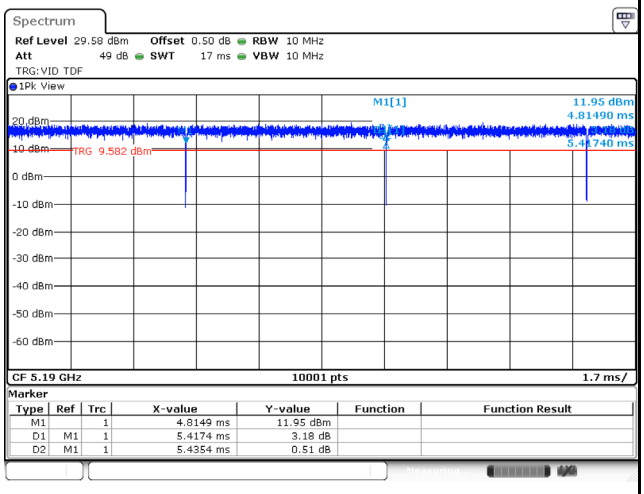
802.11n_HT40



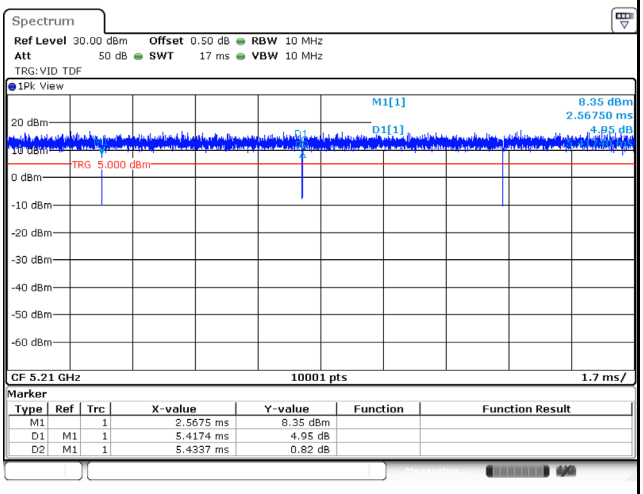
802.11ac_VHT20



802.11ac_VHT40



802.11ac_VHT80



3. Antenna requirement

Requirement of FCC part section 15.203, 15.407:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

- The transmitter has permanently attached Metal Antenna (internal antenna) on board.

3.1 Antenna information

Mode	SISO		CDD	MIMO
	ANT 1	ANT 2	ANT 1 + 2	ANT 1 + 2
802.11a	√	√	√	X
802.11n HT20	√	√	√	√
802.11n HT40	√	√	√	√
802.11ac VHT20	√	√	√	√
802.11ac VHT40	√	√	√	√
802.11ac VHT80	√	√	√	√

√ = Support, X = Not support

3.2 Directional Gain Calculations

According to clause F), 2), d), (i) of KDB 662911 D01 Multiple Transmitter Output, Directional gain may be calculated by using the formulas as below.

3.2.1. Directional Antenna Gain with equal gain

Band	ANT 1 Gain (dBi)	ANT 2 Gain (dBi)	Power Directional Gain (dBi)
UNII 1	-8.45	-8.84	-5.63
UNII 2A	-6.15	-8.46	-4.14
UNII 2C	-6.05	-8.57	-4.12
UNII 3	-8.65	-7.70	-5.14

Note.
Unequal antenna gains, with equal transmit powers. For antenna gains given by G_1, G_2, …, G_N dBi
Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] dBi

4. Summary of tests

FCC Part section(s)	Parameter	Test results
15.407(a)	Maximum conducted output power	Pass
15.407(a)	Maximum power spectral density	Pass
15.407(a)	26 dB Channel Bandwidth	Pass
15.407(e)	6 dB Channel Bandwidth	Pass
15.407(g)	Frequency stability	Pass
15.407(b), 15.205(a), 15.209(a)	Spurious emission	Pass
	Band-edge, restricted band	Pass
15.207(a)	Conducted Emissions	Pass

Notes:

1. All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
2. According to exploratory test no any obvious emission were detected from 9 ㎑ to 30 ㎒. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30 m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.
3. The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z. It was determined that **X** orientation was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in **X** orientation.
4. All the radiated tests have been performed several case.
   (stand alone, with accessories (keyboard, earphone, etc.))
   Worst case : stand alone
5. The test procedure(s) in this report were performed in accordance as following.
   - ANSI C63.10-2013
   - KDB 662911 D01 v02r01
   - KDB 789033 D02 v02r01
6. Based on the baseline scan, the worst-case data rates were:
   SISO Antenna: 802.11b mode : 1Mbps
   802.11g mode : 6Mbps
   802.11n HT20 mode : MCS0
   802.11n HT40 mode : MCS0
   802.11n VHT20 mode : MCS0
   802.11n VHT40 mode : MCS0
   802.11n VHT80 mode : MCS0

5. Measurement uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of k=2 to indicated a 95 % level of confidence. The measurement data shown herein meets of exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded uncertainty (±)	
Conducted RF power	1.76 dB	
Conducted spurious emissions	4.03 dB	
Radiated spurious emissions	9 kHz ~ 30 MHz:	2.28 dB
	30 MHz ~ 300 MHz	4.98 dB
	300 MHz ~ 1 000 MHz	5.14 dB
	1 GHz ~ 6 GHz	6.70 dB
	Above 6 GHz	6.60 dB
Conducted emissions	9 kHz ~ 150 kHz	3.66 dB
	150 kHz ~ 30 MHz	3.26 dB

6. Measurement results explanation example

The offset level is set in the spectrum analyzer to compensate the RF cable loss factor between EUT conducted output port and spectrum analyzer.
With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

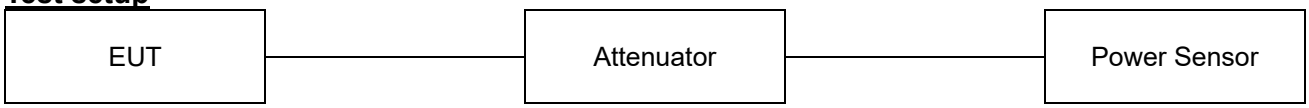
Frequency (㎒)	Factor(㏈)	Frequency (㎒)	Factor(㏈)
30	9.64	9 000	12.06
50	9.78	10 000	12.12
100	9.88	11 000	12.42
200	10.06	12 000	12.50
300	10.16	13 000	12.58
400	10.24	14 000	12.73
500	10.30	15 000	12.84
600	10.37	16 000	12.89
700	10.41	17 000	12.99
800	10.46	18 000	13.06
900	10.50	19 000	13.13
1 000	10.54	20 000	13.36
2 000	10.55	21 000	13.49
3 000	11.01	22 000	13.46
4 000	11.08	23 000	13.48
5 000	11.30	24 000	13.51
6 000	11.62	25 000	13.57
7 000	11.66	26 000	13.45
8 000	11.70	26 500	13.53

Notes:
Offset(㏈) = RF cable loss(㏈) + Attenuator(㏈)

7. Test results

7.1. Maximum conducted output power

Test setup



Limit

According to §15.407(a),

Band	EUT category		Conducted output power limit
UNII-1		Outdoor access point	1 W (30 dBm)
		Indoor access point	
		Fixed point-to-point access point	
	√	Client device	250 mW (23.98 dBm)
UNII-2A	√		250 mW or 11 dBm + 10logB[1)]
UNII-2C	√		250 mW or 11 dBm + 10logB[1)]
UNII-3	√		1 W (30 dBm)

Note:

1) Conducted output power limit B is the 26 dB emission bandwidth.

Test procedure

ANSI C63.10-2013-Section 12.3.3.2 and 14.2
KDB 789033 D02 v02r01 - Section E.2.d) or e)
KDB 662911 D01 v02r01 – Section E).1)

Test settings
Used test method is Section E.2.d)

◆ KDB 789033 D02 v02r01

Section E.2.d)
Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction):

(i) Measure the duty cycle, x, of the transmitter output signal as described in II.B..
(ii) Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
(iii) Set RBW = 1 ㎒
(iv) Set RBW ≥ 3 ㎒
(v) Number of points in sweep ≥ 2×span/RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
(vi) Sweep time = auto.
(vii) Detector = power averaging (rms), if available. Otherwise use sample detector mode.
(viii) Do not use sweep triggering. Allow the sweep to “free run.”
(ix) Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.
(x) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 ㎒ intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
(xi) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add 10 log(1/0,25) = 6 ㏈ if the duty cycle is 25%.

Section E.2.e)
Method SA-2 Alternative (power averaging(rms) detection with slow sweep with each spectrum bin averaging across on and off times of the EUT transmissions, followed by duty cycle correction):

(i) Measure the duty cycle, x, of the transmitter output signal as described in II.B..
(ii) Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
(iii) Set RBW = 1 ㎒
(iv) Set RBW ≥ 3 ㎒
(v) Number of points in sweep ≥ 2×span/RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
(vi) Manually set sweep time ≥ 10 × (number of points in sweep) × (total on/off period of the transmitted signal).
(vii) Set detector = power averaging (rms)
(viii) Perform a single sweep.
(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement

function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 ㎒ intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

(x) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add 10 log(1/0,25) = 6 ㏈ if the duty cycle is 25%.

Section E.3.a)
Method PM (Measurement using an RF average power meter):

(xi) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied.

- The EUT is configured to transmit continuously or to transmit with a constant duty cycle.
- At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
- The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five

(xii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in Ⅱ

(xiii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

(xiv) Adjust the measurement in ㏈m by adding 10 log (1/x) where x is the duty cycle (e.g., 10 log (1/0.25) if the duty cycle is 25%).

Section E.3.b)
Method PM-G (Measurement using a gated RF average power meter):
Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

Test results

SISO

Test mode	Band	Frequency (MHz)	Measured output power					Limit (dBm)
			Reading (dBm)		DCF (dB)	Result (dBm)		
			ANT1	ANT2		ANT1	ANT2	
802.11a	UNII 1	5 180	16.68	16.94	-	16.68	16.94	24.00
		5 200	17.48	16.85	-	17.48	16.85	
		5 240	17.33	16.83	-	17.33	16.83	
	UNII 2A	5 260	17.71	17.17	-	17.71	17.17	24.00
		5 280	17.75	17.14	-	17.75	17.14	
		5 320	17.33	17.03	-	17.33	17.03	
	UNII 2C	5 500	15.29	15.28	-	15.29	15.28	24.00
		5 580	15.15	14.99	-	15.15	14.99	
		5 700	15.06	15.62	-	15.06	15.62	
	UNII 3	5 745	15.39	15.09	-	15.39	15.09	30.00
		5 785	15.43	15.37	-	15.43	15.37	
		5 825	15.28	15.44	-	15.28	15.44	
802.11n HT20	UNII 1	5 180	16.63	15.60	-	16.63	15.60	24.00
		5 200	16.44	15.56	-	16.44	15.56	
		5 240	16.40	15.48	-	16.40	15.48	
	UNII 2A	5 260	16.60	15.83	-	16.60	15.83	24.00
		5 280	16.70	15.81	-	16.70	15.81	
		5 320	16.21	15.87	-	16.21	15.87	
	UNII 2C	5 500	16.91	16.03	-	16.91	16.03	24.00
		5 580	16.62	15.80	-	16.62	15.80	
		5 700	15.93	15.58	-	15.93	15.58	
	UNII 3	5 745	16.13	16.25	-	16.13	16.25	30.00
		5 785	16.27	16.23	-	16.27	16.23	
		5 825	16.12	15.39	-	16.12	15.39	
802.11n HT40	UNII 1	5 190	13.50	13.07	-	13.50	13.07	24.00
		5 230	13.16	12.86	-	13.16	12.86	
	UNII 2A	5 270	13.03	13.44	-	13.03	13.44	24.00
		5 310	12.49	13.28	-	12.49	13.28	
	UNII 2C	5 510	16.58	15.91	-	16.58	15.91	24.00
		5 590	16.40	16.23	-	16.40	16.23	
		5 670	16.88	16.36	-	16.88	16.36	
	UNII 3	5 755	16.63	16.04	-	16.63	16.04	30.00
		5 795	15.92	15.58	-	15.92	15.58	

Test mode	Band	Frequency (㎒)	Measured output power					Limit (dBm)
			Reading (dBm)		DCF (dB)	Result (dBm)		
			ANT1	ANT2		ANT1	ANT2	
802.11ac VHT20	UNII 1	5 180	16.60	15.44	-	16.60	15.44	24.00
		5 200	16.47	15.40	-	16.47	15.40	
		5 240	16.21	15.37	-	16.21	15.37	
	UNII 2A	5 260	16.61	15.69	-	16.61	15.69	24.00
		5 280	16.72	15.65	-	16.72	15.65	
		5 320	16.21	15.70	-	16.21	15.70	
	UNII 2C	5 500	16.86	15.89	-	16.86	15.89	24.00
		5 580	16.58	15.62	-	16.58	15.62	
		5 700	15.86	15.43	-	15.86	15.43	
	UNII 3	5 745	15.99	16.13	-	15.99	16.13	30.00
		5 785	16.22	15.85	-	16.22	15.85	
		5 825	16.16	16.15	-	16.16	16.15	
802.11ac VHT40	UNII 1	5 190	14.48	14.12	-	14.48	14.12	24.00
		5 230	14.36	13.84	-	14.36	13.84	
	UNII 2A	5 270	14.08	14.43	-	14.08	14.43	24.00
		5 310	13.55	14.34	-	13.55	14.34	
	UNII 2C	5 510	14.48	14.47	-	14.48	14.47	24.00
		5 590	13.93	13.13	-	13.93	13.13	
		5 670	14.39	14.28	-	14.39	14.28	
	UNII 3	5 755	14.14	13.82	-	14.14	13.82	30.00
		5 795	13.38	13.40	-	13.38	13.40	
802.11ac VHT80	UNII 1	5 210	13.19	12.73	-	13.19	12.73	24.00
	UNII 2A	5 290	13.43	13.18	-	13.43	13.18	24.00
	UNII 2C	5 530	13.28	13.08	-	13.28	13.08	24.00
		5 610	13.54	13.39	-	13.54	13.39	
	UNII 3	5 775	13.52	13.30	-	13.52	13.30	30.00

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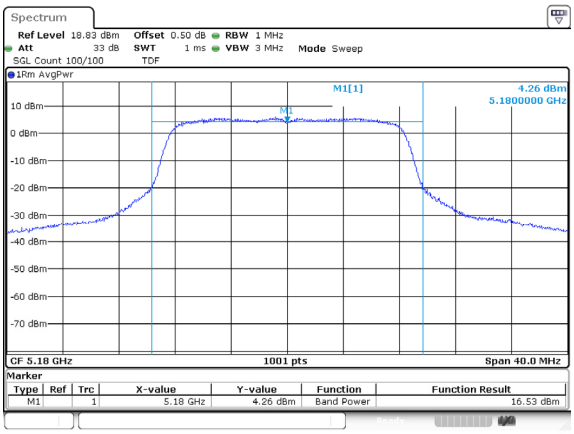
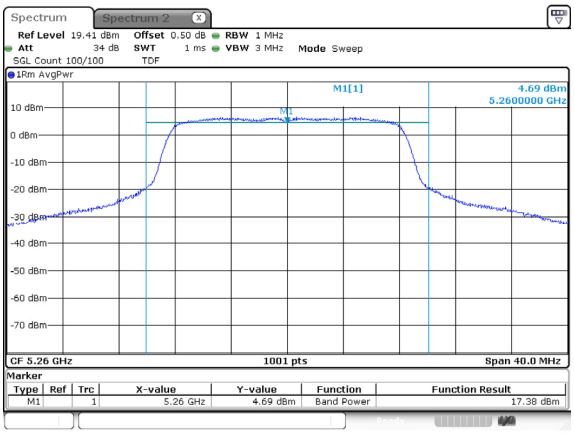
Test mode	Band	Frequency (㎒)	Measured output power				Limit (dBm)
			Reading (dBm)		DCF (dB)	Result (dBm)	
			ANT1	ANT2			
802.11a	UNII 1	5 180	16.53	15.58	-	19.09	24.00
		5 200	17.28	16.37	-	19.86	
		5 240	17.09	16.34	-	19.74	
	UNII 2A	5 260	17.38	16.63	-	20.03	24.00
		5 280	17.47	16.63	-	20.08	
		5 320	17.05	16.57	-	19.83	
	UNII 2C	5 500	15.33	15.38	-	18.37	24.00
		5 580	15.79	15.72	-	18.77	
		5 700	14.75	15.51	-	18.16	
	UNII 3	5 745	16.29	15.46	-	18.91	30.00
		5 785	15.38	15.61	-	18.51	
		5 825	16.19	15.67	-	18.95	
802.11n HT20	UNII 1	5 180	16.21	15.18	-	18.74	24.00
		5 200	16.04	15.10	-	18.61	
		5 240	15.82	15.05	-	18.46	
	UNII 2A	5 260	16.24	15.49	-	18.89	24.00
		5 280	16.34	15.31	-	18.87	
		5 320	15.88	15.56	-	18.73	
	UNII 2C	5 500	16.49	16.67	-	19.59	24.00
		5 580	16.27	16.37	-	19.33	
		5 700	15.50	16.21	-	18.88	
	UNII 3	5 745	16.45	15.89	-	19.19	30.00
		5 785	15.37	15.75	-	18.57	
		5 825	15.70	14.82	-	18.29	
802.11n HT40	UNII 1	5 190	13.99	12.89	-	16.49	24.00
		5 230	13.86	12.69	-	16.32	
	UNII 2A	5 270	13.60	12.21	-	15.97	24.00
		5 310	13.99	13.21	-	16.63	
	UNII 2C	5 510	15.94	15.61	-	18.79	24.00
		5 590	15.96	15.99	-	18.99	
		5 670	16.37	16.09	-	19.24	
	UNII 3	5 755	16.91	16.59	-	19.76	30.00
		5 795	16.39	16.43	-	19.42	

Test mode	Band	Frequency (㎒)	Measured output power				Limit (dBm)
			Reading (dBm)		DCF (dB)	Result (dBm)	
			ANT1	ANT2			
802.11ac VHT20	UNII 1	5 180	16.24	15.12	-	18.73	24.00
		5 200	16.06	15.10	-	18.62	
		5 240	15.81	15.01	-	18.44	
	UNII 2A	5 260	16.25	15.46	-	18.88	24.00
		5 280	16.37	15.42	-	18.93	
		5 320	15.91	15.50	-	18.72	
	UNII 2C	5 500	16.57	16.68	-	19.64	24.00
		5 580	16.30	16.37	-	19.35	
		5 700	15.54	16.12	-	18.85	
	UNII 3	5 745	16.59	15.84	-	19.24	30.00
		5 785	15.91	15.83	-	18.88	
		5 825	15.48	14.71	-	18.12	
802.11ac VHT40	UNII 1	5 190	14.96	13.83	-	17.44	24.00
		5 230	15.21	14.08	-	17.69	
	UNII 2A	5 270	15.47	14.22	-	17.90	24.00
		5 310	13.91	13.02	-	16.50	
	UNII 2C	5 510	14.47	14.24	-	17.37	24.00
		5 590	14.48	12.87	-	16.76	
		5 670	14.96	14.92	-	17.95	
	UNII 3	5 755	14.98	14.81	-	17.91	30.00
		5 795	14.29	14.34	-	17.33	
802.11ac VHT80	UNII 1	5 210	13.94	12.59	-	16.33	24.00
	UNII 2A	5 290	13.04	11.95	-	15.54	24.00
	UNII 2C	5 530	12.93	13.00	-	15.98	24.00
		5 610	13.24	13.23	-	16.25	
	UNII 3	5 775	13.09	13.19	-	16.15	30.00

Note.
1. Result(dB m) = $10\log(10^{(ANT\ 1/10)} + 10^{(ANT\ 2/10)})$

In order to simplify the report, attached plots were only MIMO
MIMO ANT 1

UNII-1 / 802.11a / Low ch.	UNII-2A / 802.11a / Low ch.
	
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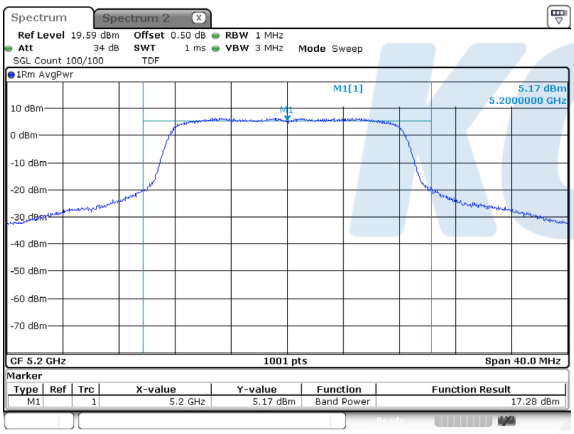	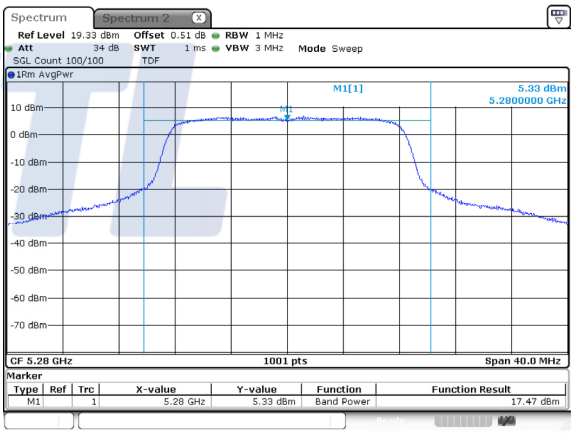
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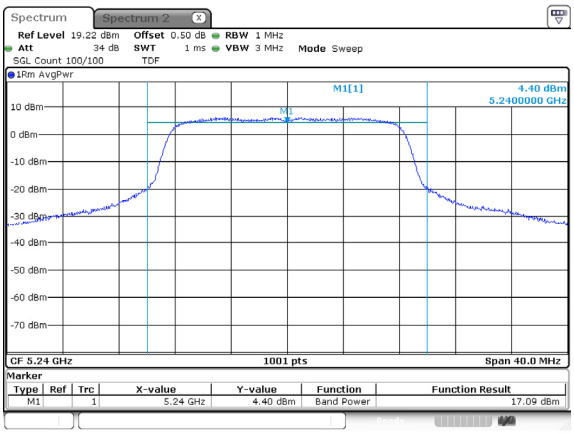
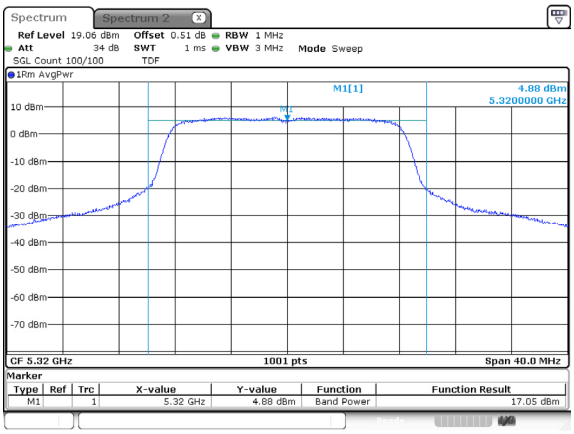
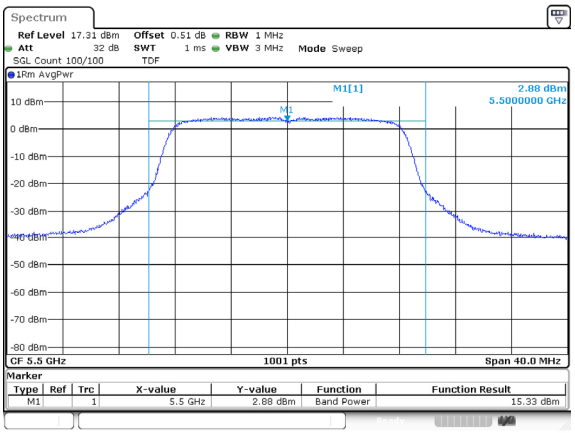
	

UNII-2C / 802.11a / Low ch.



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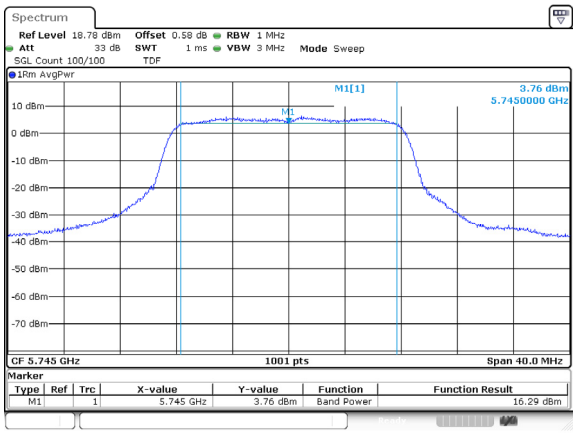

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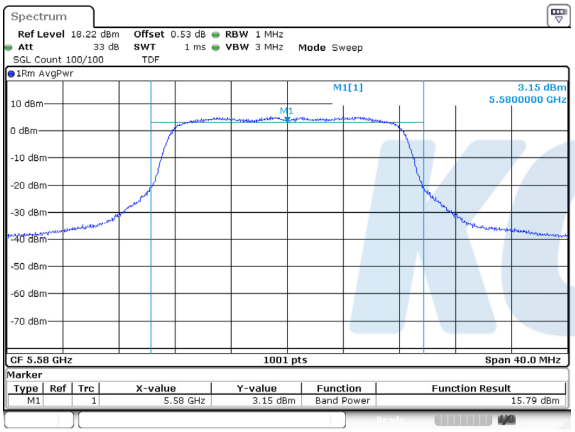

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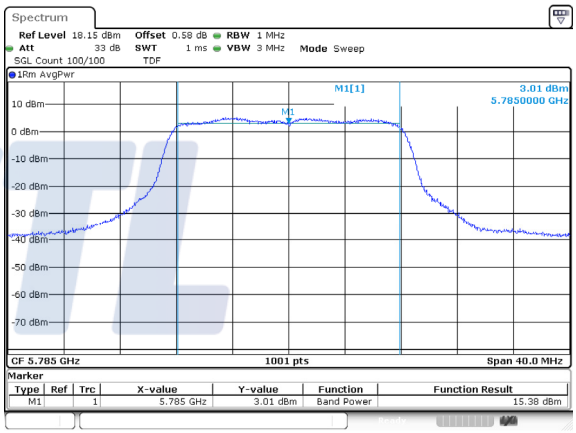

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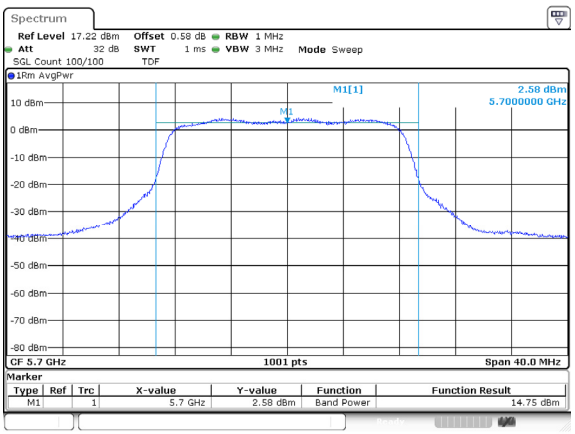

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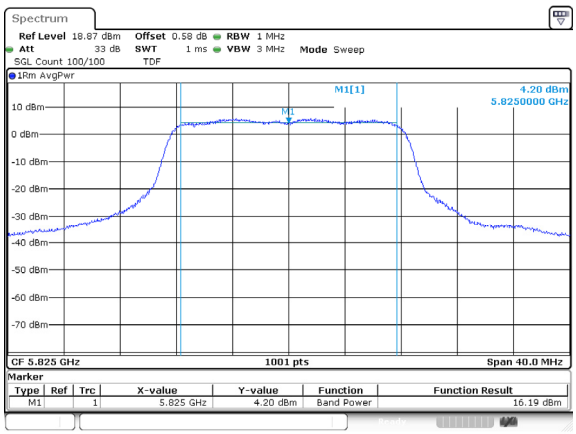
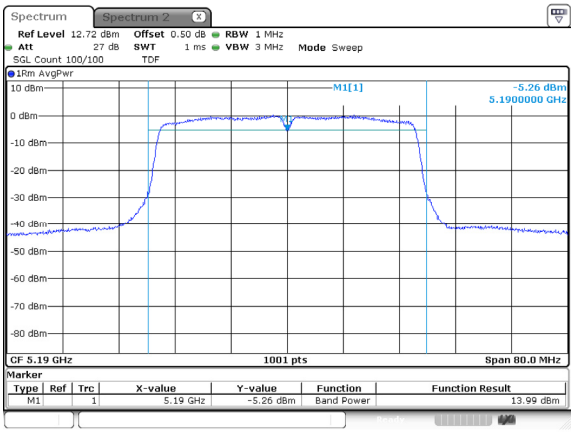
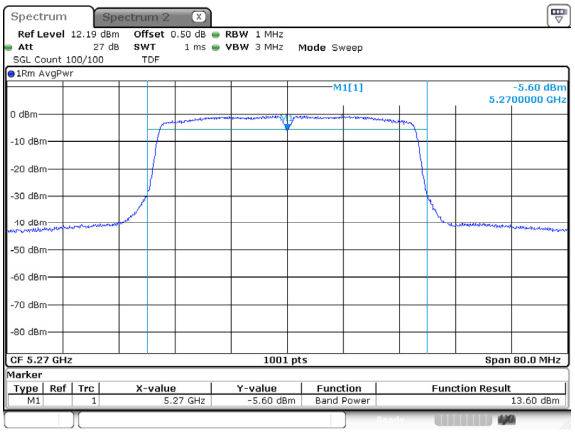
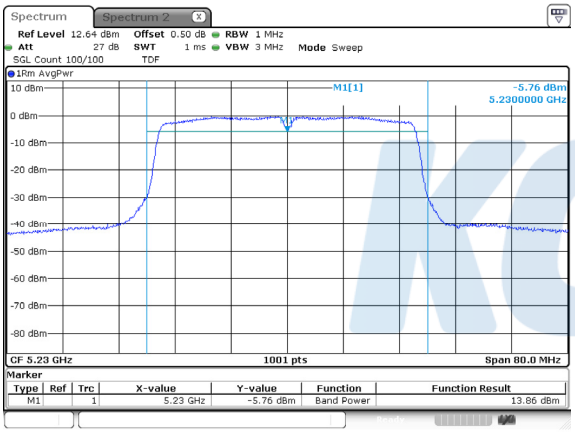
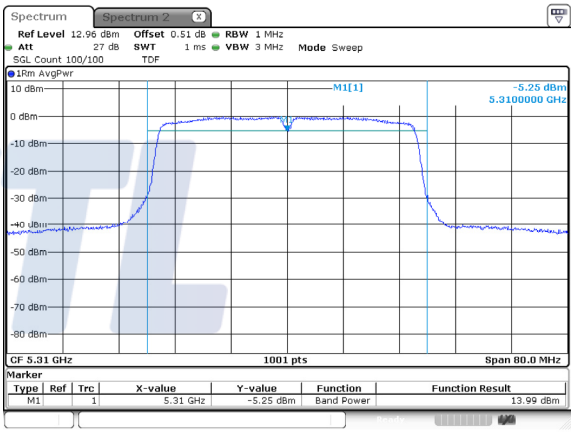


UNII-1 / 802.11n HT40 / Low ch.	UNII-2A / 802.11n HT40 / Low ch.
	
UNII-1 / 802.11n HT40 / High ch.	**UNII-2A / 802.11n HT40 / High ch.**
	

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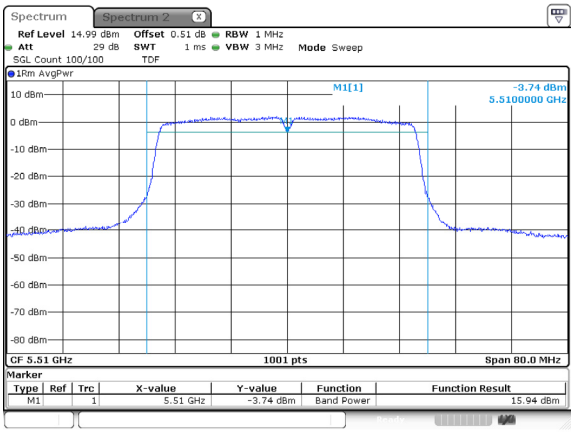

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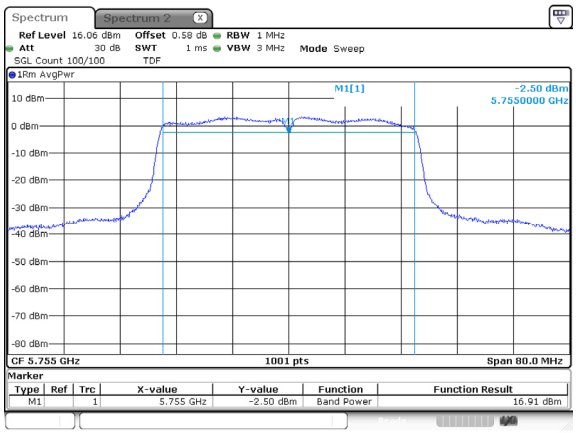

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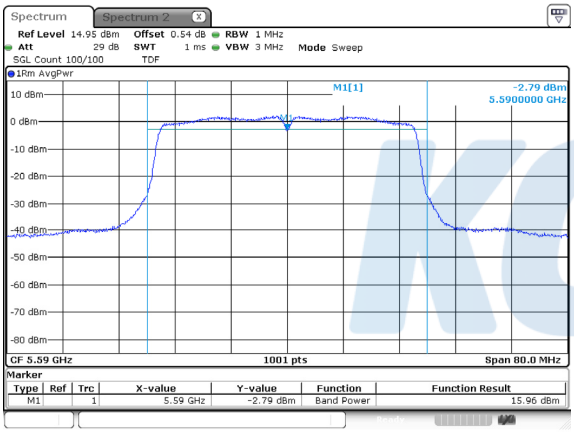

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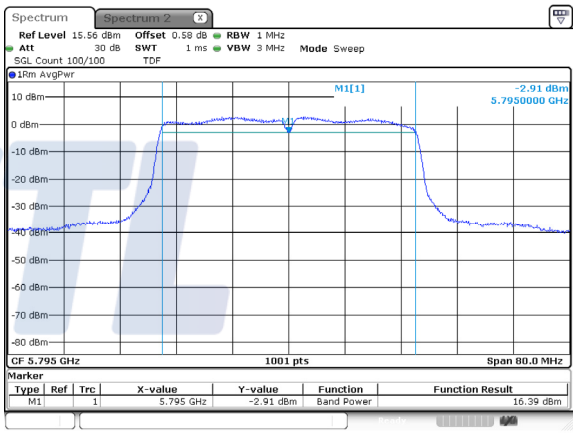

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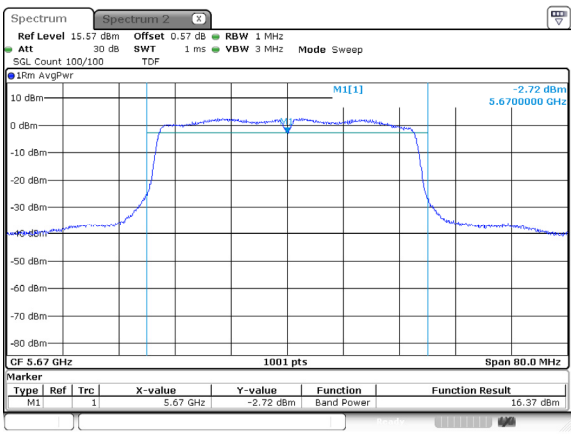

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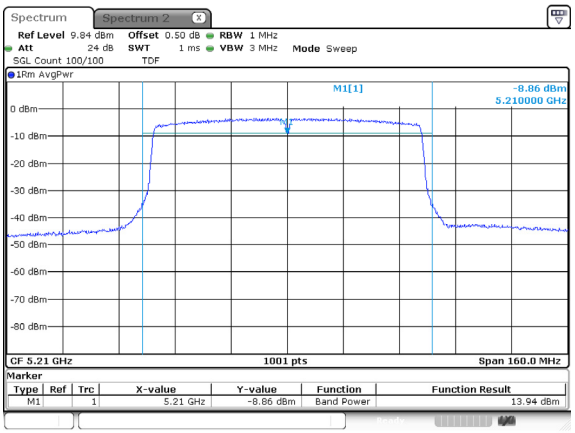	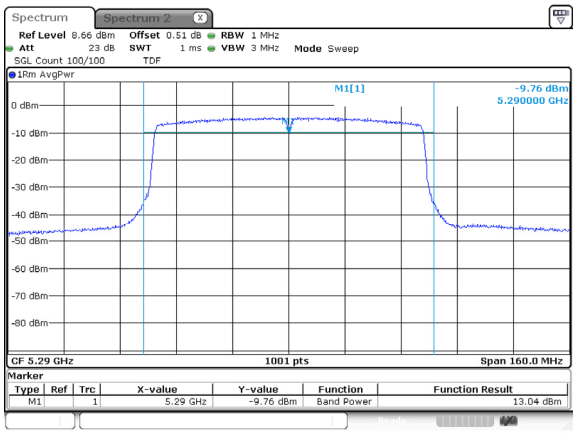
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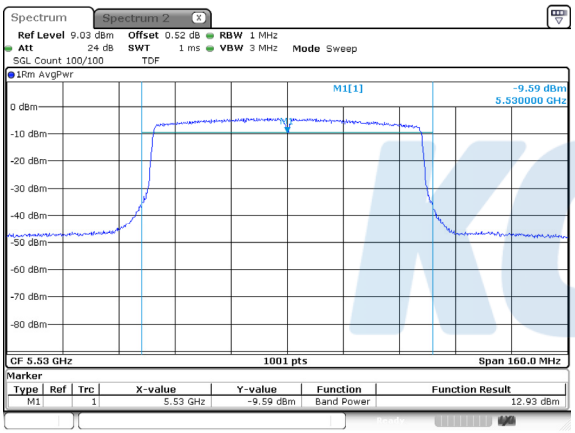	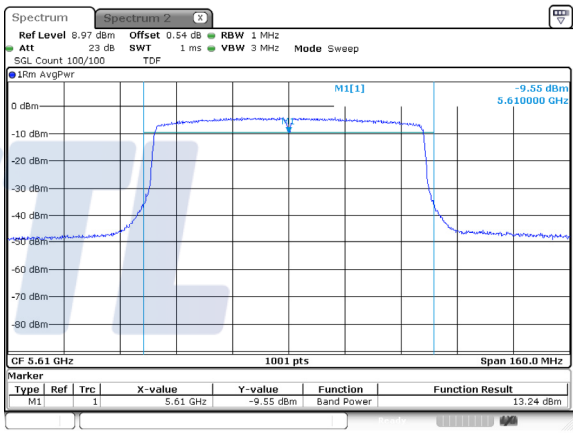
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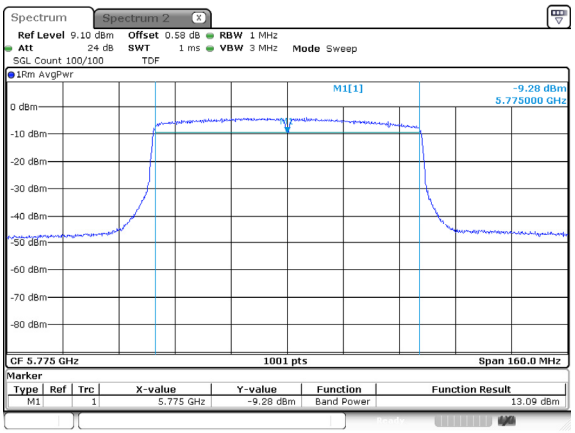
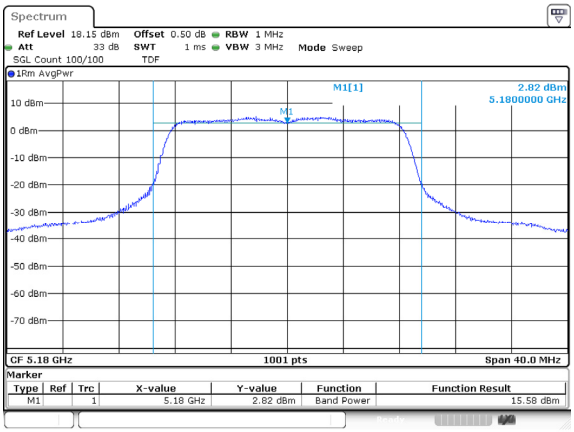
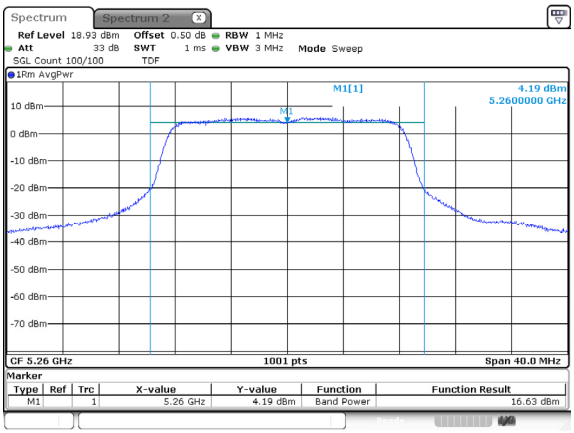
	Blank

MIMO ANT 2

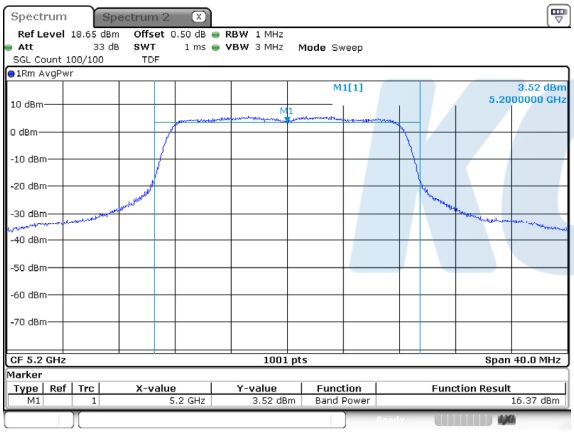
UNII-1 / 802.11a / Low ch.



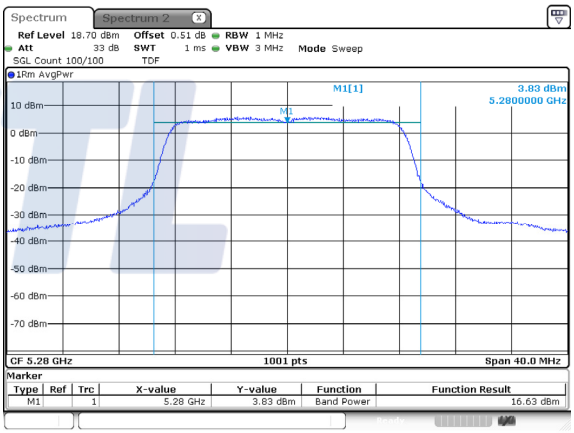
UNII-2A / 802.11a / Low ch.



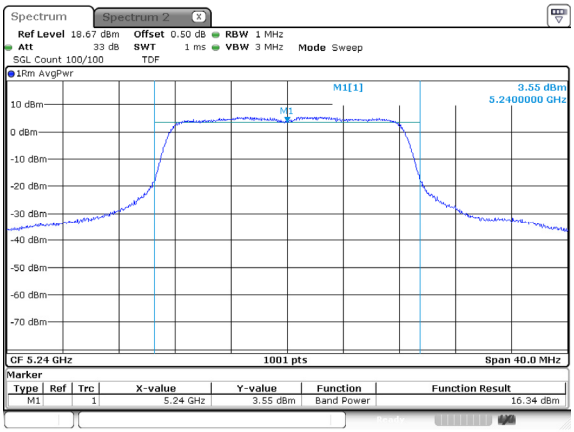
UNII-1 / 802.11a / Mid ch.



UNII-2A / 802.11a / Mid ch.



UNII-1 / 802.11a / High ch.



UNII-2A / 802.11a / High ch.