

TEST REPORT

Report No.: BCTC2009001103-2E

Applicant: Guangdong Bekey Technology Co., Ltd.

Product Name: Wifi range extender

Model/Type Ref.: 702403

Tested Date: Sep. 15, 2020 to Oct. 20, 2020

Issued Date: Oct. 20, 2020

Shenzhen BCTC Testing Co., Ltd.

FCC ID: 2AVCH-702403

Product Name: Wifi range extender
Trademark: N/A
Model/Type Ref.: 702403
WD-R750U, WD-R751U, WD-R752U, WD-R753U, WD-R754U
Prepared For: Guangdong Bekey Technology Co., Ltd.
Address: R building, DongYuan reservoir region immigration base,
Butterfly Lodge Ind District, DongYuan, Heyuan 517500, China
Manufacturer: Guangdong Bekey Technology Co., Ltd.
Address: R building, DongYuan reservoir region immigration base,
Butterfly Lodge Ind District, DongYuan, Heyuan 517500, China
Prepared By: Shenzhen BCTC Testing Co., Ltd.
Address: 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st
Road, Qiaotou Community, Fuyong Street, Bao'an District,
Shenzhen, China
Sample Received Date: Sep. 15, 2020
Sample tested Date: Sep. 15, 2020 to Oct. 20, 2020
Issue Date: Oct. 20, 2020
Report No.: BCTC2009001103-1E
FCC Part15 15.407
Test Standards ANSI C63.10-2013
Test Results PASS

Tested by:



Eric Yang/Project Handler

Approved by:



Zero Zhou/Reviewer

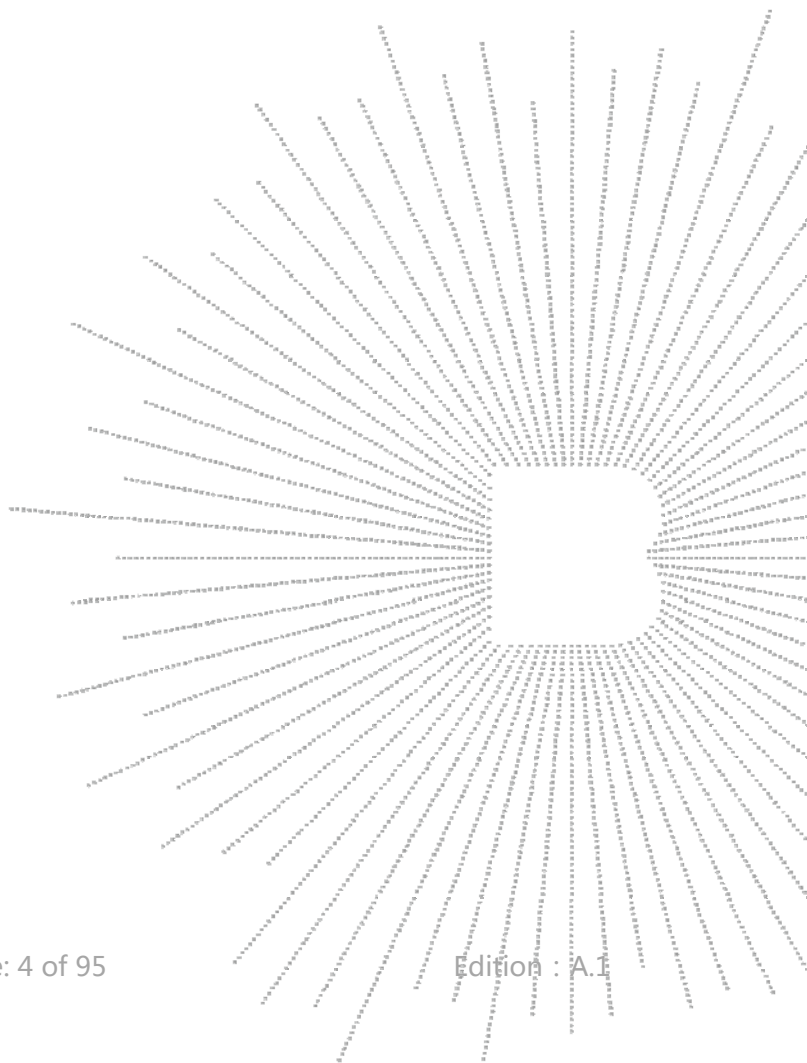
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(Note: N/A means not applicable)



1. VERSION

Report No.	Issue Date	Description	Approved
BCTC2009001103-2E	Oct. 20, 2020	Original	Valid

2. TEST SUMMARY

The Product has been tested according to the following specifications:

No.	Test Parameter	Clause No	Results
1	Spurious Radiated Emissions	15.209(a), 15.407 (b)(1) 15.407 (b)(4))	PASS
2	Conducted Emission	15.207	PASS
3	26 dB and 99% Emission Bandwidth	15.407 (a)(5) 15.1049	PASS
4	Minimum 6 dB bandwidth	15.407(e)	PASS
5	Maximum Conducted Output Power	15.407 (a)(1) 15.407 (a)(3)	PASS
6	Band Edge	2.1051, 15.407(b)(1) 15.407(b)(4)	PASS
7	Power Spectral Density	15.407 (a)(1) 15.407 (a)(3)	PASS
8	Spurious Emissions at Antenna Terminals	2.1051, 15.407(b)	PASS
8	Antenna Requirement	15.203	PASS

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.3dB
2	3m chamber Radiated spurious emission(1GHz-18GHz)	U=4.5dB
3	3m chamber Radiated spurious emission(18GHz-40GHz)	U=3.34dB
4	Conducted Adjacent channel power	U=1.38dB
5	Conducted output power uncertainty Above 1G	U=1.576dB
6	Conducted output power uncertainty below 1G	U=1.28dB
7	humidity uncertainty	U=5.3%
8	Temperature uncertainty	U=0.59℃

4. PRODUCT INFORMATION AND TEST SETUP

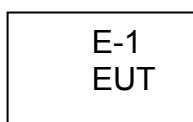
4.1 Product Information

Model/Type Ref.:	702403 WD-R750U, WD-R751U, WD-R752U, WD-R753U, WD-R754U
Model differences:	All the model are the same circuit and RF module, except model names.
Hardware Version:	N/A
Software Version:	N/A
IEEE 802.11 WLAN Mode Supported	802.11a/n/ac(20MHz channel bandwidth) 802.11n/ac(40MHz channel bandwidth)
Operation Frequency:	5180-5240MHz for 802.11a/n/ac(HT20); 5190-5230MHz for 802.11n/ac(HT40); 5745-5825 MHz for 802.11a/n/ac(HT20); 5755-5795 MHz for 802.11n/ac(HT40);
Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n/ac(HT20/HT40):MCS0-MCS15;
Type of Modulation:	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11a/n/ac;
Number Of Channel	4 channels for 802.11a/n20/ac20 in the 5180-5240MHz band ; 2 channels for 802.11 n40/ac40 in the 5190-5230MHz band ; 5 channels for 802.11a/n20/ac40 in the 5745-5825MHz band ; 2 channels for 802.11 n40/ac40 in the 5755-5795MHz band ;
Antenna installation:	External antenna
Antenna Gain:	2dBi
Ratings:	AC120V/60Hz

4.2 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

Conducted Emission / Radiated Spurious Emission Test:



4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
E-1	Wifi range extender	N/A	702403	N/A	EUT	E-1

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Channel List

802.11a/n/ac(20MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220	40	5200	48	5240
149	5745	153	5765	157	5785	161	5805
165	5825	-	-	-	-	-	-

802.11n/ac (40MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230	-	-	-	-
151	5755	159	5795	-	-	-	-

4.5 Test Mode

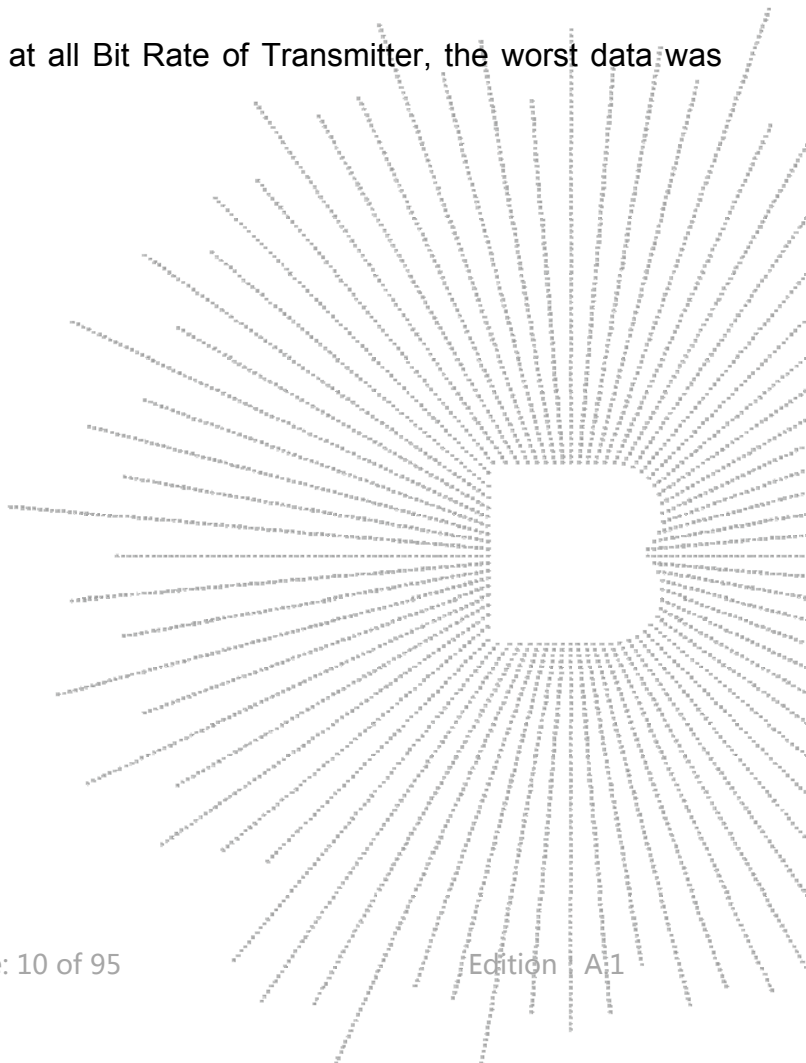
To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	802.11a / n /ac 20 CH36/ CH40/ CH 48 802.11a /n /ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n/ac 40 CH38/ CH 46 802.11n/ac 40 CH 151 / CH 159
Mode 3	802.11a / n/ac 20/ CH36/ CH40/ CH 48 802.11a /n/ac 20/ CH149/ CH157/ CH 165
Mode 4	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11a / n/ac 20 CH36/ CH40/ CH 48 802.11a /n/ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n/ac40 CH38/ CH 46 802.11n/ac40 CH 151 / CH 159
Mode 3	802.11a / n/ac 20 CH36/ CH40/ CH 48 802.11a /n/ac 20 CH149/ CH157/ CH 165

Note:

- (1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.



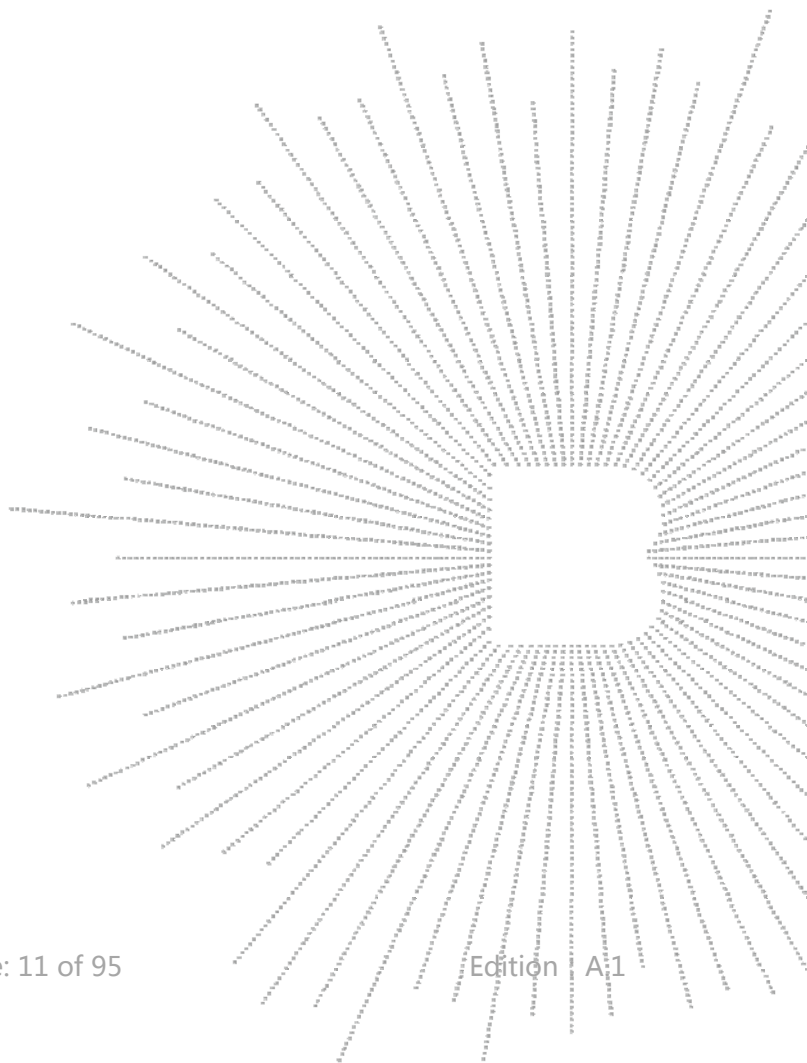
4.6 table of parameters of text software setting

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters

Test software Version	FCC_TOOL		
Parameters	DEF	DEF	DEF

4.7 Antenna

Antenna	Brand	Model Name	Antenna Type	Gain (dBi)	NOTE
A	N/A	N/A	External antenna	2	



5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

FCC Test Firm Registration Number: 712850

IC Registered No.: 23583

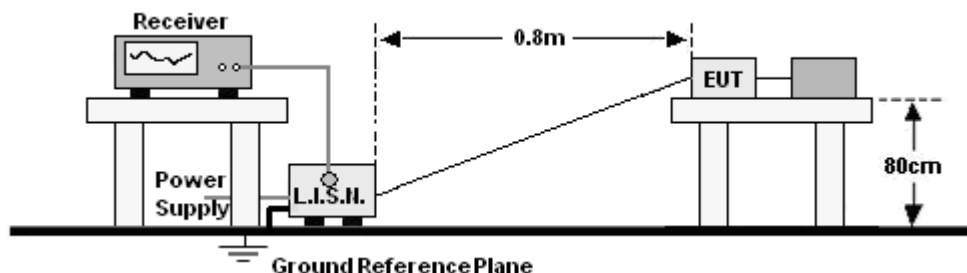
5.2 Test Instrument Used

Conducted emissions Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Receiver	R&S	ESR3	102075	Jun. 08, 2020	Jun. 07, 2021
LISN	R&S	ENV216	101375	Jun. 04, 2020	Jun. 03, 2021
ISN	HPX	ISN T800	S1509001	Jun. 04, 2020	Jun. 03, 2021
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\

Radiated emissions Test (966 chamber)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	Jun. 06. 2020	Jun. 05, 2023
Receiver	R&S	ESR3	102075	Jun. 08, 2020	Jun. 07, 2021
Receiver	R&S	ESRP	101154	Jun. 08, 2020	Jun. 07, 2021
Amplifier	Schwarzbeck	BBV9718	9718-309	Jun. 04, 2020	Jun. 03, 2021
Amplifier	Schwarzbeck	BBV9744	9744-0037	Jun. 04, 2020	Jun. 03, 2021
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	VULB9163-942	Jun. 08, 2020	Jun. 07, 2021
Horn Antenna	SCHWARZBEC K	BBHA9120 D	1201	Jun. 10, 2020	Jun. 09, 2021
Horn Antenna (18GHz-40GHz)	SCHWARZBE CK	BBHA9170	822	Jun. 10, 2020	Jun. 09, 2021
Amplifier (18GHz-40GHz)	MITEQ	TTA1840-3 5-HG	2034381	Jun. 08, 2020	Jun. 07, 2021
Loop Antenna (9kHz-30MHz)	SCHWARZBE CK	FMZB1519 B	014	Jun. 08, 2020	Jun. 07, 2021
RF cables1 (9kHz-30MHz)	Huber+Suhnar	9kHz-30M Hz	B1702988- 0008	Jun. 08, 2020	Jun. 07, 2021
RF cables2 (30MHz-1GHz)	Huber+Suhnar	30MHz-1G Hz	1486150	Jun. 08, 2020	Jun. 07, 2021
RF cables3 (1GHz-40GHz)	Huber+Suhnar	1GHz-40G Hz	1607106	Jun. 08, 2020	Jun. 07, 2021
Power Metter	Keysight	E4419B	\	Jun. 08, 2020	Jun. 07, 2021
Power Sensor (AV)	Keysight	E9 300A	\	Jun. 08, 2020	Jun. 07, 2021
Signal Analyzer 20kHz-26.5GHz	KEYSIGHT	N9020A	MY491000 60	Jun. 04, 2020	Jun. 03, 2021
Spectrum Analyzer 9kHz-40GHz	Agilent	FSP40	100363	Jun. 13, 2020	Jun. 12, 2021
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

6. CONDUCTED EMISSIONS

6.1 Block Diagram Of Test Setup



6.2 Limit

FREQUENCY (MHz)	Limit (dBuV)	
	Quas-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Notes:
1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

6.3 Test procedure

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

- The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
- The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

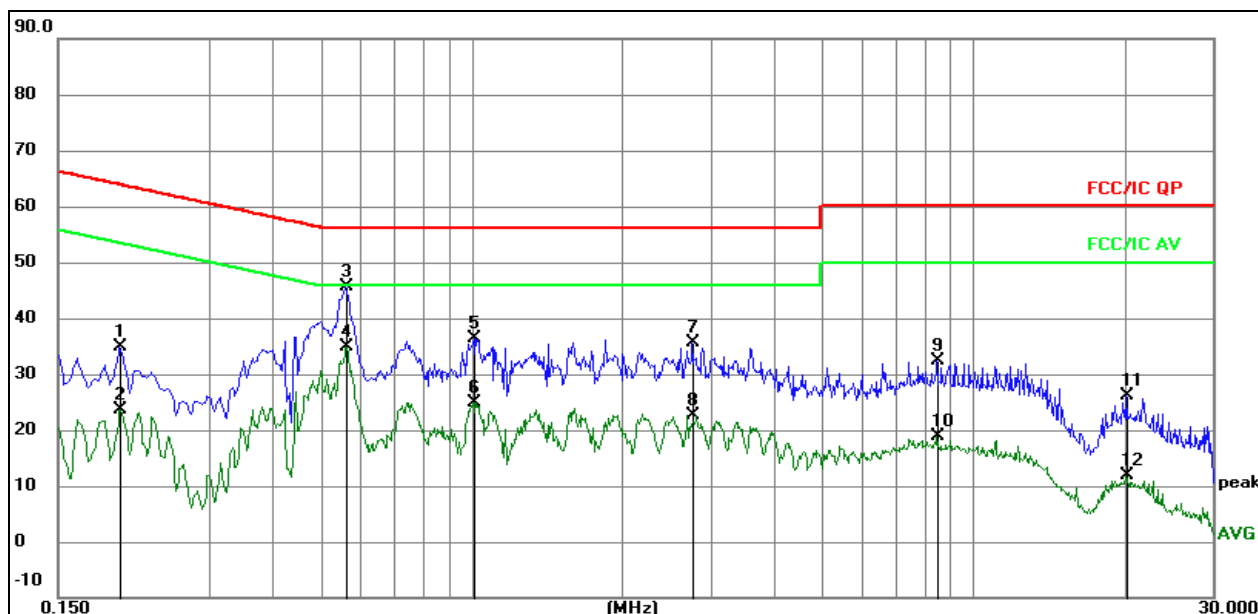
6.4 EUT operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

We pretest AC 120V and AC 240V, the worst voltage was AC 120V and the data recording in the report.

6.5 Test Result

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 5

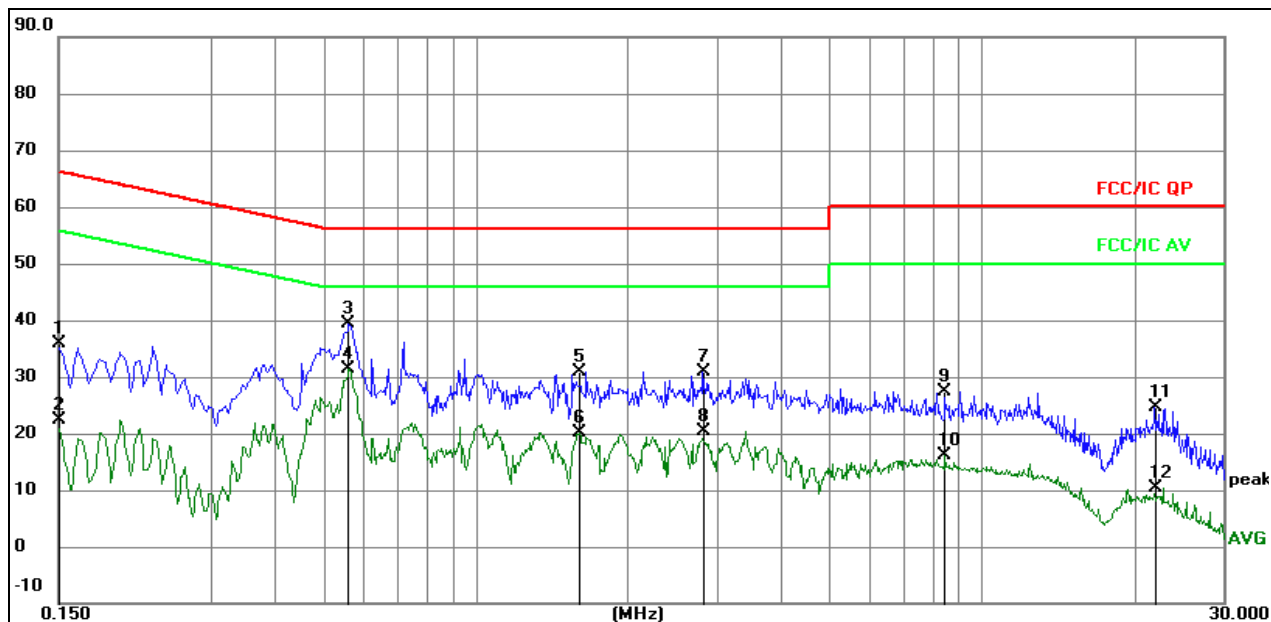


Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq. MHz	Reading Level dB	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1995	25.53	9.46	34.99	63.63	-28.64	QP	
2		0.1995	14.19	9.46	23.65	53.63	-29.98	AVG	
3	*	0.5639	35.66	9.85	45.51	56.00	-10.49	QP	
4		0.5639	25.13	9.85	34.98	46.00	-11.02	AVG	
5		1.0140	26.84	9.57	36.41	56.00	-19.59	QP	
6		1.0140	15.31	9.57	24.88	46.00	-21.12	AVG	
7		2.7645	26.07	9.64	35.71	56.00	-20.29	QP	
8		2.7645	12.97	9.64	22.61	46.00	-23.39	AVG	
9		8.4570	22.77	9.71	32.48	60.00	-27.52	QP	
10		8.4570	9.18	9.71	18.89	50.00	-31.11	AVG	
11		20.2380	16.27	9.79	26.06	60.00	-33.94	QP	
12		20.2380	2.03	9.79	11.82	50.00	-38.18	AVG	

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 5



Remark:

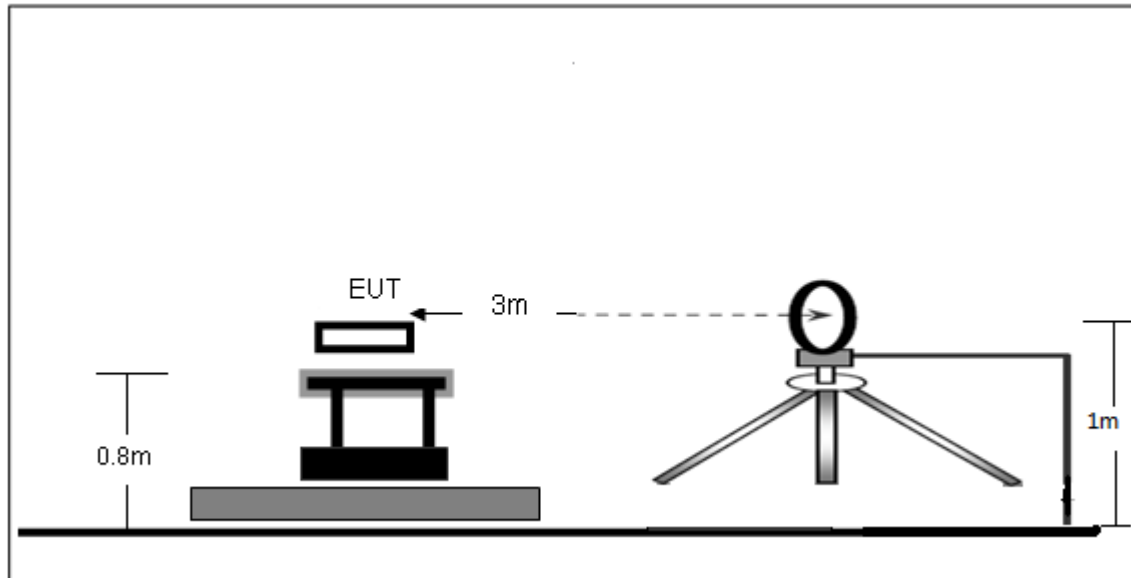
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq. MHz	Reading Level dB	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1500	26.34	9.52	35.86	66.00	-30.14	QP	
2		0.1500	12.95	9.52	22.47	56.00	-33.53	AVG	
3		0.5611	29.63	9.84	39.47	56.00	-16.53	QP	
4	*	0.5611	21.57	9.84	31.41	46.00	-14.59	AVG	
5		1.6019	21.40	9.58	30.98	56.00	-25.02	QP	
6		1.6019	10.44	9.58	20.02	46.00	-25.98	AVG	
7		2.8091	21.14	9.65	30.79	56.00	-25.21	QP	
8		2.8091	10.65	9.65	20.30	46.00	-25.70	AVG	
9		8.4561	17.74	9.71	27.45	60.00	-32.55	QP	
10		8.4561	6.34	9.71	16.05	50.00	-33.95	AVG	
11		21.9463	14.82	9.77	24.59	60.00	-35.41	QP	
12		21.9463	0.59	9.77	10.36	50.00	-39.64	AVG	

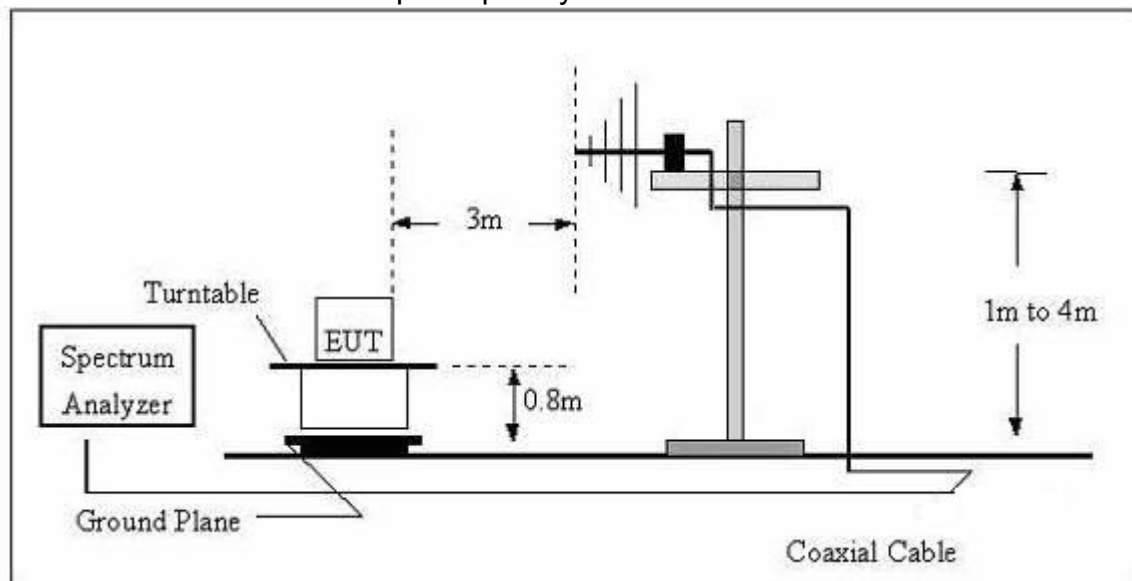
7. RADIATED EMISSIONS

7.1 Block Diagram Of Test Setup

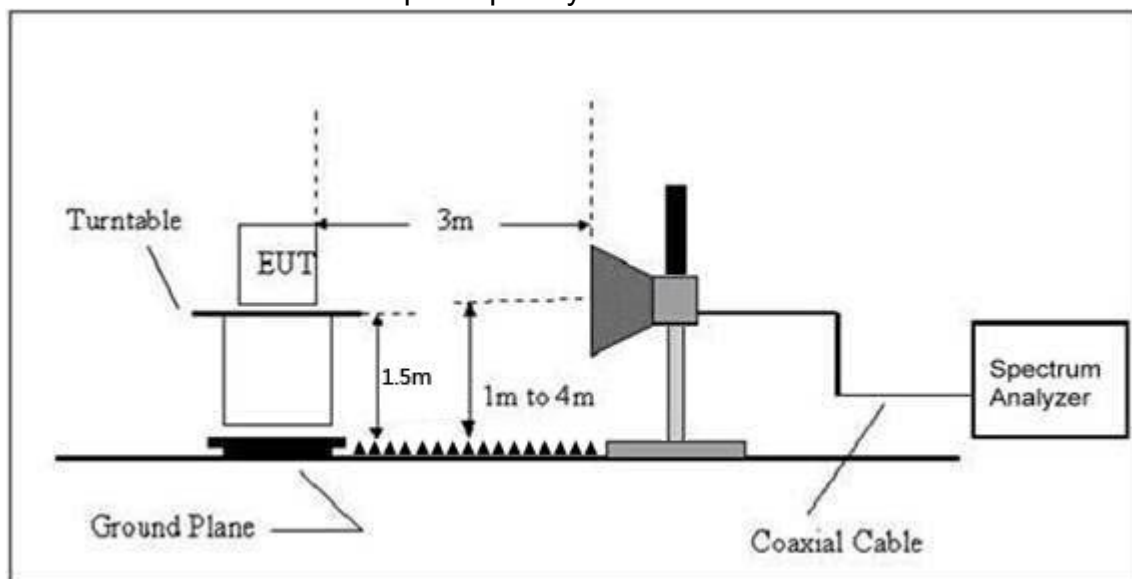
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



7.2 Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequency	Field Strength	Distance	Field Strength Limit at 3m Distance	
(MHz)	uV/m	(m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1)The limit for radiated test was performed according to FCC PART 15C.
- (2)The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

7.3 Test procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2013. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205.

It must be performed with the highest gain of each type of antenna proposed for use with the EUT.

Use the following spectrum analyzer settings:

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

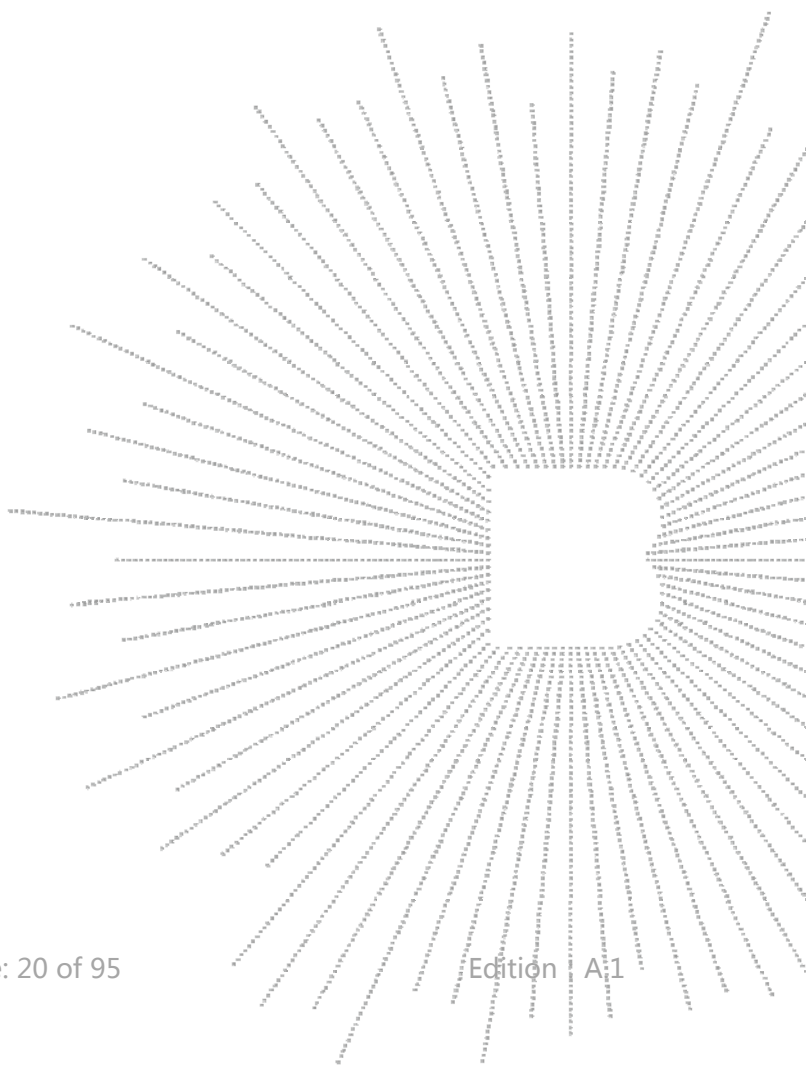
During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

Note: for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where $RBWCF [dB] = 10 \cdot \lg(100 [kHz] / \text{narrower RBW [kHz]})$. , the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

7.4 EUT operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



7.5 Test Result

Below 30MHz

Temperature:	26℃	Relative Humidity:	24%
Pressure:	101 kPa	Test Voltage :	AC120V/60Hz
Test Mode :	Mode 4	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

Note:

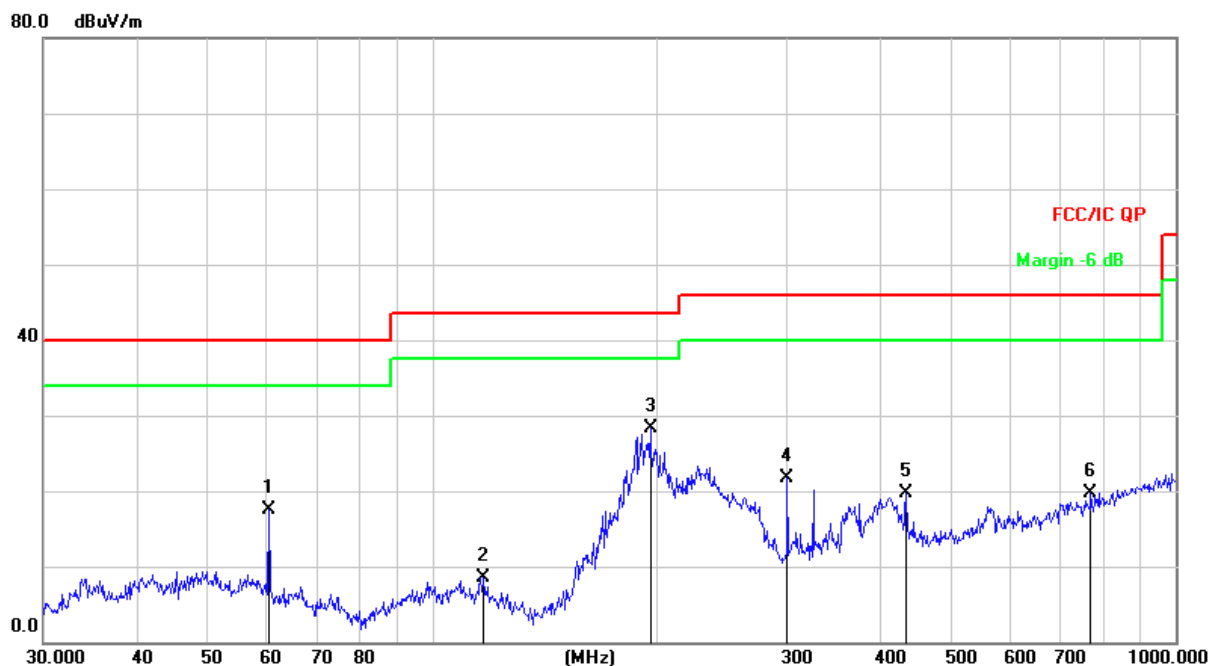
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance}/\text{test distance})$ (dB);

Limit line = specific limits(dBuV) + distance extrapolation factor.

Between 30MHz – 1GHz

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Test Voltage :	AC120V/60Hz
Test Mode :	Mode 4	Polarization :	Horizontal

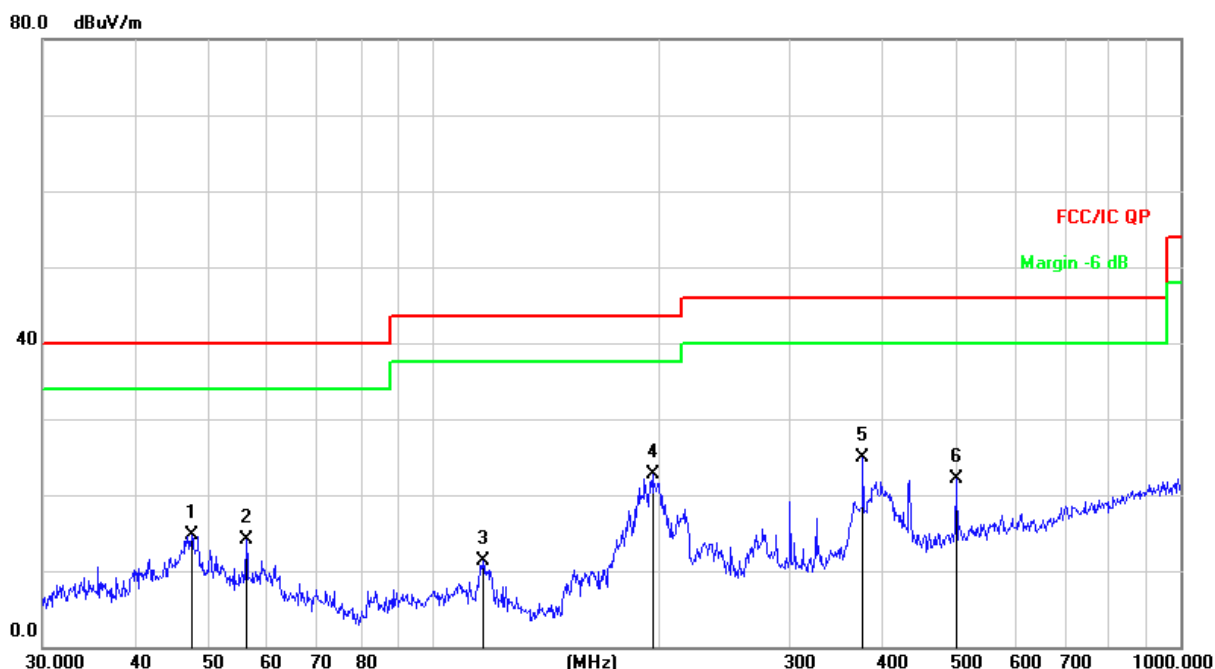


Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
	MHz	dBuV	dB	dBuV/m	dB/m	dB	
1	60.2801	33.55	-15.97	17.58	40.00	-22.42	QP
2	117.3603	25.97	-17.40	8.57	43.50	-34.93	QP
3 *	196.5098	44.88	-16.52	28.36	43.50	-15.14	QP
4	300.3672	35.25	-13.59	21.66	46.00	-24.34	QP
5	434.0651	29.94	-10.33	19.61	46.00	-26.39	QP
6	768.7481	23.71	-4.08	19.63	46.00	-26.37	QP

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kpa	Test Voltage :	AC120V/60Hz
Test Mode :	Mode 4	Polarization :	Vertical



Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		47.4918	29.73	-14.99	14.74	40.00	-25.26	QP
2		56.1974	29.54	-15.51	14.03	40.00	-25.97	QP
3		116.5401	28.72	-17.35	11.37	43.50	-32.13	QP
4	*	196.5098	39.21	-16.52	22.69	43.50	-20.81	QP
5		375.9385	36.47	-11.64	24.83	46.00	-21.17	QP
6		501.1790	30.96	-8.91	22.05	46.00	-23.95	QP

Between 1GHz – 40GHz

Test Mode :	TX(5.2G) - 802.11a
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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5180 MHz)-Above 1G									
V	4434.069	61.05	5.94	35.40	44.00	58.39	68.20	-9.81	PK
V	4434.069	43.63	5.94	35.40	44.00	40.97	54.00	-13.03	AV
V	10360.192	61.55	8.46	39.75	44.50	65.26	74.00	-8.74	PK
V	10360.192	43.80	8.46	39.75	44.50	47.51	54.00	-6.49	AV
V	15540.016	62.82	10.12	38.80	44.10	67.64	74.00	-6.36	PK
V	15540.016	43.95	10.12	38.80	42.70	50.17	54.00	-3.83	AV
H	4434.019	64.86	5.94	35.18	44.00	61.98	68.20	-6.22	PK
H	4434.019	43.79	5.94	35.18	44.00	40.91	54.00	-13.09	AV
H	10360.164	50.04	8.46	38.71	44.50	52.71	74.00	-21.29	PK
H	10360.164	41.85	8.46	38.71	44.50	44.52	54.00	-9.48	AV
H	15540.028	51.57	10.12	38.38	44.10	55.97	74.00	-18.03	PK
H	15540.028	40.47	10.12	38.38	44.10	44.87	54.00	-9.13	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.094	61.76	6.48	36.35	44.05	60.54	74.00	-13.46	PK
V	4592.094	43.50	6.48	36.35	44.05	42.28	54.00	-11.72	AV
V	10400.097	61.25	8.47	37.88	44.51	63.09	68.20	-5.11	PK
V	10400.097	43.18	8.47	37.88	44.51	45.02	54.00	-8.98	AV
V	15600.074	61.12	10.12	38.80	44.10	65.94	74.00	-8.06	PK
V	15600.074	43.81	10.12	38.80	42.70	50.03	54.00	-3.97	AV
H	4592.173	63.65	6.48	36.37	44.05	62.45	74.00	-11.55	PK
H	4592.173	43.74	6.48	36.37	44.05	42.54	54.00	-11.46	AV
H	10400.172	51.77	8.47	38.64	44.50	54.38	68.20	-13.82	PK
H	10400.172	42.05	8.47	38.64	44.50	44.66	54.00	-9.34	AV
H	15600.185	54.41	10.12	38.38	44.10	58.81	74.00	-15.19	PK
H	15600.185	44.66	10.12	38.38	44.10	49.06	54.00	-4.94	AV
High Channel (5240 MHz)-Above 1G									
V	4739.053	61.44	7.10	37.24	43.50	62.28	74.00	-11.72	PK
V	4739.053	43.98	7.10	37.24	43.50	44.82	54.00	-9.18	AV
V	10480.180	61.13	8.46	37.68	44.50	62.77	68.20	-5.43	PK
V	10480.180	43.69	8.46	37.68	44.50	45.33	54.00	-8.67	AV
V	15720.029	64.95	10.12	38.80	44.10	69.77	74.00	-4.23	PK
V	15720.029	43.79	10.12	38.80	42.70	50.01	54.00	-3.99	AV
H	4739.036	62.83	7.10	37.24	43.50	63.67	74.00	-10.33	PK
H	4739.036	43.11	7.10	37.24	43.50	43.95	54.00	-10.05	AV
H	10480.164	53.22	8.46	38.57	44.50	55.75	68.20	-12.45	PK
H	10480.164	41.91	8.46	38.57	44.50	44.44	54.00	-9.56	AV
H	15720.035	50.91	10.12	38.38	44.10	55.31	74.00	-18.69	PK
H	15720.035	44.49	10.12	38.38	44.10	48.89	54.00	-5.11	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX(5.2G) - 802.11n-HT20
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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenn a Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5180 MHz)-Above 1G									
V	4434.121	60.76	5.94	35.40	44.00	58.10	68.20	-10.10	PK
V	4434.121	43.30	5.94	35.40	44.00	40.64	54.00	-13.36	AV
V	10360.108	63.19	8.46	39.75	44.50	66.90	68.20	-1.30	PK
V	10360.108	43.52	8.46	39.75	44.50	47.23	54.00	-6.77	AV
V	15540.120	60.52	10.12	38.80	44.10	65.34	74.00	-8.66	PK
V	15540.120	43.28	10.12	38.80	42.70	49.50	54.00	-4.50	AV
H	4434.124	63.58	5.94	35.18	44.00	60.70	68.20	-7.50	PK
H	4434.124	43.35	5.94	35.18	44.00	40.47	54.00	-13.53	AV
H	10360.109	50.63	8.46	38.71	44.50	53.30	68.20	-14.90	PK
H	10360.109	43.61	8.46	38.71	44.50	46.28	54.00	-7.72	AV
H	15540.003	52.49	10.12	38.38	44.10	56.89	74.00	-17.11	PK
H	15540.003	43.96	10.12	38.38	44.10	48.36	54.00	-5.64	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.128	63.53	6.48	36.35	44.05	62.31	74.00	-11.69	PK
V	4592.128	43.32	6.48	36.35	44.05	42.10	54.00	-11.90	AV
V	10400.115	62.27	8.47	37.88	44.51	64.11	68.20	-4.09	PK
V	10400.115	43.97	8.47	37.88	44.51	45.81	54.00	-8.19	AV
V	15600.073	61.77	10.12	38.80	44.10	66.59	74.00	-7.41	PK
V	15600.073	43.66	10.12	38.80	42.70	49.88	54.00	-4.12	AV
H	4592.163	64.03	6.48	36.37	44.05	62.83	74.00	-11.17	PK
H	4592.163	43.29	6.48	36.37	44.05	42.09	54.00	-11.91	AV
H	10400.018	53.02	8.47	38.64	44.50	55.63	68.20	-12.57	PK
H	10400.018	43.74	8.47	38.64	44.50	46.35	54.00	-7.65	AV
H	15600.085	50.51	10.12	38.38	44.10	54.91	74.00	-19.09	PK
H	15600.085	43.96	10.12	38.38	44.10	48.36	54.00	-5.64	AV
High Channel (5240 MHz)-Above 1G									
V	4739.144	62.45	7.10	37.24	43.50	63.29	74.00	-10.71	PK
V	4739.144	43.22	7.10	37.24	43.50	44.06	54.00	-9.94	AV
V	10480.025	61.55	8.46	37.68	44.50	63.19	68.20	-5.01	PK
V	10480.025	43.58	8.46	37.68	44.50	45.22	54.00	-8.78	AV
V	15720.071	64.88	10.12	38.80	44.10	69.70	74.00	-4.30	PK
V	15720.071	43.75	10.12	38.80	42.70	49.97	54.00	-4.03	AV
H	4739.035	62.74	7.10	37.24	43.50	63.58	74.00	-10.42	PK
H	4739.035	43.05	7.10	37.24	43.50	43.89	54.00	-10.11	AV
H	10480.055	51.96	8.46	38.57	44.50	54.49	68.20	-13.71	PK
H	10480.055	43.29	8.46	38.57	44.50	45.82	54.00	-8.18	AV
H	15720.187	54.92	10.12	38.38	44.10	59.32	74.00	-14.68	PK
H	15720.187	41.36	10.12	38.38	44.10	45.76	54.00	-8.24	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX(5.2G) - 802.11n-HT40
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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5190 MHz)-Above 1G									
V	4434.052	60.15	5.94	35.40	44.00	57.49	74.00	-16.51	PK
V	4434.052	43.86	5.94	35.40	44.00	41.20	54.00	-12.80	AV
V	10380.039	60.22	8.46	39.75	44.50	63.93	68.20	-4.27	PK
V	10380.039	43.46	8.46	39.75	44.50	47.17	54.00	-6.83	AV
V	15570.049	61.07	10.12	38.80	44.10	65.89	74.00	-8.11	PK
V	15570.049	43.23	10.12	38.80	42.70	49.45	54.00	-4.55	AV
H	4434.111	63.51	5.94	35.18	44.00	60.63	74.00	-13.37	PK
H	4434.111	43.85	5.94	35.18	44.00	40.97	54.00	-13.03	AV
H	10380.160	50.09	8.46	38.71	44.50	52.76	68.20	-15.44	PK
H	10380.160	44.26	8.46	38.71	44.50	46.93	54.00	-7.07	AV
H	15570.039	54.60	10.12	38.38	44.10	59.00	74.00	-15.00	PK
H	15570.039	41.61	10.12	38.38	44.10	46.01	54.00	-7.99	AV
middle Channel (5230 MHz)-Above 1G									
V	4739.013	60.93	6.48	36.35	44.05	59.71	74.00	-14.29	PK
V	4739.013	43.40	6.48	36.35	44.05	42.18	54.00	-11.82	AV
V	10460.122	63.18	8.47	37.88	44.51	65.02	68.20	-3.18	PK
V	10460.122	43.09	8.47	37.88	44.51	44.93	54.00	-9.07	AV
V	15690.154	64.88	10.12	38.80	44.10	69.70	74.00	-4.30	PK
V	15690.154	43.21	10.12	38.80	42.70	49.43	54.00	-4.57	AV
H	4739.052	61.17	6.48	36.37	44.05	59.97	74.00	-14.03	PK
H	4739.052	43.03	6.48	36.37	44.05	41.83	54.00	-12.17	AV
H	10460.177	52.63	8.47	38.64	44.50	55.24	68.20	-12.96	PK
H	10460.177	41.41	8.47	38.64	44.50	44.02	54.00	-9.98	AV
H	15690.184	51.82	10.12	38.38	44.10	56.22	74.00	-17.78	PK
H	15690.184	40.44	10.12	38.38	44.10	44.84	54.00	-9.16	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX(5.2G) - 802.11ac-HT20
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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5180 MHz)-Above 1G									
V	4434.044	63.57	5.94	35.40	44.00	60.91	68.20	-7.29	PK
V	4434.044	43.55	5.94	35.40	44.00	40.89	54.00	-13.11	AV
V	10360.077	61.30	8.46	39.75	44.50	65.01	74.00	-8.99	PK
V	10360.077	43.02	8.46	39.75	44.50	46.73	54.00	-7.27	AV
V	15540.104	63.41	10.12	38.80	44.10	68.23	74.00	-5.77	PK
V	15540.104	43.40	10.12	38.80	42.70	49.62	54.00	-4.38	AV
H	4434.087	61.24	5.94	35.18	44.00	58.36	68.20	-9.84	PK
H	4434.087	43.87	5.94	35.18	44.00	40.99	54.00	-13.01	AV
H	10360.184	54.23	8.46	38.71	44.50	56.90	74.00	-17.10	PK
H	10360.184	41.11	8.46	38.71	44.50	43.78	54.00	-10.22	AV
H	15540.100	50.85	10.12	38.38	44.10	55.25	74.00	-18.75	PK
H	15540.100	43.04	10.12	38.38	44.10	47.44	54.00	-6.56	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.086	61.96	6.48	36.35	44.05	60.74	74.00	-13.26	PK
V	4592.086	43.64	6.48	36.35	44.05	42.42	54.00	-11.58	AV
V	10400.173	60.62	8.47	37.88	44.51	62.46	68.20	-5.74	PK
V	10400.173	43.78	8.47	37.88	44.51	45.62	54.00	-8.38	AV
V	15600.092	63.96	10.12	38.80	44.10	68.78	74.00	-5.22	PK
V	15600.092	43.72	10.12	38.80	42.70	49.94	54.00	-4.06	AV
H	4592.185	63.67	6.48	36.37	44.05	62.47	74.00	-11.53	PK
H	4592.185	43.54	6.48	36.37	44.05	42.34	54.00	-11.66	AV
H	10400.136	50.65	8.47	38.64	44.50	53.26	68.20	-14.94	PK
H	10400.136	44.71	8.47	38.64	44.50	47.32	54.00	-6.68	AV
H	15600.149	51.97	10.12	38.38	44.10	56.37	74.00	-17.63	PK
H	15600.149	41.30	10.12	38.38	44.10	45.70	54.00	-8.30	AV
High Channel (5240 MHz)-Above 1G									
V	4739.188	63.59	7.10	37.24	43.50	64.43	74.00	-9.57	PK
V	4739.188	43.56	7.10	37.24	43.50	44.40	54.00	-9.60	AV
V	10480.006	61.51	8.46	37.68	44.50	63.15	68.20	-5.05	PK
V	10480.006	43.95	8.46	37.68	44.50	45.59	54.00	-8.41	AV
V	15720.023	61.97	10.12	38.80	44.10	66.79	74.00	-7.21	PK
V	15720.023	43.80	10.12	38.80	42.70	50.02	54.00	-3.98	AV
H	4739.022	63.50	7.10	37.24	43.50	64.34	74.00	-9.66	PK
H	4739.022	43.42	7.10	37.24	43.50	44.26	54.00	-9.74	AV
H	10480.057	51.86	8.46	38.57	44.50	54.39	68.20	-13.81	PK
H	10480.057	43.82	8.46	38.57	44.50	46.35	54.00	-7.65	AV
H	15720.150	51.93	10.12	38.38	44.10	56.33	74.00	-17.67	PK
H	15720.150	42.55	10.12	38.38	44.10	46.95	54.00	-7.05	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX(5.2G) - 802.11ac-HT40
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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5190 MHz)-Above 1G									
V	4434.109	60.90	5.94	35.40	44.00	58.24	74.00	-15.76	PK
V	4434.109	43.71	5.94	35.40	44.00	41.05	54.00	-12.95	AV
V	10380.096	62.82	8.46	39.75	44.50	66.53	68.20	-1.67	PK
V	10380.096	43.28	8.46	39.75	44.50	46.99	54.00	-7.01	AV
V	15570.120	64.40	10.12	38.80	44.10	69.22	74.00	-4.78	PK
V	15570.120	43.22	10.12	38.80	42.70	49.44	54.00	-4.56	AV
H	4434.098	60.59	5.94	35.18	44.00	57.71	74.00	-16.29	PK
H	4434.098	43.23	5.94	35.18	44.00	40.35	54.00	-13.65	AV
H	10380.042	50.35	8.46	38.71	44.50	53.02	68.20	-15.18	PK
H	10380.042	40.91	8.46	38.71	44.50	43.58	54.00	-10.42	AV
H	15570.187	52.13	10.12	38.38	44.10	56.53	74.00	-17.47	PK
H	15570.187	40.98	10.12	38.38	44.10	45.38	54.00	-8.62	AV
middle Channel (5230 MHz)-Above 1G									
V	4739.176	62.40	6.48	36.35	44.05	61.18	74.00	-12.82	PK
V	4739.176	43.35	6.48	36.35	44.05	42.13	54.00	-11.87	AV
V	10460.068	60.69	8.47	37.88	44.51	62.53	68.20	-5.67	PK
V	10460.068	43.22	8.47	37.88	44.51	45.06	54.00	-8.94	AV
V	15690.147	61.55	10.12	38.80	44.10	66.37	74.00	-7.63	PK
V	15690.147	43.47	10.12	38.80	42.70	49.69	54.00	-4.31	AV
H	4739.011	60.90	6.48	36.37	44.05	59.70	74.00	-14.30	PK
H	4739.011	43.85	6.48	36.37	44.05	42.65	54.00	-11.35	AV
H	10460.025	54.39	8.47	38.64	44.50	57.00	68.20	-11.20	PK
H	10460.025	44.78	8.47	38.64	44.50	47.39	54.00	-6.61	AV
H	15690.044	54.98	10.12	38.38	44.10	59.38	74.00	-14.62	PK
H	15690.044	43.76	10.12	38.38	44.10	48.16	54.00	-5.84	AV

Note: PK value is lower than the Average value limit, So average didn't record.
The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX (5.8G) -- 802.11a
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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5745 MHz)-Above 1G									
V	4679.035	60.16	5.94	35.40	44.00	57.50	74.00	-16.50	PK
V	4679.035	43.20	5.94	35.40	44.00	40.54	54.00	-13.46	AV
V	11490.089	62.31	8.46	39.75	44.50	66.02	68.20	-2.18	PK
V	11490.089	43.90	8.46	39.75	44.50	47.61	54.00	-6.39	AV
V	17235.096	64.74	10.12	38.80	44.10	69.56	74.00	-4.44	PK
V	17235.096	43.49	10.12	38.80	42.70	49.71	54.00	-4.29	AV
H	4679.198	62.57	5.94	35.18	44.00	59.69	74.00	-14.31	PK
H	4679.198	43.44	5.94	35.18	44.00	40.56	54.00	-13.44	AV
H	11490.103	50.08	8.46	38.71	44.50	52.75	68.20	-15.45	PK
H	11490.103	41.16	8.46	38.71	44.50	43.83	54.00	-10.17	AV
H	17235.144	52.95	10.12	38.38	44.10	57.35	74.00	-16.65	PK
H	17235.144	40.91	10.12	38.38	44.10	45.31	54.00	-8.69	AV
middle Channel (5785 MHz)-Above 1G									
V	4592.194	64.26	6.48	36.35	44.05	63.04	74.00	-10.96	PK
V	4592.194	43.29	6.48	36.35	44.05	42.07	54.00	-11.93	AV
V	11570.044	63.01	8.47	37.88	44.51	64.85	68.20	-3.35	PK
V	11570.044	43.92	8.47	37.88	44.51	45.76	54.00	-8.24	AV
V	17355.139	60.49	10.12	38.80	44.10	65.31	74.00	-8.69	PK
V	17355.139	43.83	10.12	38.80	42.70	50.05	54.00	-3.95	AV
H	4592.078	63.30	6.48	36.37	44.05	62.10	74.00	-11.90	PK
H	4592.078	43.11	6.48	36.37	44.05	41.91	54.00	-12.09	AV
H	11570.102	52.15	8.47	38.64	44.50	54.76	68.20	-13.44	PK
H	11570.102	44.73	8.47	38.64	44.50	47.34	54.00	-6.66	AV
H	17355.059	50.40	10.12	38.38	44.10	54.80	74.00	-19.20	PK
H	17355.059	40.61	10.12	38.38	44.10	45.01	54.00	-8.99	AV
High Channel (5825 MHz)-Above 1G									
V	6039.129	61.18	7.10	37.24	43.50	62.02	68.20	-6.18	PK
V	6039.129	43.41	7.10	37.24	43.50	44.25	54.00	-9.75	AV
V	11650.074	60.10	8.46	37.68	44.50	61.74	74.00	-12.26	PK
V	11650.074	43.86	8.46	37.68	44.50	45.50	54.00	-8.50	AV
V	17475.198	62.83	10.12	38.80	44.10	67.65	68.20	-0.55	PK
V	17475.198	43.89	10.12	38.80	42.70	50.11	54.00	-3.89	AV
H	6039.182	60.17	7.10	37.24	43.50	61.01	68.20	-7.19	PK
H	6039.182	43.48	7.10	37.24	43.50	44.32	54.00	-9.68	AV
H	11650.047	52.71	8.46	38.57	44.50	55.24	74.00	-18.76	PK
H	11650.047	42.64	8.46	38.57	44.50	45.17	54.00	-8.83	AV
H	17475.177	54.72	10.12	38.38	44.10	59.12	68.20	-9.08	PK
H	17475.177	43.18	10.12	38.38	44.10	47.58	54.00	-6.42	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX (5.8G) --802.11n-HT20
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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5745 MHz)-Above 1G									
V	4679.120	64.42	5.94	35.40	44.00	61.76	74.00	-12.24	PK
V	4679.120	43.61	5.94	35.40	44.00	40.95	54.00	-13.05	AV
V	11490.192	63.04	8.46	39.75	44.50	66.75	68.20	-1.45	PK
V	11490.192	43.53	8.46	39.75	44.50	47.24	54.00	-6.76	AV
V	17235.016	61.96	10.12	38.80	44.10	66.78	74.00	-7.22	PK
V	17235.016	43.80	10.12	38.80	42.70	50.02	54.00	-3.98	AV
H	4679.169	60.12	5.94	35.18	44.00	57.24	74.00	-16.76	PK
H	4679.169	43.07	5.94	35.18	44.00	40.19	54.00	-13.81	AV
H	11490.180	52.49	8.46	38.71	44.50	55.16	68.20	-13.04	PK
H	11490.180	42.34	8.46	38.71	44.50	45.01	54.00	-8.99	AV
H	17235.195	52.76	10.12	38.38	44.10	57.16	74.00	-16.84	PK
H	17235.195	41.18	10.12	38.38	44.10	45.58	54.00	-8.42	AV
middle Channel (5785 MHz)-Above 1G									
V	4592.011	61.79	6.48	36.35	44.05	60.57	74.00	-13.43	PK
V	4592.011	43.01	6.48	36.35	44.05	41.79	54.00	-12.21	AV
V	11570.124	63.27	8.47	37.88	44.51	65.11	68.20	-3.09	PK
V	11570.124	43.03	8.47	37.88	44.51	44.87	54.00	-9.13	AV
V	17355.104	64.56	10.12	38.80	44.10	69.38	74.00	-4.62	PK
V	17355.104	43.48	10.12	38.80	42.70	49.70	54.00	-4.30	AV
H	4592.034	62.13	6.48	36.37	44.05	60.93	74.00	-13.07	PK
H	4592.034	43.93	6.48	36.37	44.05	42.73	54.00	-11.27	AV
H	11570.041	54.68	8.47	38.64	44.50	57.29	68.20	-10.91	PK
H	11570.041	42.51	8.47	38.64	44.50	45.12	54.00	-8.88	AV
H	17355.072	52.51	10.12	38.38	44.10	56.91	74.00	-17.09	PK
H	17355.072	40.93	10.12	38.38	44.10	45.33	54.00	-8.67	AV
High Channel (5825 MHz)-Above 1G									
V	6039.072	64.56	7.10	37.24	43.50	65.40	68.20	-2.80	PK
V	6039.072	43.78	7.10	37.24	43.50	44.62	54.00	-9.38	AV
V	11650.015	60.05	8.46	37.68	44.50	61.69	74.00	-12.31	PK
V	11650.015	43.86	8.46	37.68	44.50	45.50	54.00	-8.50	AV
V	17475.157	63.19	10.12	38.80	44.10	68.01	68.20	-0.19	PK
V	17475.157	43.23	10.12	38.80	42.70	49.45	54.00	-4.55	AV
H	6039.081	62.24	7.10	37.24	43.50	63.08	68.20	-5.12	PK
H	6039.081	43.16	7.10	37.24	43.50	44.00	54.00	-10.00	AV
H	11650.057	52.47	8.46	38.57	44.50	55.00	74.00	-19.00	PK
H	11650.057	43.08	8.46	38.57	44.50	45.61	54.00	-8.39	AV
H	17475.118	50.76	10.12	38.38	44.10	55.16	68.20	-13.04	PK
H	17475.118	42.82	10.12	38.38	44.10	47.22	54.00	-6.78	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX (5.8G) -- 802.11n-HT40
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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenn a Factor (dB/m)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5755 MHz)-Above 1G									
V	4679.112	60.52	5.94	35.40	44.00	57.86	74.00	-16.14	PK
V	4679.112	43.07	5.94	35.40	44.00	40.41	54.00	-13.59	AV
V	11510.166	61.61	8.46	39.75	44.50	65.32	68.20	-2.88	PK
V	11510.166	43.23	8.46	39.75	44.50	46.94	54.00	-7.06	AV
V	17265.079	64.82	10.12	38.80	44.10	69.64	74.00	-4.36	PK
V	17265.079	43.63	10.12	38.80	42.70	49.85	54.00	-4.15	AV
H	4679.103	60.66	5.94	35.18	44.00	57.78	74.00	-16.22	PK
H	4679.103	43.16	5.94	35.18	44.00	40.28	54.00	-13.72	AV
H	11510.095	53.25	8.46	38.71	44.50	55.92	68.20	-12.28	PK
H	11510.095	42.92	8.46	38.71	44.50	45.59	54.00	-8.41	AV
H	17265.115	51.20	10.12	38.38	44.10	55.60	74.00	-18.40	PK
H	17265.115	44.71	10.12	38.38	44.10	49.11	54.00	-4.89	AV
middle Channel (5795 MHz)-Above 1G									
V	6039.019	61.89	6.48	36.35	44.05	60.67	68.20	-7.53	PK
V	6039.019	43.60	6.48	36.35	44.05	42.38	54.00	-11.62	AV
V	11590.077	63.17	8.47	37.88	44.51	65.01	74.00	-8.99	PK
V	11590.077	43.71	8.47	37.88	44.51	45.55	54.00	-8.45	AV
V	17385.153	60.57	10.12	38.80	44.10	65.39	68.20	-2.81	PK
V	17385.153	43.41	10.12	38.80	42.70	49.63	54.00	-4.37	AV
H	6039.030	60.11	6.48	36.37	44.05	58.91	68.20	-9.29	PK
H	6039.030	43.83	6.48	36.37	44.05	42.63	54.00	-11.37	AV
H	11590.176	52.98	8.47	38.64	44.50	55.59	74.00	-18.41	PK
H	11590.176	44.04	8.47	38.64	44.50	46.65	54.00	-7.35	AV
H	17385.117	50.31	10.12	38.38	44.10	54.71	68.20	-13.49	PK
H	17385.117	42.55	10.12	38.38	44.10	46.95	54.00	-7.05	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX (5.8G) --802.11ac-HT20
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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5745 MHz)-Above 1G									
V	4679.107	64.93	5.94	35.40	44.00	62.27	74.00	-11.73	PK
V	4679.107	43.90	5.94	35.40	44.00	41.24	54.00	-12.76	AV
V	11490.101	61.86	8.46	39.75	44.50	65.57	68.20	-2.63	PK
V	11490.101	43.84	8.46	39.75	44.50	47.55	54.00	-6.45	AV
V	17235.069	62.61	10.12	38.80	44.10	67.43	74.00	-6.57	PK
V	17235.069	43.58	10.12	38.80	42.70	49.80	54.00	-4.20	AV
H	4679.084	63.53	5.94	35.18	44.00	60.65	74.00	-13.35	PK
H	4679.084	43.76	5.94	35.18	44.00	40.88	54.00	-13.12	AV
H	11490.030	54.02	8.46	38.71	44.50	56.69	68.20	-11.51	PK
H	11490.030	44.10	8.46	38.71	44.50	46.77	54.00	-7.23	AV
H	17235.133	52.28	10.12	38.38	44.10	56.68	74.00	-17.32	PK
H	17235.133	41.25	10.12	38.38	44.10	45.65	54.00	-8.35	AV
middle Channel (5785 MHz)-Above 1G									
V	4592.187	61.68	6.48	36.35	44.05	60.46	74.00	-13.54	PK
V	4592.187	43.78	6.48	36.35	44.05	42.56	54.00	-11.44	AV
V	11570.111	60.54	8.47	37.88	44.51	62.38	68.20	-5.82	PK
V	11570.111	43.39	8.47	37.88	44.51	45.23	54.00	-8.77	AV
V	17355.189	61.63	10.12	38.80	44.10	66.45	74.00	-7.55	PK
V	17355.189	43.69	10.12	38.80	42.70	49.91	54.00	-4.09	AV
H	4592.166	64.02	6.48	36.37	44.05	62.82	74.00	-11.18	PK
H	4592.166	43.46	6.48	36.37	44.05	42.26	54.00	-11.74	AV
H	11570.056	54.81	8.47	38.64	44.50	57.42	68.20	-10.78	PK
H	11570.056	44.32	8.47	38.64	44.50	46.93	54.00	-7.07	AV
H	17355.177	53.33	10.12	38.38	44.10	57.73	74.00	-16.27	PK
H	17355.177	43.29	10.12	38.38	44.10	47.69	54.00	-6.31	AV
High Channel (5825 MHz)-Above 1G									
V	6039.008	62.62	7.10	37.24	43.50	63.46	68.20	-4.74	PK
V	6039.008	43.70	7.10	37.24	43.50	44.54	54.00	-9.46	AV
V	11650.113	64.37	8.46	37.68	44.50	66.01	74.00	-7.99	PK
V	11650.113	43.66	8.46	37.68	44.50	45.30	54.00	-8.70	AV
V	17475.127	61.03	10.12	38.80	44.10	65.85	68.20	-2.35	PK
V	17475.127	43.25	10.12	38.80	42.70	49.47	54.00	-4.53	AV
H	6039.012	63.95	7.10	37.24	43.50	64.79	68.20	-3.41	PK
H	6039.012	43.89	7.10	37.24	43.50	44.73	54.00	-9.27	AV
H	11650.089	52.51	8.46	38.57	44.50	55.04	74.00	-18.96	PK
H	11650.089	43.93	8.46	38.57	44.50	46.46	54.00	-7.54	AV
H	17475.023	52.26	10.12	38.38	44.10	56.66	68.20	-11.54	PK
H	17475.023	40.61	10.12	38.38	44.10	45.01	54.00	-8.99	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX (5.8G) -- 802.11ac-HT40
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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5755 MHz)-Above 1G									
V	4679.042	60.72	5.94	35.40	44.00	58.06	74.00	-15.94	PK
V	4679.042	43.82	5.94	35.40	44.00	41.16	54.00	-12.84	AV
V	11510.027	60.67	8.46	39.75	44.50	64.38	68.20	-3.82	PK
V	11510.027	43.81	8.46	39.75	44.50	47.52	54.00	-6.48	AV
V	17265.170	60.34	10.12	38.80	44.10	65.16	74.00	-8.84	PK
V	17265.170	43.52	10.12	38.80	42.70	49.74	54.00	-4.26	AV
H	4679.183	60.65	5.94	35.18	44.00	57.77	74.00	-16.23	PK
H	4679.183	43.23	5.94	35.18	44.00	40.35	54.00	-13.65	AV
H	11510.193	51.35	8.46	38.71	44.50	54.02	68.20	-14.18	PK
H	11510.193	40.24	8.46	38.71	44.50	42.91	54.00	-11.09	AV
H	17265.175	52.08	10.12	38.38	44.10	56.48	74.00	-17.52	PK
H	17265.175	44.01	10.12	38.38	44.10	48.41	54.00	-5.59	AV
middle Channel (5795 MHz)-Above 1G									
V	6039.112	63.73	6.48	36.35	44.05	62.51	68.20	-5.69	PK
V	6039.112	43.89	6.48	36.35	44.05	42.67	54.00	-11.33	AV
V	11590.010	63.94	8.47	37.88	44.51	65.78	74.00	-8.22	PK
V	11590.010	43.28	8.47	37.88	44.51	45.12	54.00	-8.88	AV
V	17385.050	60.80	10.12	38.80	44.10	65.62	68.20	-2.58	PK
V	17385.050	43.87	10.12	38.80	42.70	50.09	54.00	-3.91	AV
H	6039.004	63.63	6.48	36.37	44.05	62.43	68.20	-5.77	PK
H	6039.004	43.71	6.48	36.37	44.05	42.51	54.00	-11.49	AV
H	11590.197	54.92	8.47	38.64	44.50	57.53	74.00	-16.47	PK
H	11590.197	40.19	8.47	38.64	44.50	42.80	54.00	-11.20	AV
H	17385.057	51.79	10.12	38.38	44.10	56.19	68.20	-12.01	PK
H	17385.057	42.24	10.12	38.38	44.10	46.64	54.00	-7.36	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

8. POWER SPECTRAL DENSITY TEST

8.1 Block Diagram Of Test Setup



8.2 Limit

For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional

gain greater than 6 dBi are used, both the maximum conducted output power and the maximum

power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional

gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of

the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in

maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz

(3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.3 Test procedure

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

- a) Set $RBW \geq 1/T$, where T is defined in section II.B.I.a).
- b) Set $VBW \geq 3 RBW$.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/RBW)$ to the measured result, whereas $RBW (< 500 \text{ KHz})$ is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add $10\log(1\text{MHz}/RBW)$ to the measured result, whereas $RBW (< 1 \text{ MHz})$ is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections 5.c) and 5.d) above, since $RBW=100 \text{ KHz}$ is available on nearly all spectrum analyzers.

8.4 EUT operating Conditions

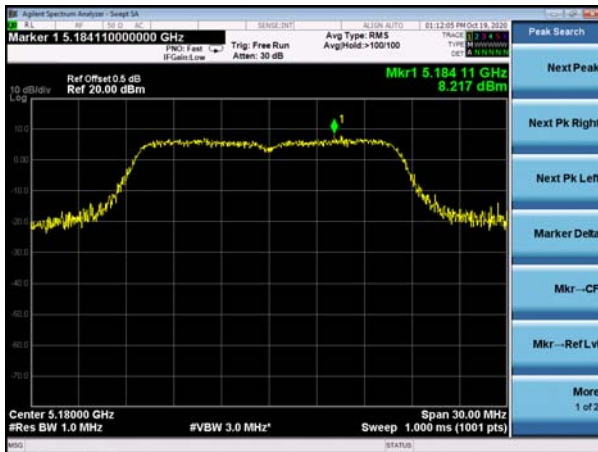
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

8.5 Test Result

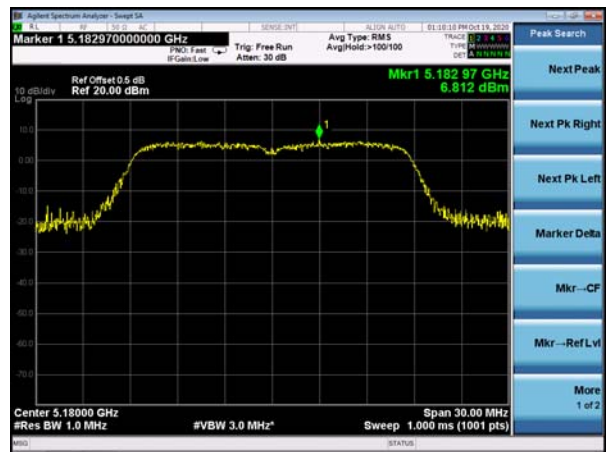
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX Frequency U-NII-1 (5180-5240MHz)		

Mode	Frequency	Measured Power Density (dBm/MHz)	Limit (dBm/MHz)	Result
802.11 a	5180 MHz	8.217	17	PASS
	5200 MHz	7.253	17	PASS
	5240 MHz	6.049	17	PASS
802.11 n20	5180 MHz	6.812	17	PASS
	5200 MHz	6.844	17	PASS
	5240 MHz	6.406	17	PASS
802.11 n40	5190 MHz	5.588	17	PASS
	5230 MHz	3.945	17	PASS
802.11 ac20	5180 MHz	8.075	17	PASS
	5200 MHz	7.750	17	PASS
	5240 MHz	5.986	17	PASS
802.11 ac40	5190 MHz	3.977	17	PASS
	5230 MHz	4.111	17	PASS

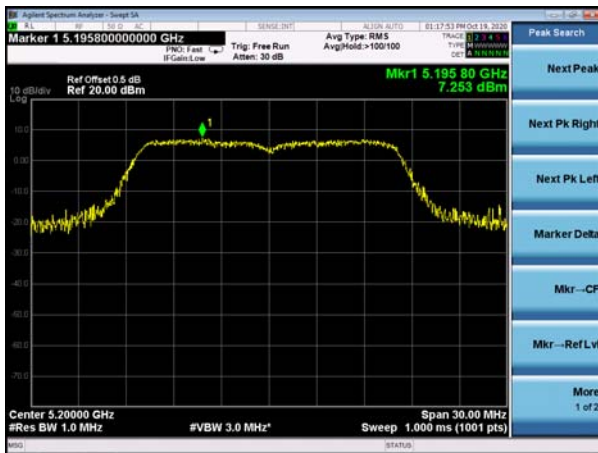
(802.11a) PSD plot on channel 36



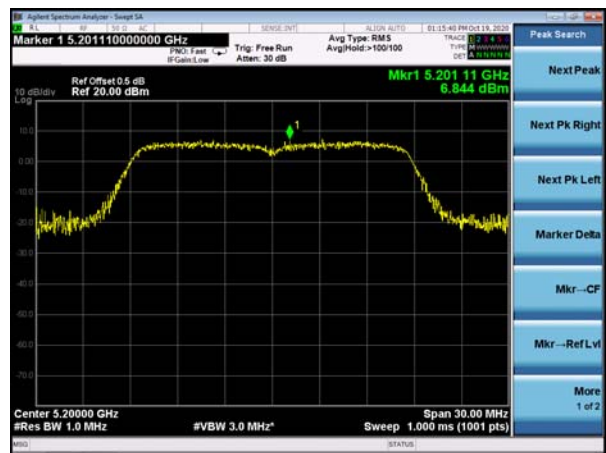
(802.11n20) PSD plot on channel 36



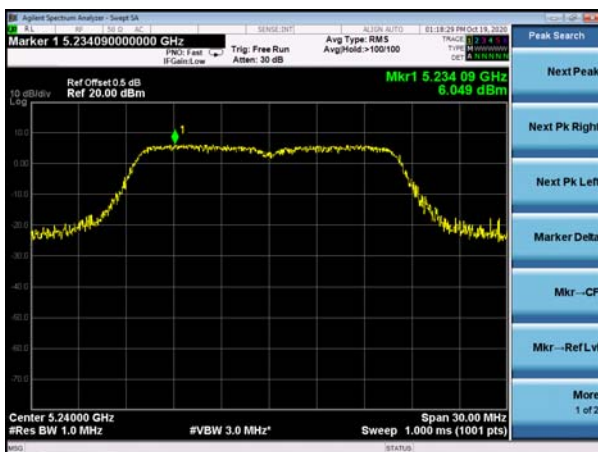
(802.11a) PSD plot on channel 40



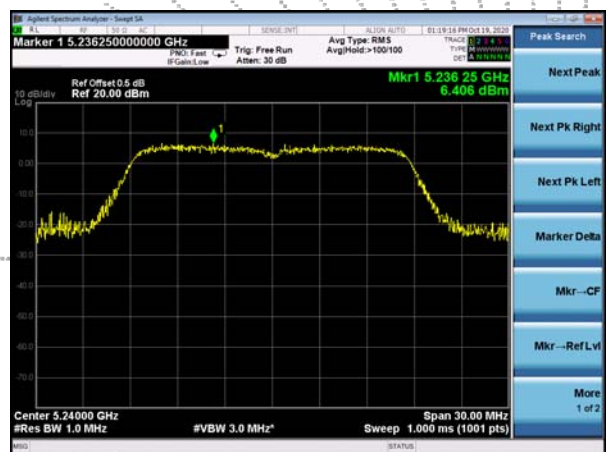
(802.11n20) PSD plot on channel 40



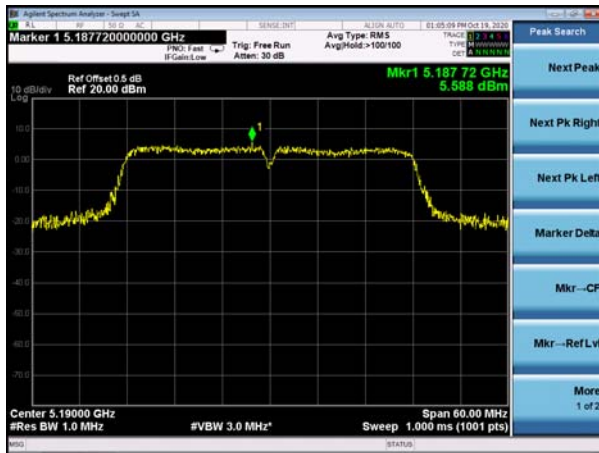
(802.11a) PSD plot on channel 48



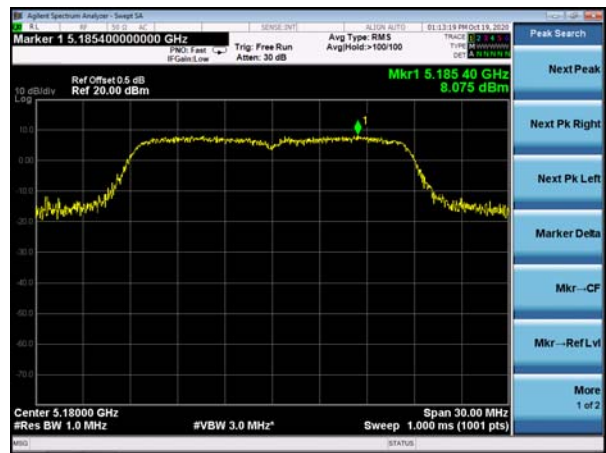
(802.11n20) PSD plot on channel 48



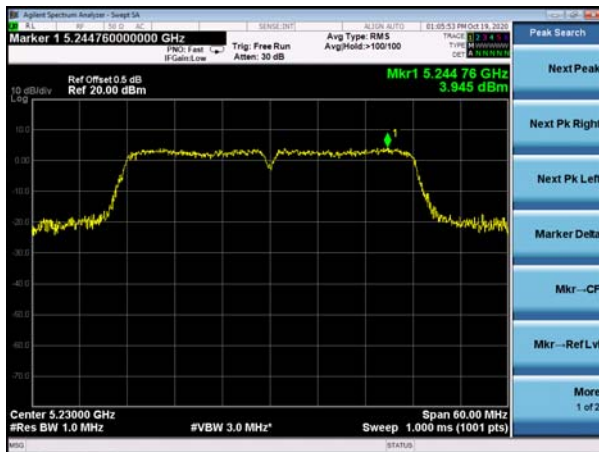
(802.11n40) PSD plot on channel 38



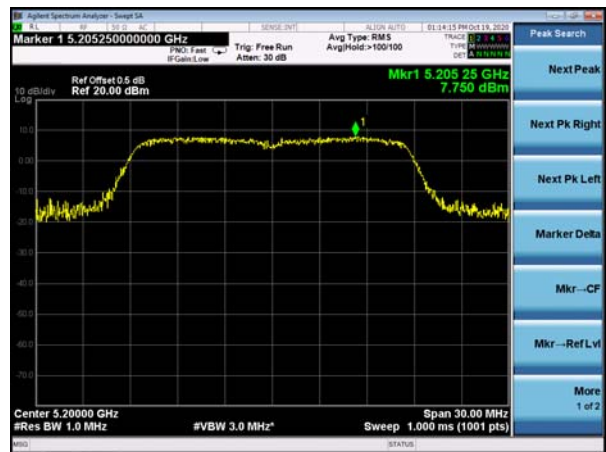
(802.11ac20) PSD plot on channel 36



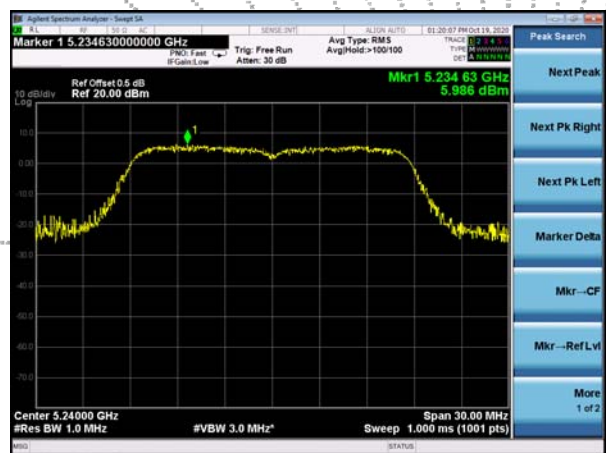
(802.11n40) PSD plot on channel 46



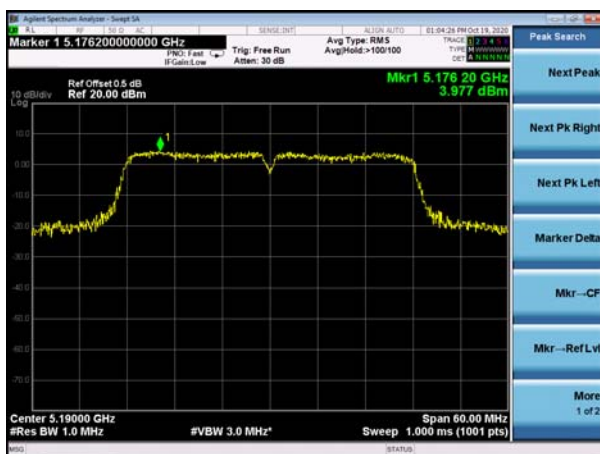
(802.11ac20) PSD plot on channel 40



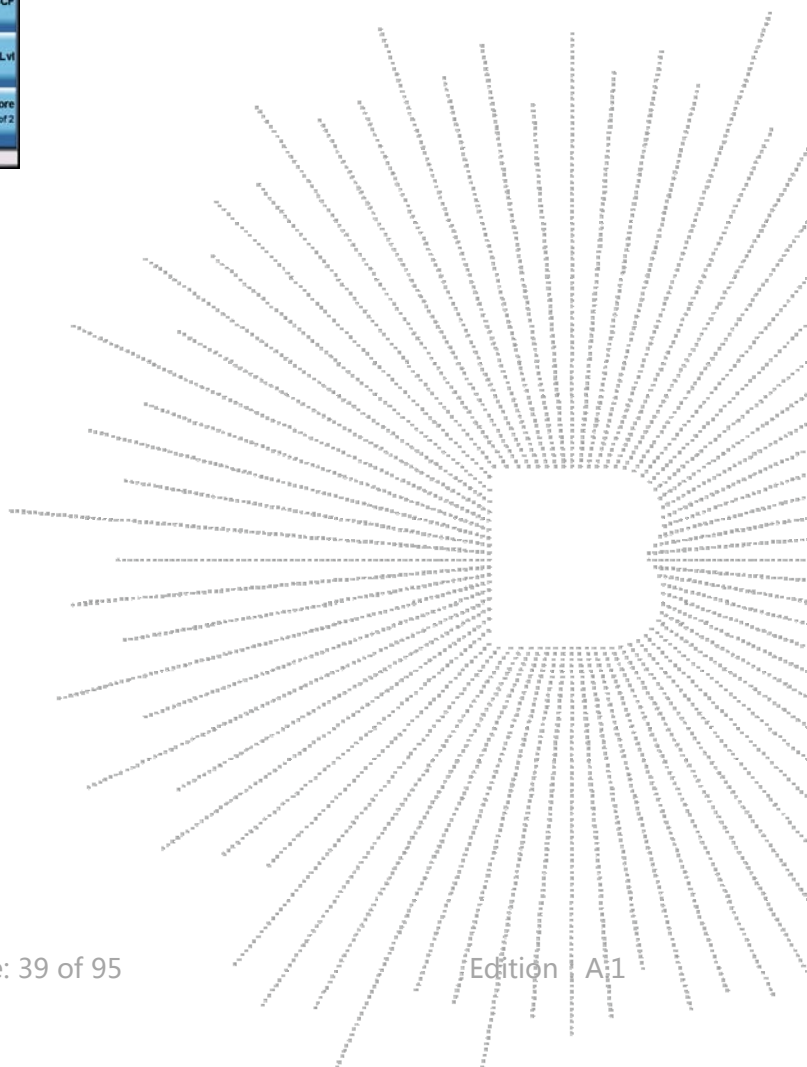
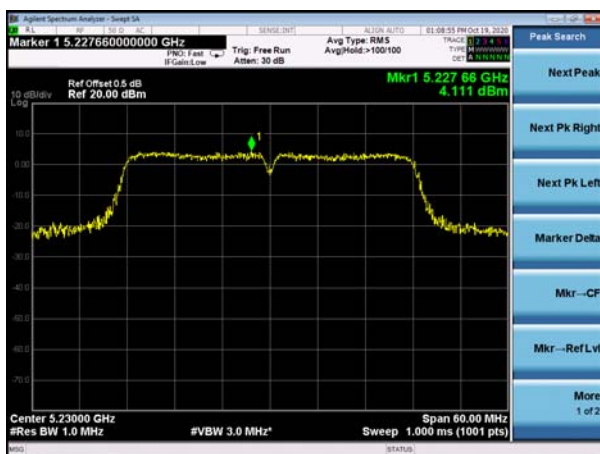
(802.11ac20) PSD plot on channel 48



(802.11ac40) PSD plot on channel 38

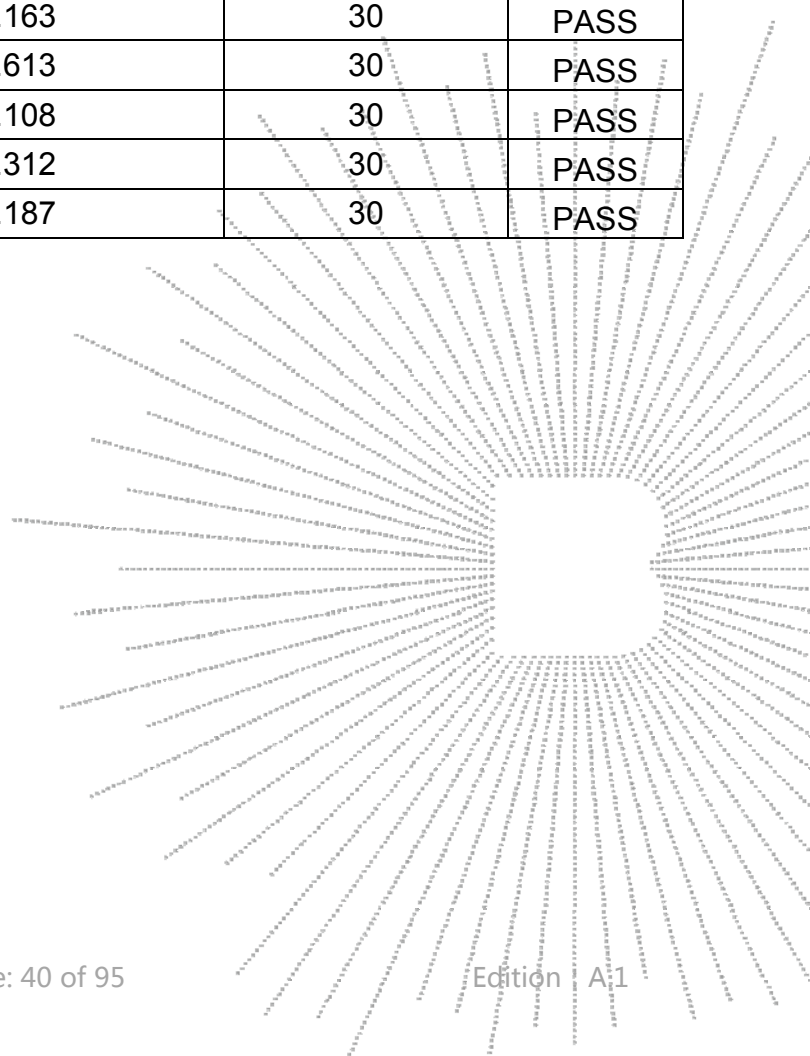


(802.11ac40) PSD plot on channel 46



Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX Frequency U-NII-3 (5745-5825MHz)		

Mode	Frequency	Measured Power Density (dBm/500KHz)	Limit (dBm/500kHz)	Result
802.11 a	5745 MHz	4.463	30	PASS
	5785 MHz	4.005	30	PASS
	5825 MHz	3.180	30	PASS
802.11 n20	5745 MHz	4.075	30	PASS
	5785 MHz	3.169	30	PASS
	5825 MHz	2.486	30	PASS
802.11 n40	5755 MHz	1.255	30	PASS
	5795 MHz	0.097	30	PASS
802.11 ac20	5745 MHz	4.163	30	PASS
	5785 MHz	3.613	30	PASS
	5825 MHz	2.108	30	PASS
802.11 ac40	5755 MHz	1.312	30	PASS
	5795 MHz	1.187	30	PASS



(802.11a) PSD plot on channel 149



(802.11n20) PSD plot on channel 149



(802.11a) PSD plot on channel 157



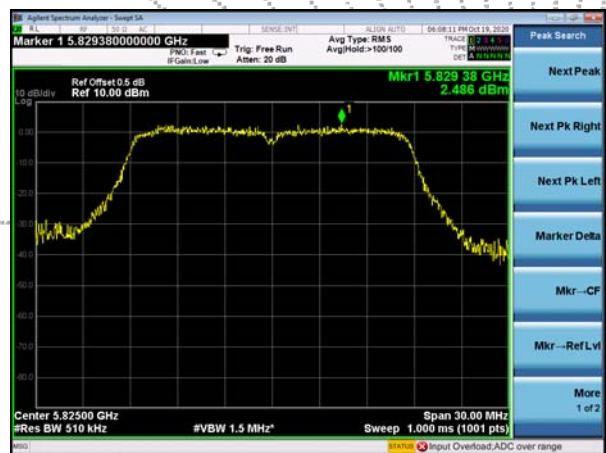
(802.11n20) PSD plot on channel 157



(802.11a) PSD plot on channel 165



(802.11n20) PSD plot on channel 165



(802.11n40) PSD plot on channel 151



(802.11ac20) PSD plot on channel 149



(802.11n40) PSD plot on channel 159



(802.11ac20) PSD plot on channel 157



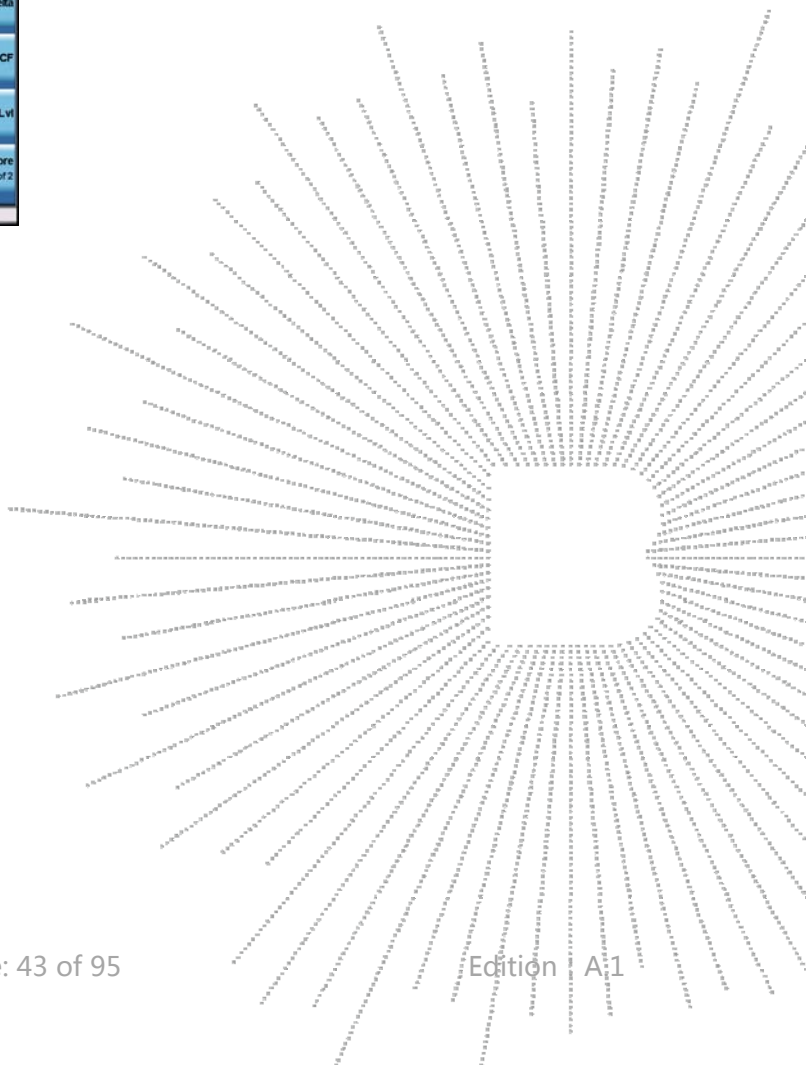
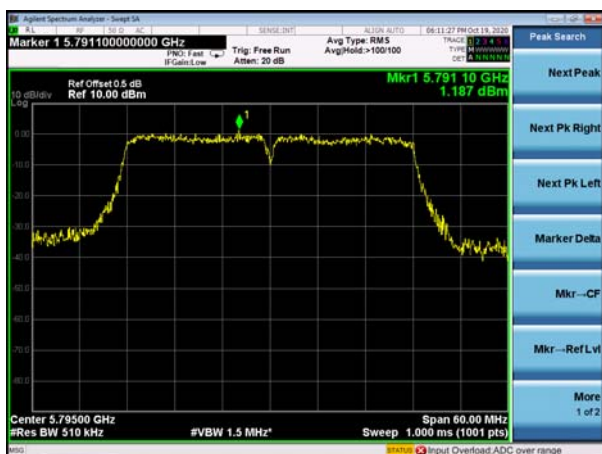
(802.11ac20) PSD plot on channel 165



(802.11ac40) PSD plot on channel 151

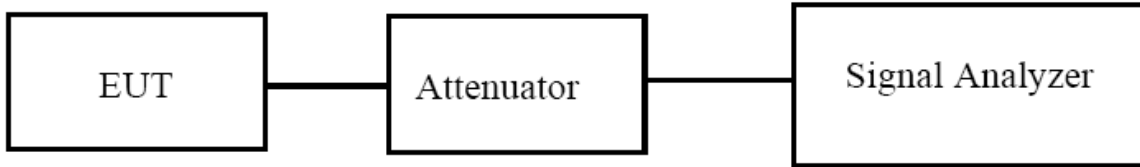


(802.11ac40) PSD plot on channel 159



9. 26DB & 6DB & 99% EMISSION BANDWIDTH

9.1 Block Diagram Of Test Setup



9.2 Limit

The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

9.3 Test procedure

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW $\geq 3 \cdot$ RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.