



TEST REPORT

KCTL Inc. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-31-285-0894 FAX: 82-505-299-8311 www.kctl.co.kr	Report No.: KR20-SRF0016-A Page (1) of (219)			
1. Client ◦ Name : Samsung Electronics Co., Ltd. ◦ Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea ◦ Date of Receipt : 2019-12-26				
2. Use of Report : -				
3. Name of Product and Model : Mobile Phone / SM-M315F/DS				
4. Manufacturer and Country of Origin : Samsung Electronics Co., Ltd. / Korea				
5. FCC ID : A3LSMM315F				
6. Date of Test : 2020-01-14 to 2020-02-04				
7. Test Standards : FCC Part 15 Subpart E, 15.407				
8. Test Results : Refer to the test result in the test report				
Affirmation	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> Tested by Name : Kwonse Kim (Signature) </td> <td style="width: 50%; padding: 5px;"> Technical Manager Name : Bobae Lee (Signature) </td> </tr> </table>	Tested by Name : Kwonse Kim (Signature)	Technical Manager Name : Bobae Lee (Signature)	2020-02-04
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KCTL Inc.				
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Report revision history

Date	Revision	Page No
2020-01-30	Initial report	-
2020-02-04	Added the frequency stability test	75 ~ 79

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Note. The report No. KR20-SRF0016 is superseded by the report No. KR20-SRF0016-A.



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1. General information

Client : Samsung Electronics Co., Ltd.
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 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 : Mobile Phone
 Model : SM-A515F/DSN
 Modulation technique : Bluetooth(BDR/EDR)_GFSK, $\pi/4$ DQPSK, 8DPSK
 Bluetooth(BLE)_GFSK
 WIFI(802.11b/g/n20/n40/ac20/ac40/ac80)_DSSS, OFDM
 LTE_QPSK, 16QAM
 WCDMA_QPSK
 GSM_GMSK, 8-PSK
 Number of channels : Bluetooth(BDR/EDR)_79ch / Bluetooth(BLE)_40ch
 802.11b/g/n_HT20 : 11 ch
 UNII-1: 4 ch (20 MHz), 2 ch (40 MHz), 1 ch (80 MHz)
 UNII-2A: 4 ch (20 MHz), 2 ch (40 MHz), 1 ch (80 MHz)
 UNII-2C: 12 ch (20 MHz), 6 ch (40 MHz), 3 ch (80 MHz)
 UNII-3: 5 ch (20 MHz), 2 ch (40 MHz), 1 ch (80 MHz)
 Power source : DC 3.85 V
 Antenna specification : LTE/GSM/WCDMA_LDS Antenna
 WIFI/Bluetooth(BDR/EDR/BLE)_LDS Antenna

Antenna gain	: WIFI/Bluetooth(BDR/EDR/BLE) : -3.4 dBi UNII-1 -5.9 dBi UNII-2A -6.3 dBi UNII-2C -5.3 dBi UNII-3 -6.6 dBi
Frequency range	: Bluetooth(BDR/EDR/BLE)_2 402 MHz ~ 2 480 MHz 2 412 MHz ~ 2 462 MHz (802.11b/g/n_HT20) UNII-1: 5 180 MHz ~ 5 240 MHz (802.11a/n_HT20/ac_VHT20) UNII-1: 5 190 MHz ~ 5 230 MHz (802.11n_HT40/ac_VHT40) UNII-1: 5 210 MHz (802.11ac_VHT80) UNII-2A: 5 260 MHz ~ 5 320 MHz (802.11a/n_HT20/ac_VHT20) UNII-2A: 5 270 MHz ~ 5 310 MHz (802.11n_HT40/ac_VHT40) UNII-2A: 5 290 MHz (802.11ac_VHT80) UNII-2C: 5 500 MHz ~ 5 720 MHz (802.11a/n_HT20/ac_VHT20) UNII-2C: 5 510 MHz ~ 5 710 MHz (802.11n_HT40/ac_VHT40) UNII-2C: 5 530 MHz ~ 5 690 MHz (802.11ac_VHT80) UNII-3: 5 745 MHz ~ 5 825 MHz (802.11a/n_HT20/ac_VHT20) UNII-3: 5 755 MHz ~ 5 795 MHz (802.11n_HT40/ac_VHT40) UNII-3: 5 775 MHz (802.11ac_VHT80) LTE Band 2_1 850.7 MHz ~ 1 909.3 MHz LTE Band 4_1 710.7 MHz ~ 1 754.3 MHz LTE Band 5_824.7 MHz ~ 848.3 MHz LTE Band 12_699.7 MHz ~ 715.3 MHz LTE Band 13_779.5 MHz ~ 784.5 MHz LTE Band 17_706.5 MHz ~ 713.5 MHz LTE Band 26_824.7 MHz ~ 848.3 MHz, 814.7 MHz ~ 823.3 MHz LTE Band 41_2 498.5 MHz ~ 2 687.5 MHz LTE Band 66_1 710.7 MHz ~ 1 779.3 MHz GSM 850_824.2 MHz ~ 848.8 MHz GSM 1900_1 850.2 MHz ~ 1 909.8 MHz WCDMA 850_826.4 MHz ~ 846.6 MHz WCDMA 1700_1 712.4 MHz ~ 1 752.6 MHz WCDMA 1910_1 852.4 MHz ~ 1 907.6 MHz
Software version	: M315F.001
Hardware version	: REV1.0
Test device serial No.	: Conducted(R38MC0ANYKB, R38MC0ANZKH, R38MC0AP17A, R38MC0ANXTJ) Radiated(R38MC0ANYWL, R38MC0ANZHK)
Operation temperature	: -30 °C ~ 50 °C

2.1. Accessory information

Equipment	Manufacturer	Model	Serial No.	Power source
Travel Adapter	Samsung Electronics Co., Ltd.	EP-TA200	R37M4NR27T1SE3	AC 100-240V 50-60 Hz, 0.5A, 9.0V-1.67A, 5.0V-2.0A
Micro USB Data Cable	Samsung Electronics Co., Ltd.	-	-	-

2.2. Frequency/channel operations

This device contains the following capabilities:

WIFI(2.4GHz band 802.11b/g/n(HT20), 5GHz band 802.11a/n(HT20/HT40)/ac(VHT/20/40/80)),
 Bluetooth(BDR/EDR/BLE),

LTE Band 2, LTE Band 4, LTE Band 5, LTE Band 12, LTE Band 13, LTE Band 17, LTE Band 26,
 LTE Band41, LTE Band66, WCDMA 850, WCDMA 1700, WCDMA 1900, GSM 850, GSM 1900

UNII-1

Ch.	Frequency (MHz)
36	5 180
40	5 200
48	5 240

UNII-2A

Ch.	Frequency (MHz)
52	5 260
56	5 280
64	5 320

UNII-2C

Ch.	Frequency (MHz)
100	5 500
120	5 600
140	5 700
144	5 720

UNII-3

Ch.	Frequency (MHz)
149	5 745
157	5 785
165	5 825

Table 2.2.1. 802.11a/n/ac_HT20/VHT20 mode

UNII-1

Ch.	Frequency (MHz)
38	5 190
46	5 230

UNII-2A

Ch.	Frequency (MHz)
54	5 270
62	5 310

UNII-2C

Ch.	Frequency (MHz)
102	5 510
118	5 590
140	5 700
142	5 710

UNII-3

Ch.	Frequency (MHz)
151	5 755
159	5 795

Table 2.2.2. 802.11n/ac_HT40/VHT40 mode

UNII-1

Ch.	Frequency (MHz)
42	5 210

UNII-2A

Ch.	Frequency (MHz)
58	5 290

UNII-2C

Ch.	Frequency (MHz)
106	5 530
122	5 610
134	5 670
138	5 690

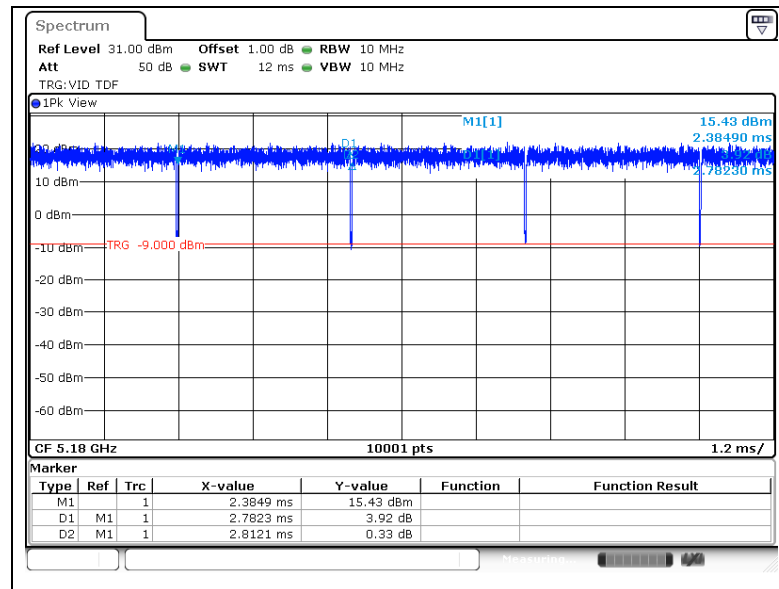
UNII-3

Ch.	Frequency (MHz)
155	5 775

Table 2.2.3. 802.11ac_VHT80 mode

2.3. Duty Cycle Correction Factor

- 802.11a

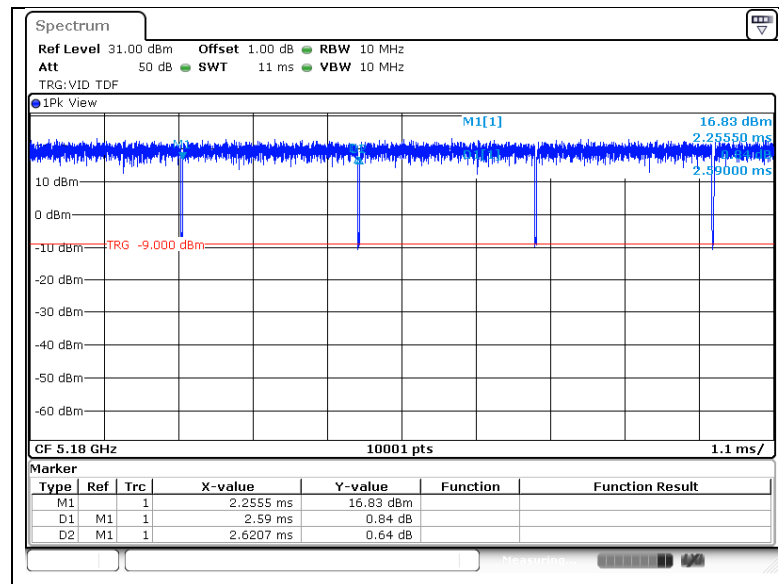


Note₁) : Period : 2.812 1 ms, On time : 2.782 3 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(1/0.989) = 0.046$ dB, $x = 2.782\ 3/2.812\ 1 = 0.989$ (98.9%)

Note₃) : 802.11a is a continuous transmission (duty cycle ≥ 98 %)

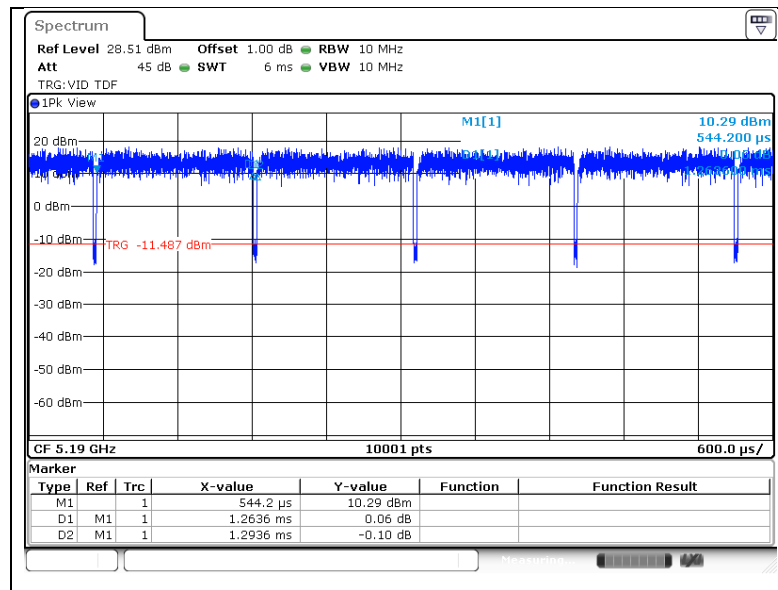
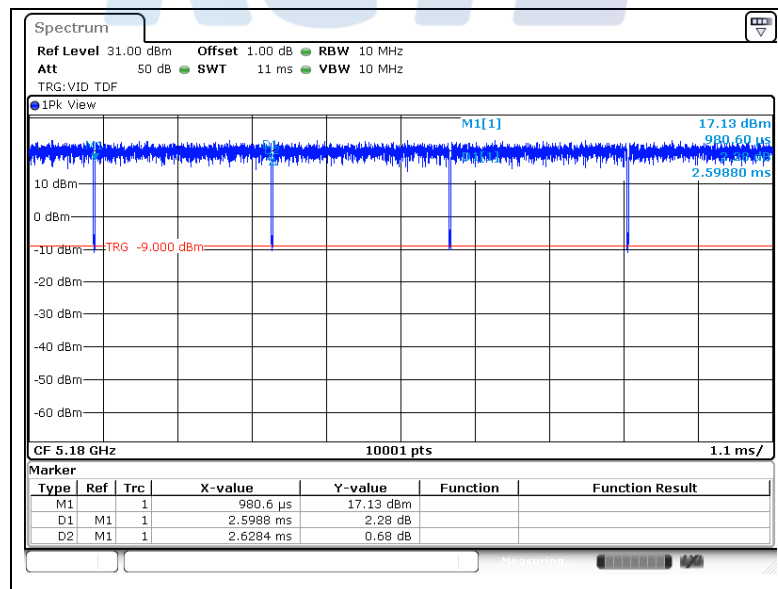
- 802.11n HT20

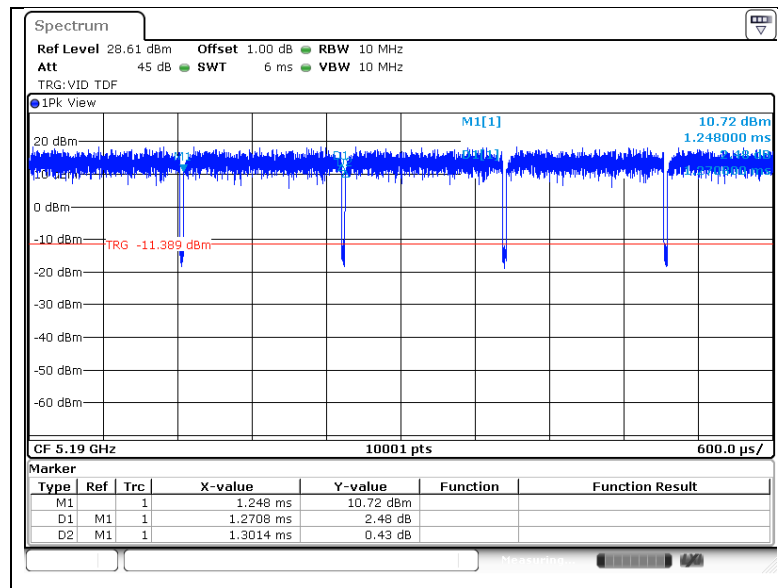
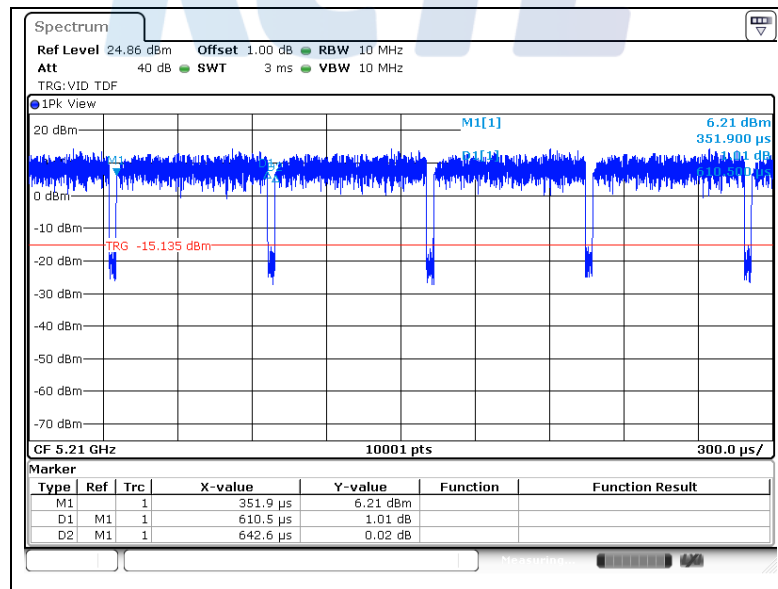


Note₁) : Period : 2.620 7 ms, On time : 2.590 0 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(1/0.988) = 0.051$ dB, $x = 2.590\ 0/2.620\ 7 = 0.988$ (98.8%)

Note₃) : 802.11n_HT20 is a continuous transmission (duty cycle ≥ 98 %)

- 802.11n HT40Note₁) : Period : 1.293 6 ms, On time : 1.263 6 msNote₂) : DCCF = $10 \log(1 / x) = 10 \log(1/0.977) = 0.102$ dB, $x = 1.263\ 6/1.293\ 6 = 0.977$ (97.7%)Note₃) : 802.11n HT40 is a non-continuous transmission (duty cycle < 98 %)**- 802.11ac VHT20**Note₁) : period: 2.628 4 ms, On time: 2.598 8 msNote₂) : DCCF = $10 \log(1 / x) = 10 \log(1/0.989) = 0.049$ dB, $x = 2.598\ 8/2.628\ 4 = 0.989$ (98.9%)Note₃) : 802.11ac VHT20 is a continuous transmission (duty cycle >= 98 %)

- 802.11ac VHT40Note₁): period: 1.301 4 ms, On time: 1.270 8 msNote₂): $DCCF = 10 \log(1 / x) = 10 \log(1/0.976) = 0.103 \text{ dB}$, $x = 1.270 \text{ 8} / 1.301 \text{ 4} = 0.976 \text{ (97.6\%)}$ Note₃): 802.11ac VHT40 is a non-continuous transmission (duty cycle < 98 %)**- 802.11ac VHT80**Note₁): period: 0.642 6 ms, On time: 0.610 5 msNote₂): $DCCF = 10 \log(1 / x) = 10 \log(1/0.950) = 0.223 \text{ dB}$, $x = 0.610 \text{ 5} / 0.642 \text{ 6} = 0.950 \text{ (95.0\%)}$ Note₃): 802.11ac VHT80 is a non-continuous transmission (duty cycle < 98 %)

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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 LDS Antenna (internal antenna) on board.

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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(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 kHz to 30 MHz. 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. The test procedure(s) in this report were performed in accordance as following.
 - ANSI C63.10-2013
 - KDB 789033 D02 v02r01
5. The worst-case data rates were:
 - SISO Antenna: 802.11a 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 or 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 ($\pm$)	
Conducted RF power	1.23 dB	
Conducted spurious emissions	1.24 dB	
Radiated spurious emissions	9 kHz ~ 30 MHz:	2.28 dB
	30 MHz ~ 1000 MHz	5.02 dB
	Above 1 GHz	6.64 dB
Conducted emissions	9 kHz ~ 150 kHz	3.66 dB
	150 kHz ~ 30 MHz	3.26 dB

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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 (MHz)	Factor(dB)	Frequency (MHz)	Factor(dB)
30	9.78	16 000	12.70
50	9.99	17 000	12.71
100	10.05	18 000	12.94
200	10.15	19 000	13.43
300	10.23	20 000	13.09
400	10.30	21 000	13.18
500	10.35	22 000	13.72
600	10.39	23 000	13.54
700	10.44	24 000	13.47
800	10.49	25 000	13.64
900	10.54	26 000	13.80
1 000	10.55	26 500	13.63
2 000	10.86	27 000	13.84
3 000	11.07	28 000	13.69
4 000	11.24	29 000	14.08
5 000	11.48	30 000	14.12
6 000	11.66	31 000	14.38
7 000	11.78	32 000	14.94
8 000	12.05	33 000	15.01
9 000	12.06	34 000	15.47
10 000	12.15	35 000	15.53
11 000	12.27	36 000	15.62
12 000	12.24	37 000	16.10
13 000	12.43	38 000	16.24
14 000	12.68	39 000	16.25
15 000	12.81	40 000	16.48

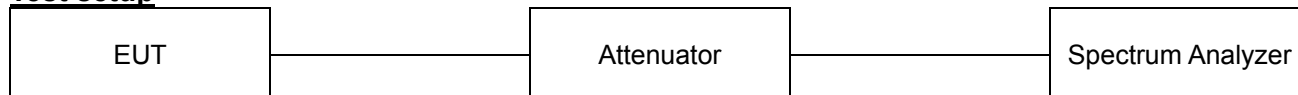
Notes:

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

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 12.3.2.4

KDB 789033 D02 v02r01 - Section E.2.d) or e)

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 MHz
- (iv) Set RBW $\geq$ 3 MHz
- (v) Number of points in sweep $\geq 2 \times \text{span} / \text{RBW}$. (This ensures that bin-to-bin spacing is $\leq \text{RBW} / 2$, 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 MHz 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 $10 \log (1/0.25) = 6 \text{ dB}$ 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 MHz
- (iv) Set RBW $\geq$ 3 MHz
- (v) Number of points in sweep $\geq 2 \times \text{span} / \text{RBW}$. (This ensures that bin-to-bin spacing is $\leq \text{RBW} / 2$, so that narrowband signals are not lost between frequency bins.)
- (vi) Manually set sweep time $\geq 10 \times (\text{number of points in sweep}) \times (\text{total on/off period of the transmitted signal})$.
- (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 MHz 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 $10 \log (1/0.25) = 6$ dB 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 dBm 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

Test mode	Band	Freq (MHz)	Measured power (dBm)	DCCF (dB)	Conducted output power (dBm)	Conducted Power Limit (dBm)
					Average	
802.11a	UNII-1	5 180	14.15	-	14.15	23.98
		5 200	15.43	-	15.43	
		5 240	15.91	-	15.91	
	UNII-2A	5 260	16.05	-	16.05	
		5 280	15.24	-	15.24	
		5 320	15.55	-	15.55	
	UNII-2C	5 500	15.25	-	15.25	23.07
		5 600	16.29	-	16.29	
		5 700	16.34	-	16.34	
		5 720	16.52	-	16.52	
	UNII-3	5 745	15.79	-	15.79	30.00
		5 785	15.49	-	15.49	
		5 825	15.72	-	15.72	
802.11n HT20	UNII-1	5 180	15.50	-	15.50	23.98
		5 200	15.78	-	15.78	
		5 240	16.32	-	16.32	
	UNII-2A	5 260	16.27	-	16.27	
		5 280	15.50	-	15.50	
		5 320	15.82	-	15.82	
	UNII-2C	5 500	15.46	-	15.46	23.12
		5 600	15.21	-	15.21	
		5 700	15.87	-	15.87	
		5 720	16.00	-	16.00	
	UNII-3	5 745	15.43	-	15.43	30.00
		5 785	15.87	-	15.87	
		5 825	15.77	-	15.77	
802.11n HT40	UNII-1	5 190	13.94	0.10	14.04	23.98
		5 230	14.05	0.10	14.15	
	UNII-2A	5 270	13.48	0.10	13.58	
		5 310	13.64	0.10	13.74	
	UNII-2C	5 510	14.09	0.10	14.19	
		5 590	14.46	0.10	14.56	
		5 670	14.10	0.10	14.20	
		5 710	13.99	0.10	14.09	
	UNII-3	5 755	13.58	0.10	13.68	30.00
		5 795	13.61	0.10	13.71	

Test mode	Band	Freq (MHz)	Measured power (dBm)	DCCF (dB)	Conducted output power (dBm)	Conducted Power Limit (dBm)
					Average	
802.11ac VHT20	UNII-1	5 180	15.38	-	15.38	23.98
		5 200	15.94	-	15.94	
		5 240	16.18	-	16.18	
	UNII-2A	5 260	16.23	-	16.23	
		5 280	15.53	-	15.53	
		5 320	15.86	-	15.86	
	UNII-2C	5 500	15.47	-	15.47	23.12
		5 600	15.20	-	15.20	
		5 700	15.15	-	15.15	
		5 720	16.19	-	16.19	
	UNII-3	5 745	15.91	-	15.91	30.00
		5 785	15.59	-	15.59	
		5 825	15.62	-	15.62	
802.11ac VHT40	UNII-1	5 190	14.13	0.10	14.23	23.98
		5 230	13.97	0.10	14.07	
	UNII-2A	5 270	13.39	0.10	13.49	
		5 310	13.49	0.10	13.59	
	UNII-2C	5 510	13.91	0.10	14.01	
		5 590	14.04	0.10	14.14	
		5 670	13.66	0.10	13.76	
		5 710	13.68	0.10	13.78	
	UNII-3	5 755	13.66	0.10	13.76	30.00
		5 795	13.56	0.10	13.66	
802.11ac VHT80	UNII-1	5 210	12.42	0.22	12.64	23.98
	UNII-2A	5 290	13.52	0.22	13.74	
	UNII-2C	5 530	13.00	0.22	13.22	
		5 610	12.97	0.22	13.19	
		5 690	12.60	0.22	12.82	
	UNII-3	5 775	12.90	0.22	13.12	30.00

Note:

1. Conducted Output power Calculation:

$$\text{Conducted Output power} = \text{Measured power(dB m)} + \text{DCCF (dB)}$$

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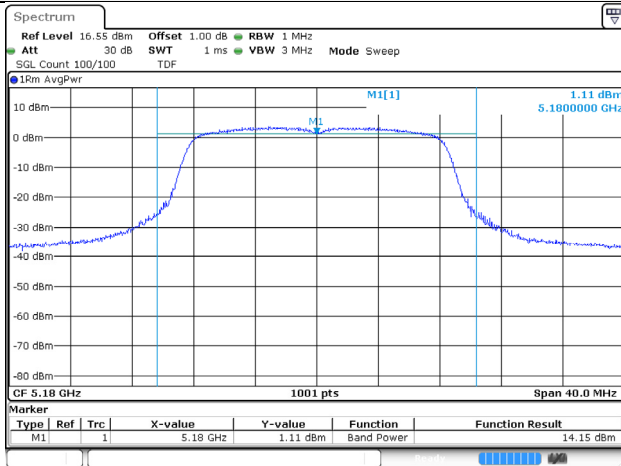
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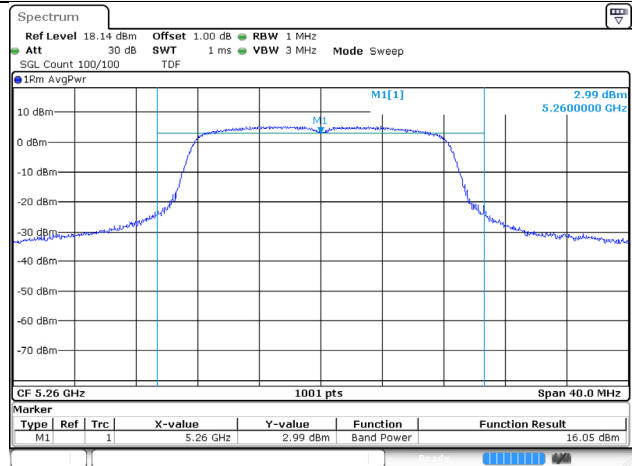
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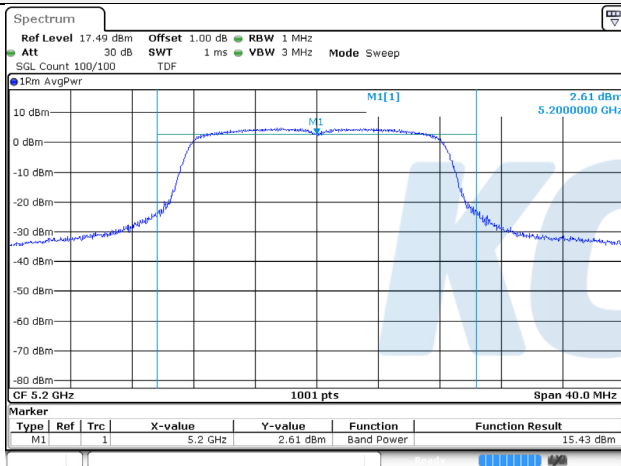
UNII-1 / 802.11a / Low ch.



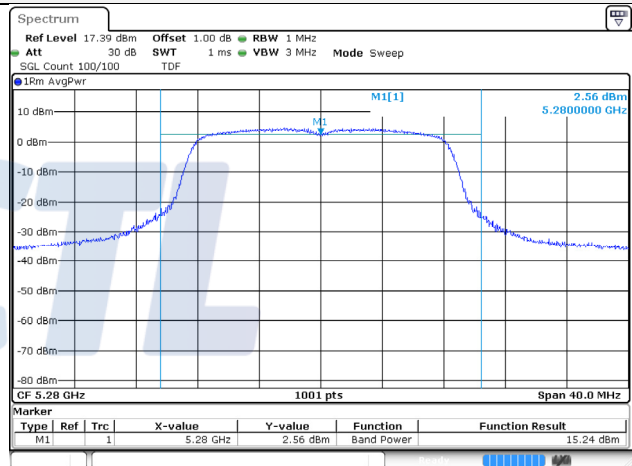
UNII-2A / 802.11a / Low ch.



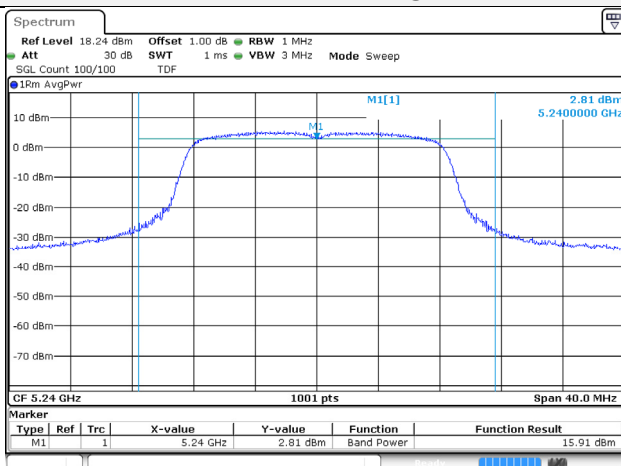
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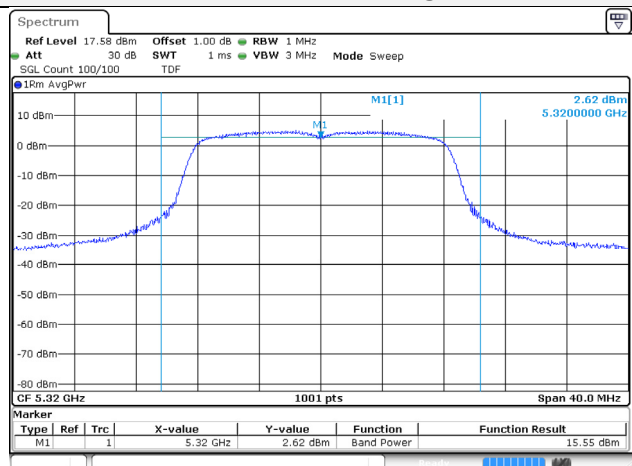
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UNII-1 / 802.11a / High ch.



UNII-2A / 802.11a / High ch.



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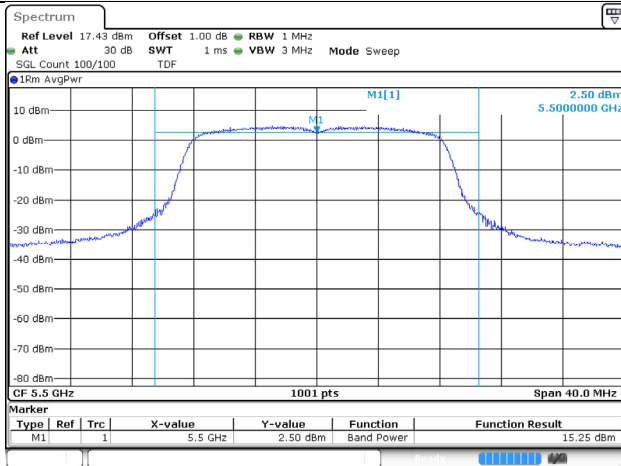
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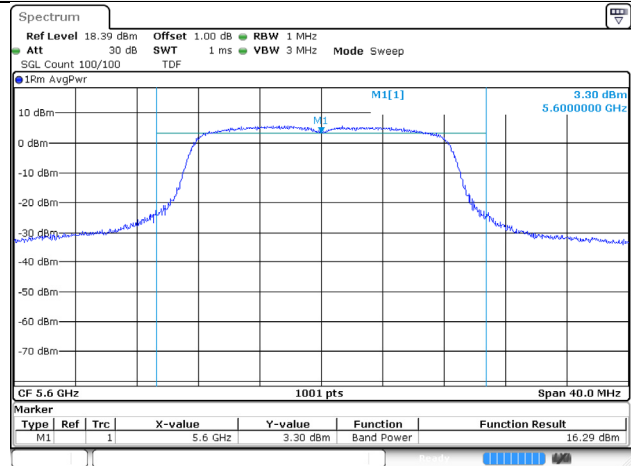
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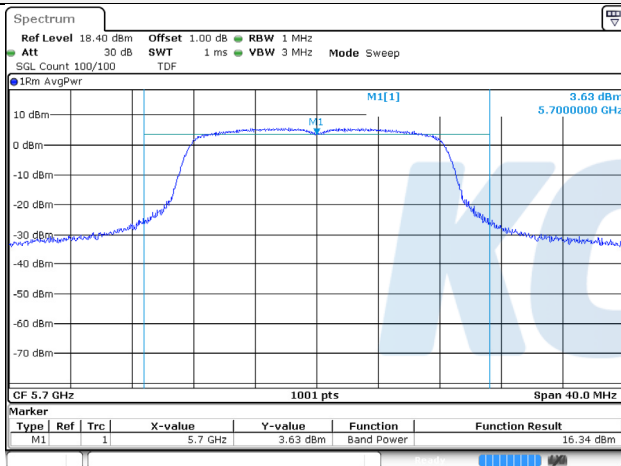
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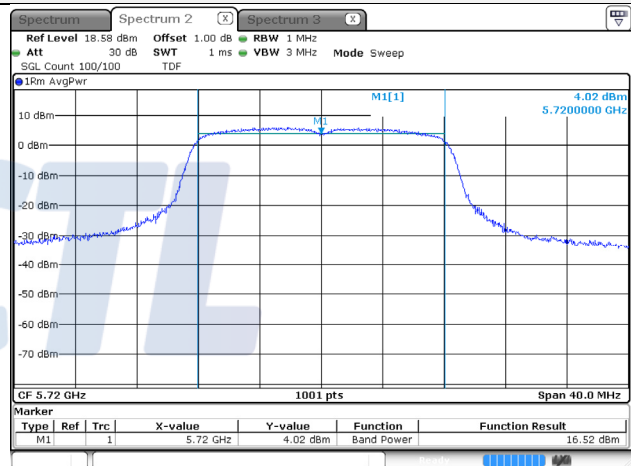
UNII-2C / 802.11a / Mid ch.



UNII-2C / 802.11a / High ch.



UNII-2C / 802.11a / Straddle ch.



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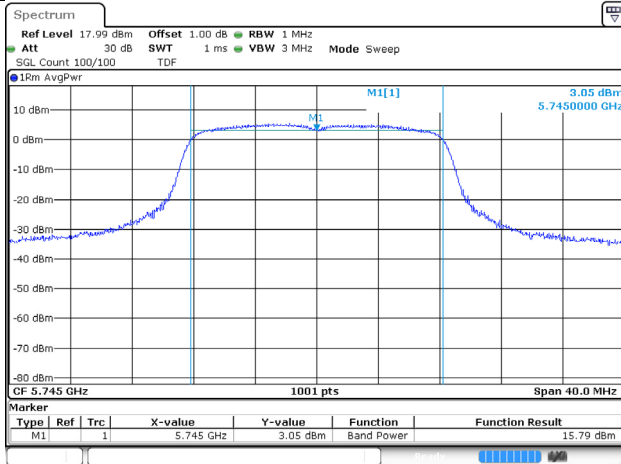
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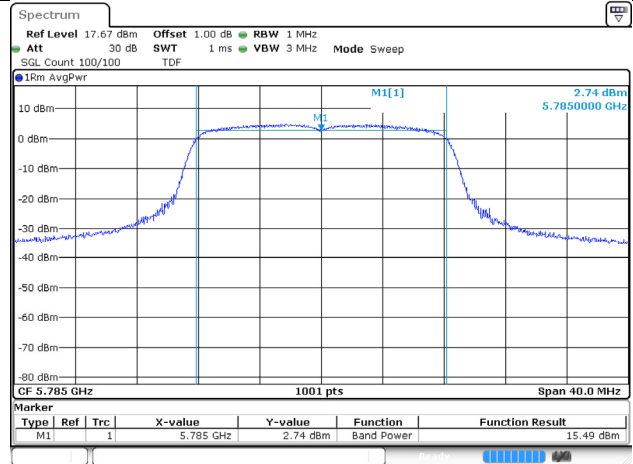
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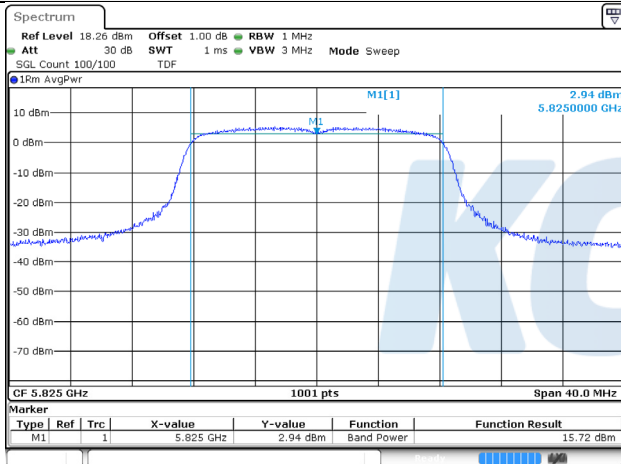
UNII-3 / 802.11a / Low ch.



UNII-3 / 802.11a / Mid ch.



UNII-3 / 802.11a / High ch.



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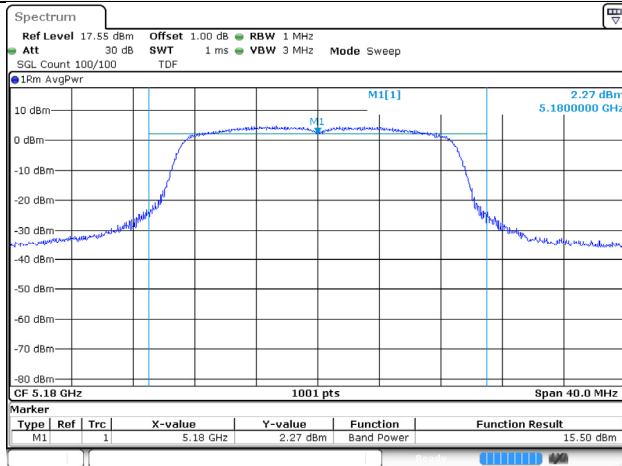
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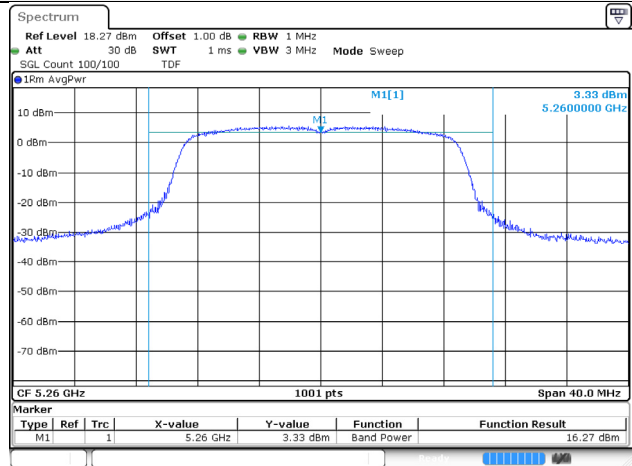
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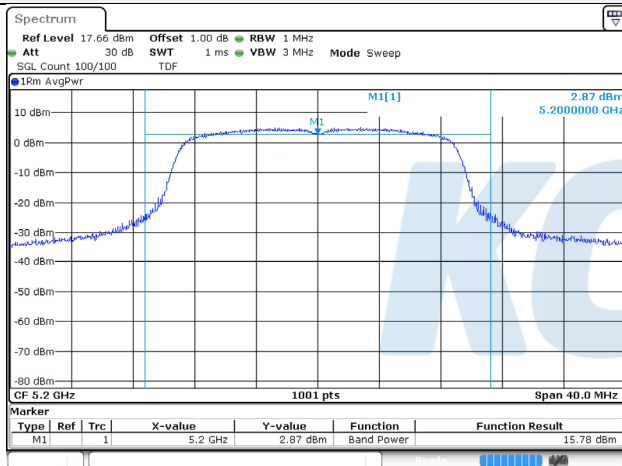
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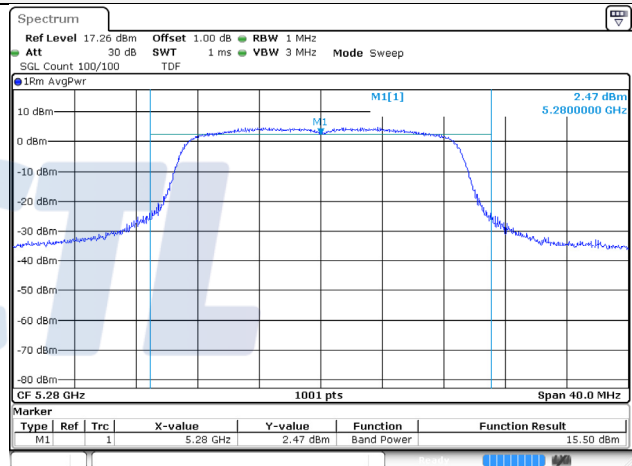
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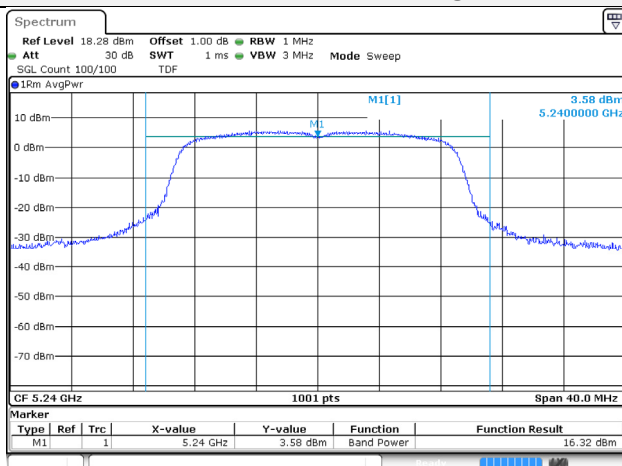
UNII-1 / 802.11n HT20 / Mid ch.



UNII-2A / 802.11n HT20 / Mid ch.



UNII-1 / 802.11n HT20 / High ch.



UNII-2A / 802.11n HT20 / High ch.

