



■ Report No.: DDT-R22062203-2E06

■ Issued Date: Sep. 21, 2022

FCC CERTIFICATION TEST REPORT

FOR

Applicant	:	Guangzhou Shirui Electronics Co., Ltd
Address	:	192 Kezhu Road, Sciotech Park, Guangzhou Economic Technology Development District, Guangzhou, China
Equipment under Test	:	Integrated video conference terminal
Model No.	:	UC S15, MS*****(*=0-9,A-Z or blank), UC S*****(*=0-9,A-Z or blank)
Trade Mark	:	MAXHUB
FCC ID	:	2AFG6-UCS15
Manufacturer	:	Guangzhou Shirui Electronics Co., Ltd
Address	:	192 Kezhu Road, Sciotech Park, Guangzhou Economic Technology Development District, Guangzhou, China

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

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REPORT

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Test Report Declare

Applicant	:	Guangzhou Shirui Electronics Co., Ltd
Address	:	192 Kezhu Road, Sciencetech Park, Guangzhou Economic Technology Development District, Guangzhou, China
Equipment under Test	:	Integrated video conference terminal
Model No.	:	UC S15, MS*****(*=0-9,A-Z or blank), UC S*****(*=0-9,A-Z or blank)
Trade Mark	:	MAXHUB
Manufacturer	:	Guangzhou Shirui Electronics Co., Ltd
Address	:	192 Kezhu Road, Sciencetech Park, Guangzhou Economic Technology Development District, Guangzhou, China

Test Standard Used:

FCC Rules and Regulations Part 15 Subpart E

Test procedure used:

ANSI C63.10:2013, 789033 D02 General U-NII Test Procedures New Rules v02r01, 662911 D01 Multiple Transmitter Output v02r01

We Declare:

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.

Report No:	DDT-R22062203-2E06		
Date of Receipt:	Aug. 02, 2022	Date of Test:	Aug. 02, 2022 ~ Sep. 20, 2022

Prepared By:

Johnny Wang

Johnny Wang/Engineer

Approved By:



Damon Hu/EMC Manager

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Sep. 21, 2022	

1. Summary of test results

The EUT have been tested according to the applicable standards as referenced below.

Description of Test Item	Standard	Results
6/26db Bandwidth and 99% Bandwidth	FCC 15.407 (e)	Pass
Maximum Conducted Output Power	FCC 15.407 (a)	Pass
Power Spectral Density	FCC 15.407 (a)	Pass
Frequency Stability Measurement	FCC 15.407 (g)	Pass
Emissions in restricted frequency bands	FCC 15.407 (a) FCC 15.209 FCC 15.205	Pass
Band Edge Compliance	FCC 15.407 (a) FCC 15.209 FCC 15.205	Pass
Power Line Conducted Emission	FCC 15.207	Pass
Antenna requirement	FCC 15.203	Pass
Dynamic Frequency Selection	FCC 15.407 (h)	N/A

Note: N/A is an abbreviation for Not Applicable and means this test item is not applicable for this device according to the technology characteristic of device.

2. General test information

2.1. Description of EUT

EUT* Name	: Integrated video conference terminal
Model Number	: UC S15, MS*****(*=0-9,A-Z or blank), UC S*****(*=0-9,A-Z or blank)
Difference of models	: Above models are identical in schematic and structure, only the name is different for all the models, therefore the test performed on the model UC S15.
EUT function description	: Please reference user manual of this device
Power supply	: Input: 100-240V ~ 50/60Hz
Radio Technology	: IEEE 802.11ac
FCC Operation frequency	: IEEE 802.11ac HT40: 5190MHz
Modulation	: IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK)
Transmitter rate	: IEEE 802.11ac HT40: 30, 60, 90, 120, 180, 240, 270, 300, 360, 400 Mbps
Antenna Gain	: Antenna 1: PCB antenna, Maximum PK gain: 5.17 dBi Antenna 2: PCB antenna, Maximum PK gain: 5.17 dBi
Sample Type	: Series production
Sample Number	: S22062203-01 for conductive S22062203-02 for radiation

Note: EUT is the ab. of equipment under test.

Antenna information			
	Ant1 gain	Ant2 gain	MIMO
IEEE 802.11ac VHT40	5.17	5.17	8.18

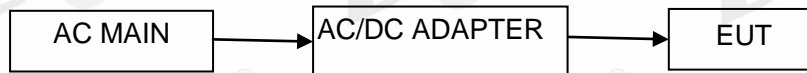
2.2. Accessories of EUT

Assistant equipment	Manufacturer	Model number	Other
Switching adapter	Dong Guan City GangQi Electronic Co., Ltd.	GQ36-120300-AX	Input: 100-240V ~ 50/60Hz 1A MAX Output: DC 12V3A 36W
HDMI cable	N/A	N/A	Length: 1.6m
Remote control	N/A	N/A	N/A
Type-C cable	N/A	N/A	Length: 3.0m

2.3. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	EMC Compliance	SN
N/A	N/A	N/A	N/A	N/A

2.4. Block diagram of EUT configuration for test



The test software was used to control EUT work in Continuous Tx mode and select test channel, wireless mode as below table.

Test software: MobaXterm.exe

The pathloss of external cable: 0.5dB (According to the manufacturer's claims)

Tested mode, channel, and data rate information					
Mode	Setting Tx Power		data rate (Mbps) (see Note)	Channel	Frequency (MHz)
	Ant 1	Ant 2			
IEEE 802.11ac HT40	35	40	MCS 0	CH38	5190

Note: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.

2.5. Deviations of test standard

No Deviation.

2.6. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	+21 °C to +25 °C
Humidity range:	40% to 75%
Pressure range:	86 kPa to 106 kPa

2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd.

Addr.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808.

Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20155, G-20118

2.8. Measurement uncertainty

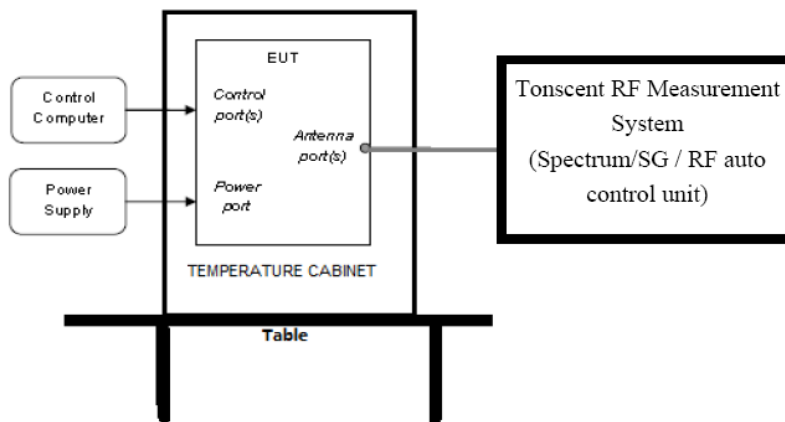
Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Frequencies Stability	6.7 × 10 ⁻⁸ (Antenna couple method)
	5.5 × 10 ⁻⁸ (Conducted method)
Conducted spurious emissions	0.86 dB (10 MHz ≤ f < 3.6GHz);
	1.40 dB (3.6 GHz ≤ f < 8 GHz)
	1.66 dB (8 GHz ≤ f < 22 GHz)
Uncertainty for radio frequency (RBW<20kHz)	3×10 ⁻⁸
Temperature	0.4℃
Humidity	2%
Uncertainty for Radiation Emission test (30MHz-1GHz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1GHz-40GHz)	4.10 dB (1-6 GHz)
	4.40 dB (6 GHz-18 GHz)
	3.54 dB (18 GHz-26 GHz)
	4.30 dB (26 GHz-40 GHz)
Uncertainty for Power line conduction emission test	3.32 dB (150 kHz-30 MHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3. Equipment used during test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑RF Connected Test (Tonscend RF Measurement System 3#)					
SPECTRUM ANALYZER	R&S	FSV40	101407	Jul. 21, 2022	1 Year
Wideband Radio Communication tester	R&S	CMW500	117491	May 18, 2022	1 Year
Vector Signal Generator	Agilent	N5182A	MY19060405	May 18, 2022	1 Year
Vector Signal Generator	Agilent	N5182A	MY48180912	May 18, 2022	1 Year
RF Control Unit	Tonsend	JS0806-2	DDT-ZC01449	May 18, 2022	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150L	ZX170110-A	May 26, 2022	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.2.6.77.0518	N/A	N/A
☑Radiation 3#chamber					
EMI Test Receiver	R&S	ESU	100472	May 18, 2022	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	May 18, 2022	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Sep. 19, 2021	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	01429	Jul. 22, 2022	1 Year
Double Ridged Horn Antenna	Schwarzbeck	BBHA 9120 D	02468	Nov. 29, 2021	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	May 06, 2022	1 Year
Pre-amplifier	COM-POWER	PAM-118A	18040084	Sep. 02, 2021	1 Year
Pre-amplifier	COM-POWER	PAM-118A	18040084	Aug. 27, 2022	1 Year
Pre-amplifier	COM-POWER	PAM-840A	461369	Apr. 11, 2022	1 Year
Test software	Audix	E3	V 6.1.1.1	N/A	N/A
☑Power Line Conducted Emissions Test 1#					
Test Receiver	R&S	ESCI	100551	Sep. 02, 2021	1 Year
Test Receiver	R&S	ESCI	100551	Aug. 26, 2022	1 Year
LISN 1	R&S	ENV216	101109	Sep. 07, 2021	1 Year
LISN 1	R&S	ENV216	101109	Aug. 26, 2022	1 Year
LISN 2	R&S	ESH2-Z5	100309	Sep. 07, 2021	1 Year
LISN 2	R&S	ESH2-Z5	100309	Aug. 26, 2022	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Sep. 02, 2021	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Aug. 26, 2022	1 Year
CE Cable 1	HUBSER	N/A	W10.01	Sep. 02, 2021	1 Year
CE Cable 1	HUBSER	N/A	W10.01	Aug. 26, 2022	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A

4. 26dB Bandwidth, 6dB Bandwidth and 99% Bandwidth

4.1. Block diagram of test setup



4.2. Limits

FCC Part15, Subpart E/ RSS-247		
Test Item	Limit	Frequency Range (MHz)
Bandwidth	26 dB Bandwidth	5150-5250
	26 dB Bandwidth	5250-5350
	26 dB Bandwidth	For FCC:5470-5725 For IC:5470-5600 5650-5725
	Minimum 500kHz 6dB Bandwidth	5725-5850

4.3. Test Procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	For 6 dB Bandwidth: RBW=100 kHz For 26 dB Bandwidth: approximately 1% of the emission bandwidth.
VBW	For 6 dB Bandwidth: VBW=300 kHz For 26 dB Bandwidth: >3 RBW
Trace	Max hold
Sweep	Auto couple

(2) Allow the trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB and 6 dB relative to the maximum level measured in the fundamental emission.

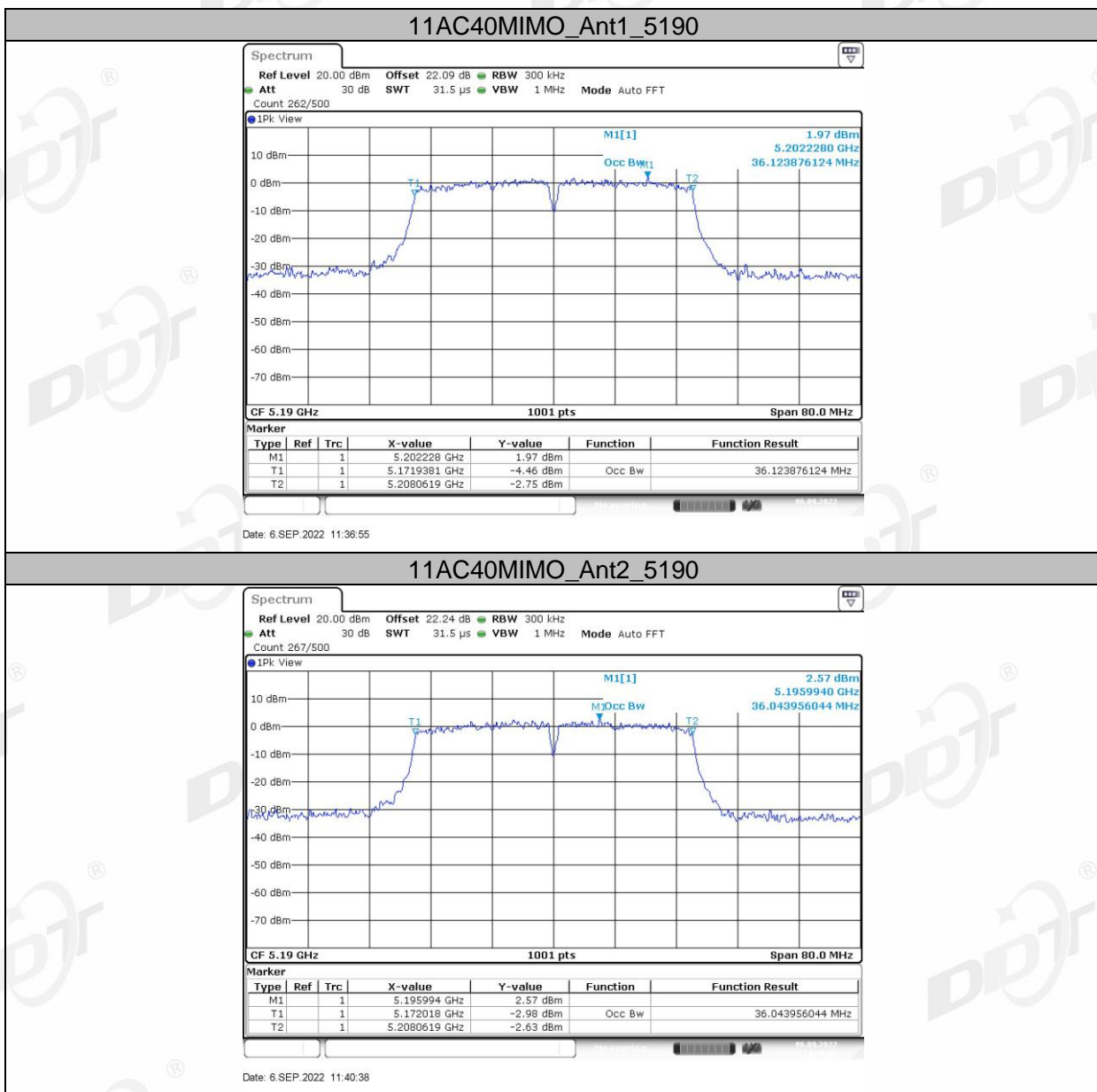
4.4. Test Result

Test Mode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11AC40MIMO	Ant1	5190	36.12	5171.938	5208.062	---	Pass
	Ant2	5190	36.04	5172.018	5208.062	---	Pass

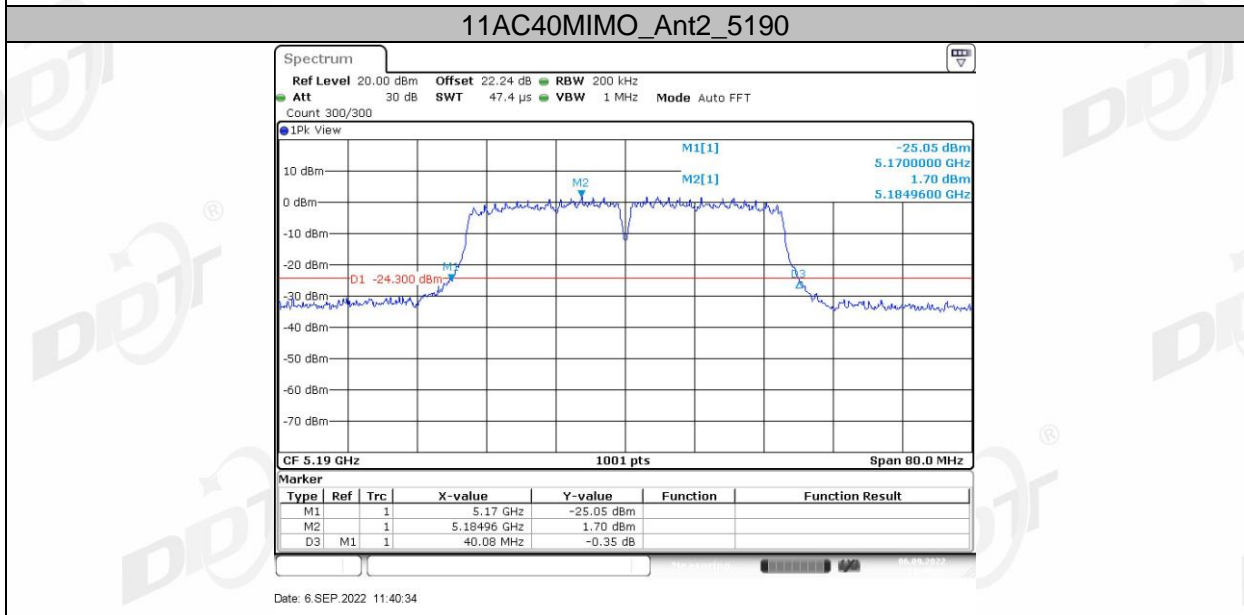
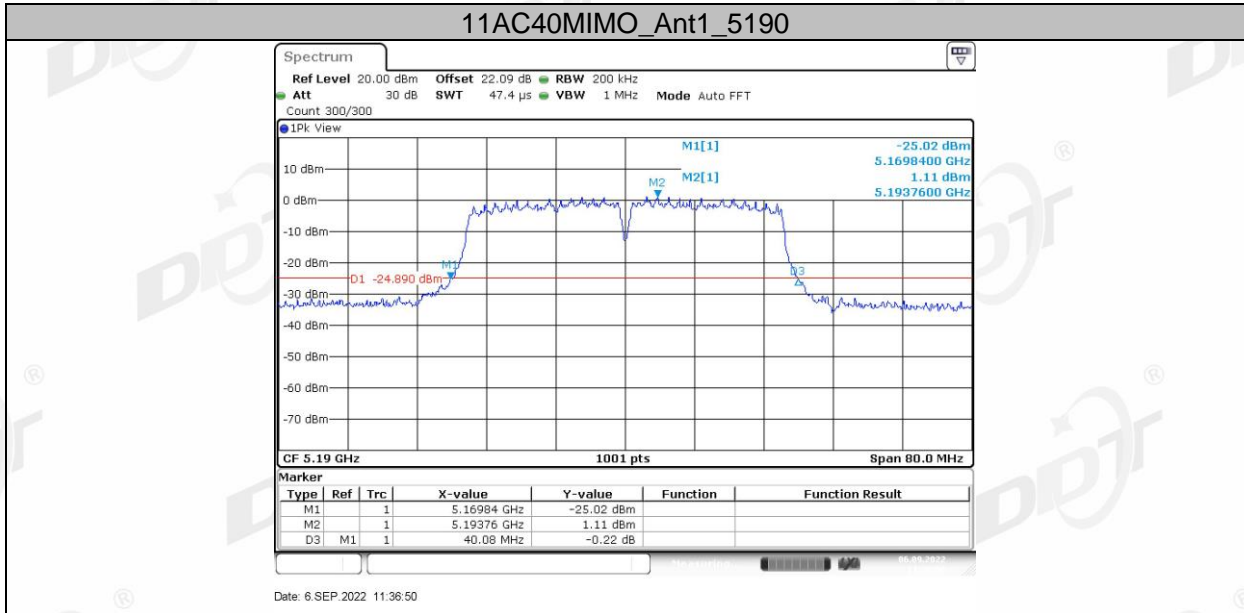
Test Mode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11AC40MIMO	Ant1	5190	40.08	5169.84	5209.92	---	Pass
	Ant2	5190	40.08	5170.00	5210.08	---	Pass

4.5. Original test data

99% OBW:



26db EBW:



5. Maximum Output Power

5.1. Block diagram of test setup

Same as section 4.1

5.2. Limits

FCC Part15, Subpart E/ RSS-247		
Test Item	Limit	Frequency Range (MHz)
Conducted Output Power	For FCC client devices: 250 mW (24 dBm)	5150-5250
	For RSS: e.i.r.p. power: not exceed 200 mW (23 dBm) or $10 + 10 \log_{10} B$, whichever is less	
Note: 1. For FCC: B=26 bandwidth; For ISED: B=99% bandwidth. Note: 2. For 802.11n and 802.11ac, the EUT incorporates a MIMO function. The Antenna directional gain is 8.18 dBi. The Output Power limit is the above limits-(8.18-6) dB		

5.3. Test Procedure

Connect each EUT's antenna output to power sensor by RF cable and attenuator

Measure the output power by power sensor.

5.4. Test Result

Test Mode	Antenna	Channel	Result [dBm]	Limit [dBm]	Verdict
11AC40MIMO	Ant1	5190	8.23	≤ 21.82	Pass
	Ant2	5190	8.05	≤ 21.82	Pass
	total	5190	11.15	≤ 21.82	Pass

Test Mode	Antenna	Channel	EIRP [dBm]	Limit [dBm]	Verdict
11AC40MIMO	Ant1	5190	13.40	≤ 20.82	Pass
	Ant2	5190	13.22	≤ 20.82	Pass
	total	5190	19.33	≤ 20.82	Pass

6. Power Spectral Density

6.1. Block diagram of test setup

Same with 4.1

6.2. Limits

FCC Part15, Subpart E/ RSS-247		
Test Item	Limit	Frequency Range (MHz)
Power Spectral Density	For FCC: Other than Mobile and portable:17 dBm/MHz Mobile and portable client devices:11 dBm/MHz	5150-5250
	For RSS eirp:10 dBm/MHz	
Note: For 802.11n and 802.11ac, the EUT incorporates a MIMO function. The Antenna directional gain is 8.18 dBi. For FCC and 5725-5850MHz of ISED, the Power Spectral Density limit is the above limits-(8.18-6) dB		

6.3. Test Procedure

The transmitter output was connected to a spectrum analyzer. Power density was measured by spectrum analyzer with 1MHz RBW and 3MHz VBW.

Connect the UUT to the spectrum analyser and use the following settings:

5150 MHz~5250 MHz

Center Frequency	The centre frequency of the channel under test
Detector	RMS
RBW	1MHz
VBW	$\geq 3 \times \text{RBW}$
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Max hold
Sweep time	Auto

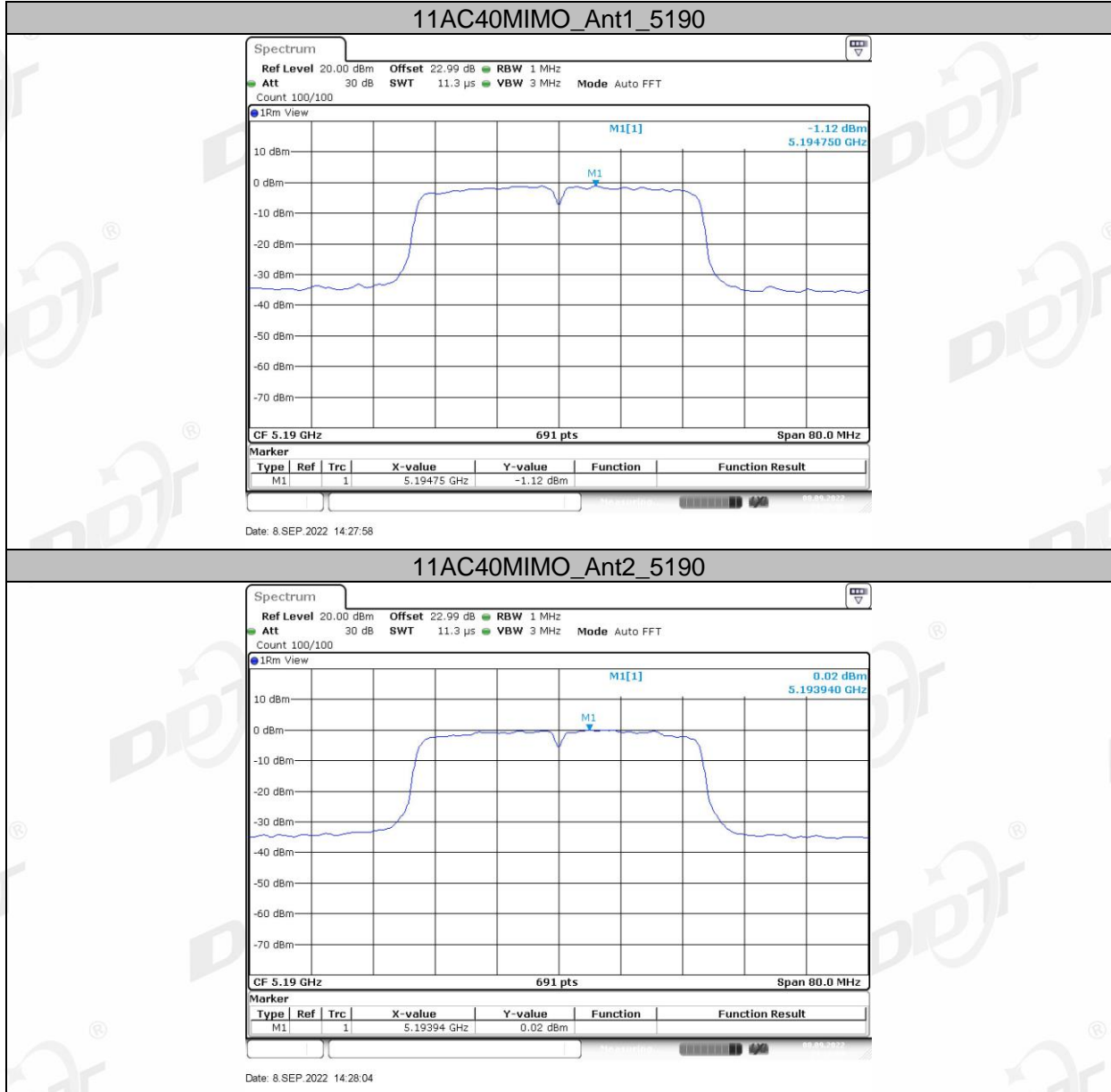
5725 MHz-5850 MHz

Center Frequency	The centre frequency of the channel under test
Detector	RMS
RBW	500 kHz
VBW	$\geq 3 \times \text{RBW}$
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Max hold
Sweep time	Auto

6.4. Test Result

Test Mode	Antenna	Channel	Result [dBm/MHz]	Limit [dBm/MHz]	Verdict
11AC40MIMO	Ant1	5190	-1.12	<=8.82	Pass
	Ant2	5190	0.02	<=8.82	Pass
	total	5190	2.50	<=8.82	Pass

6.5. Original test data



7. Frequency Stability Measurement

7.1. Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

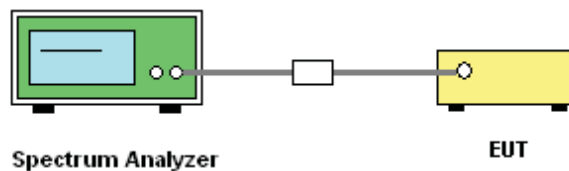
7.2. Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

7.3. Test Procedures

- (1) To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
- (2) The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10 dB lower than the measured peak value.
- (3) The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

7.4. Test Setup



7.5. Test Result

Voltage								
Test Mode	Antenna	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11AC40MIMO	Ant1	5190	NV	NT	0.00	0.000000	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	0.00	0.000000	20	PASS
	Ant2	5190	NV	NT	0.00	0.000000	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	0.00	0.000000	20	PASS

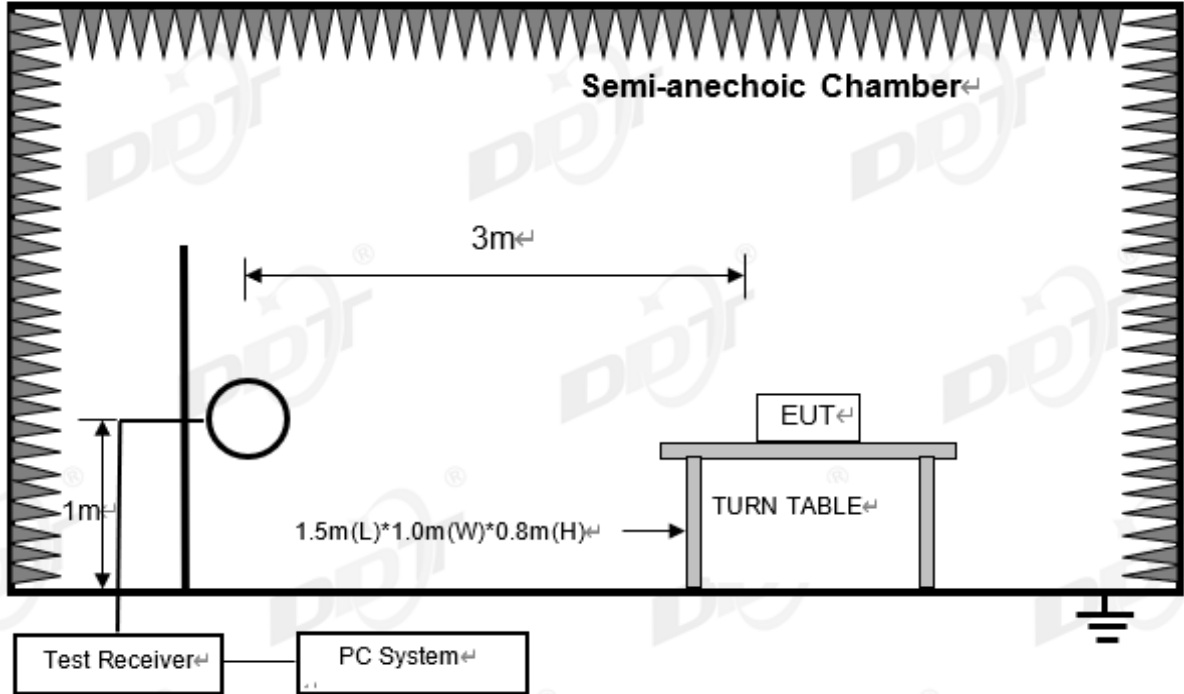
Temperature								
Test Mode	Antenna	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11AC40MIMO	Ant1	5190	NV	-30	0.00	0.000000	20	PASS
			NV	-20	0.00	0.000000	20	PASS
			NV	-10	0.00	0.000000	20	PASS
			NV	0	0.00	0.000000	20	PASS
			NV	10	0.00	0.000000	20	PASS
			NV	20	0.00	0.000000	20	PASS

Ant2	5190	NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS
		NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS

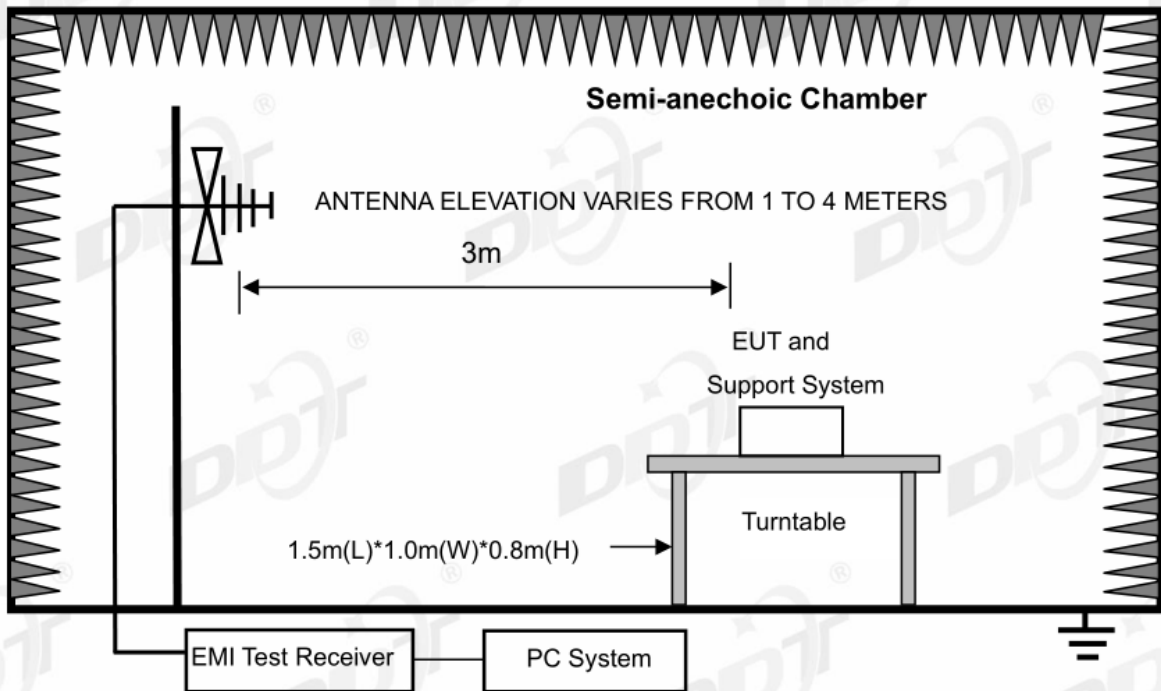
8. Emissions in restricted frequency bands

8.1. Block diagram of test setup

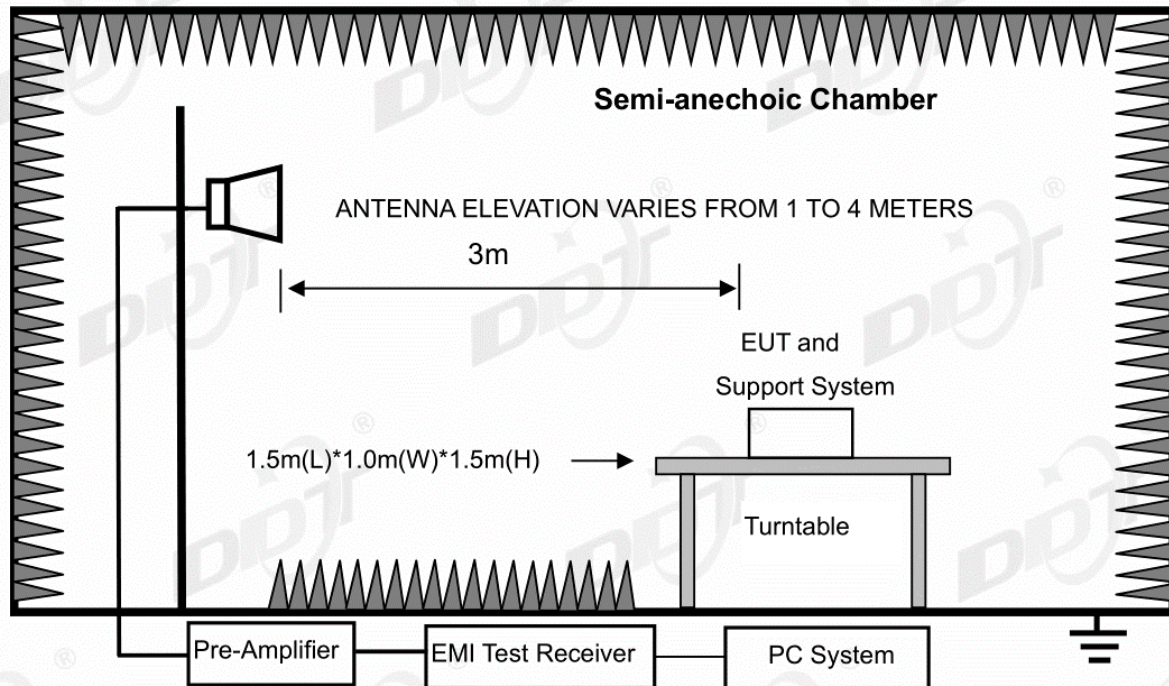
In 3 m Anechoic Chamber, test setup diagram for 9 kHz - 30 MHz:



In 3 m Anechoic Chamber, test setup diagram for 30 MHz - 1 GHz:



In 3 m Anechoic Chamber, test setup diagram for frequency above 1 GHz:



Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

8.2. Limit

(1) FCC 15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.1772&4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.2072&4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

¹Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

²Above 38.6

(2) FCC 15.209 Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
0.009 ~ 0.490	300	2400/F(kHz)	67.6-20log(F)
0.490 ~ 1.705	30	24000/F(kHz)	87.6-20log(F)
1.705 ~ 30.0	30	30	29.54
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Note: (1) The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9 - 90 kHz, 110 - 490 kHz and above 1000 MHz, radiated emissions limits in these three bands are based on measurements employing an average detector.

(2) At frequencies below 30 MHz, measurement may be performed at a distance closer than that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$\text{Limit}_{3\text{m}}(\text{dB}\mu\text{V}/\text{m}) = \text{Limit}_{30\text{m}}(\text{dB}\mu\text{V}/\text{m}) + 40\text{Log}(30\text{m}/3\text{m})$$

(3) Limit for this EUT

The emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20 dB below the fundamental emissions or comply with 15.209 limits.

8.3. Test Procedure

- (1) EUT height should be 0 m for below 1 GHz at a semi - anechoic chamber while EUT height should be 0 m for above 1GHz at full chamber or semi - anechoic chamber ground with absorbers
- (2) Setup EUT and assistant system according clause 2.3 and 8.2
- (3) Test antenna was located 3m from the EUT on an adjustable mast, and the antenna used as below table.

Test frequency range	Test antenna used	Test distance
9 kHz-30 MHz	Active Loop antenna	3 m
30 MHz-1 GHz	Trilog Broadband Antenna	3 m
1 GHz-18 GHz	Double Ridged Horn Antenna(1GHz-18GHz)	3 m
18 GHz-40 GHz	Horn Antenna(18GHz-40GHz)	1 m

According ANSI C63.10:2013 clause 6.4.4.2 and 6.5.3, for measurements below 30 MHz, the loop antenna was positioned with its plane vertical from the EUT and rotated about its vertical axis for maximum response at each azimuth position around the EUT. And the loop antenna also

be positioned with its plane horizontal at the specified distance from the EUT. The center of the loop is 1 m above the ground. for measurement above 30 MHz, the Trilog Broadband Antenna or Horn Antenna was located 3m from EUT, Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

(4) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions from 9 kHz to 40 GHz:

(a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1 m to 4 m (Except loop antenna, it's fixed 1m above ground.)

(b) Change work frequency or channel of device if practicable.

(c) Change modulation type of device if practicable.

(d) Change power supply range from 85% to 115% of the rated supply voltage

(e) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions.

Spectrum frequency from 9 kHz to 40 GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 9 kHz to 30 MHz and 18 GHz to 40 GHz, so below final test was performed with frequency range from 30 MHz to 18 GHz.

(5) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10:2013 on Radiated Emission test.

(6) The emissions from 9 kHz to 1 GHz were measured based on CISPR QP detector except for the frequency bands 9-90 kHz, 110-490 kHz, for emissions from 9 kHz-90kHz,110kHz-490kHz and above 1GHz were measured based on average detector, for emissions above 1 GHz, peak emissions also be measured and need comply with Peak limit.

(7) The emissions from 9 kHz to 1 GHz, QP or average values were measured with EMI receiver with below RBW

Frequency band	RBW
9 kHz-150 kHz	200 Hz
150 kHz-30 MHz	9 kHz
30 MHz-1 GHz	120 kHz

(8) For emissions above 1 GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1 MHz, VBW is set at 3MHz for Peak measure, the RBW is set at 1 MHz, VBW is set at 10 Hz for AV value.

8.4. Test result

Pass. (See below detailed test result)

All the emissions except fundamental emission from 9 kHz to 25 GHz were comply with 15.209 limits.

Note1: According exploratory test no any obvious emission was detected from 9 kHz to 30 MHz and 18 GHz to 40 GHz, so the final test was performed with frequency range from 30 MHz to 18 GHz and recorded in below.

Note2: For emissions below 1 GHz, according exploratory explorer test, when change Tx mode and channel, have no distinct influence on emissions level, so for emissions below 1 GHz, the final test was only performed with EUT working in MIMO of 802.11ac40 mode.

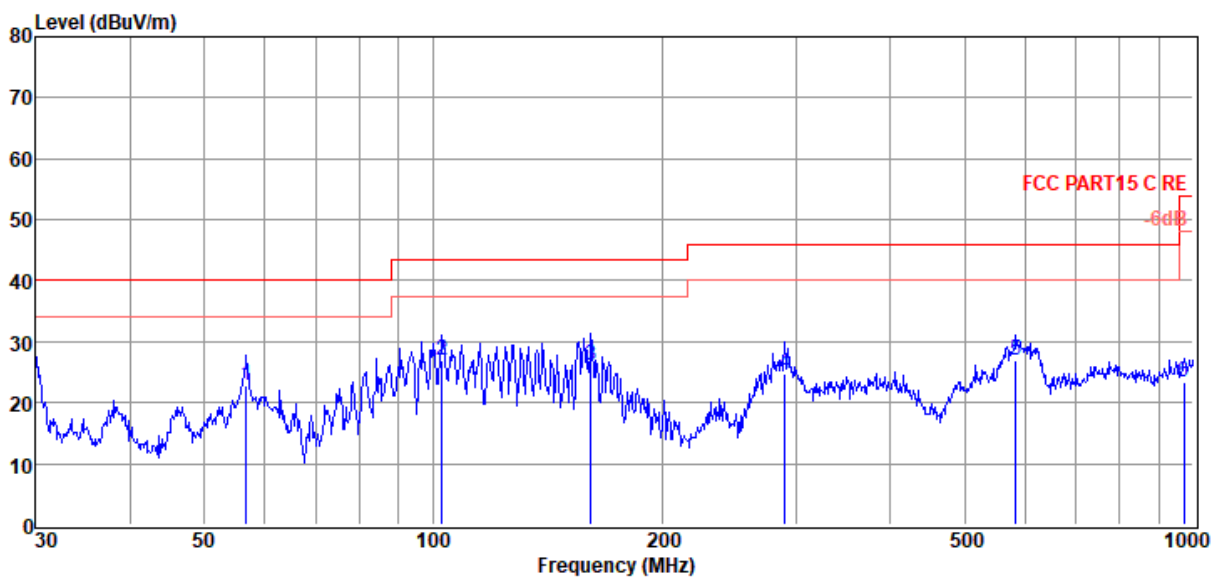
Note3: For below test data, when the limit tabular marked “/” means this frequency point is the fundamental emission and no need comply with this limit.

Note4: For simultaneous transmission of multiple channels in the BT, 2.4G WIFI and 5G WIFI, no noticeable emission was found.

Note5: 30MHz~40GHz: (All mode all have been tested, only the MIMO of 802.11ac40 mode is the worst case and reported. And the BT(8800)+WIFI(8822) and WIFI(8800)+WIFI(8822) are the worst simultaneous case and reported)

Radiated Emission test (below 1GHz) TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#	D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC BELOW 1G.EM6
Test Date : 2022-08-12	Tested By : Bairong
EUT : Integrated video conference terminal	Model Number : UC S15
Power Supply : AC 120V/60Hz	Test Mode : Tx Mode
Condition : Temp:22.8°C,Humi:59.1%,Press:100.1kPa	Antenna/Distance : 2022 9161 #3/3m/HORIZONTAL
Memo : 5GWIFI	

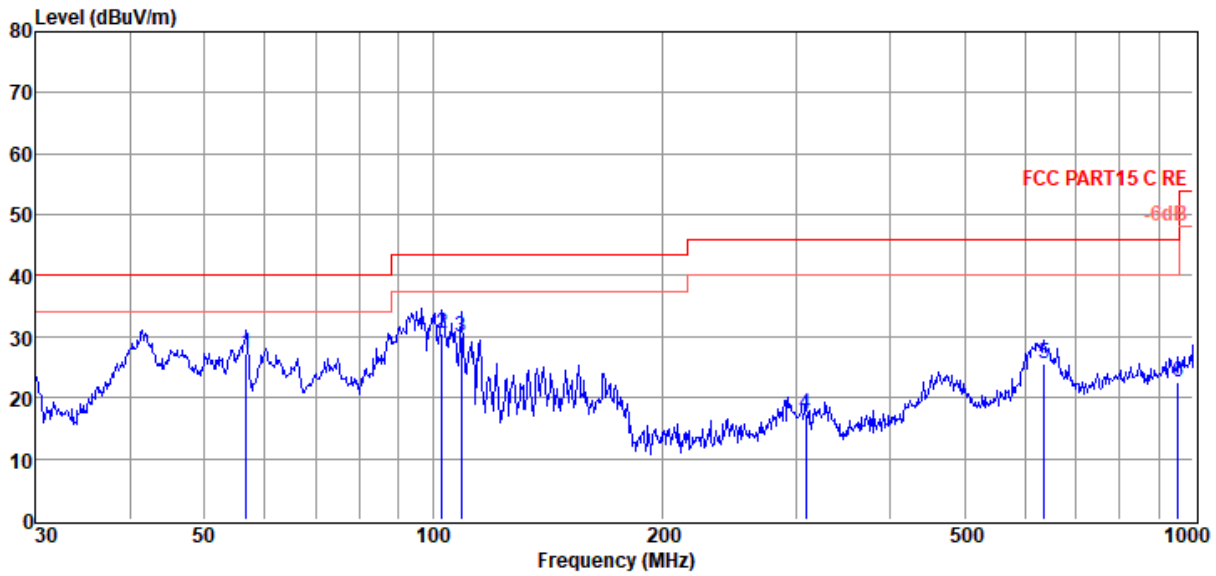


Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	56.79	39.78	11.48	3.73	22.72	40.00	-17.28	QP	HORIZONTAL
2	102.72	42.68	12.57	4.00	27.01	43.50	-16.49	QP	HORIZONTAL
3	161.47	34.94	19.19	4.30	26.22	43.50	-17.28	QP	HORIZONTAL
4	290.02	39.48	12.90	4.79	24.87	46.00	-21.13	QP	HORIZONTAL
5	584.79	35.14	18.79	5.69	26.93	46.00	-19.07	QP	HORIZONTAL
6	972.34	24.17	23.80	6.69	23.29	54.00	-30.71	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
 2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
 3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC BELOW 1G.EM6
Test Date : 2022-08-12 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : Tx Mode
Condition : Temp:22.8°C,Humi:59.1%,Press:100.1kPa **Antenna/Distance** : 2022 9161 #3/3m/VERTICAL
Memo : 5GWIFI



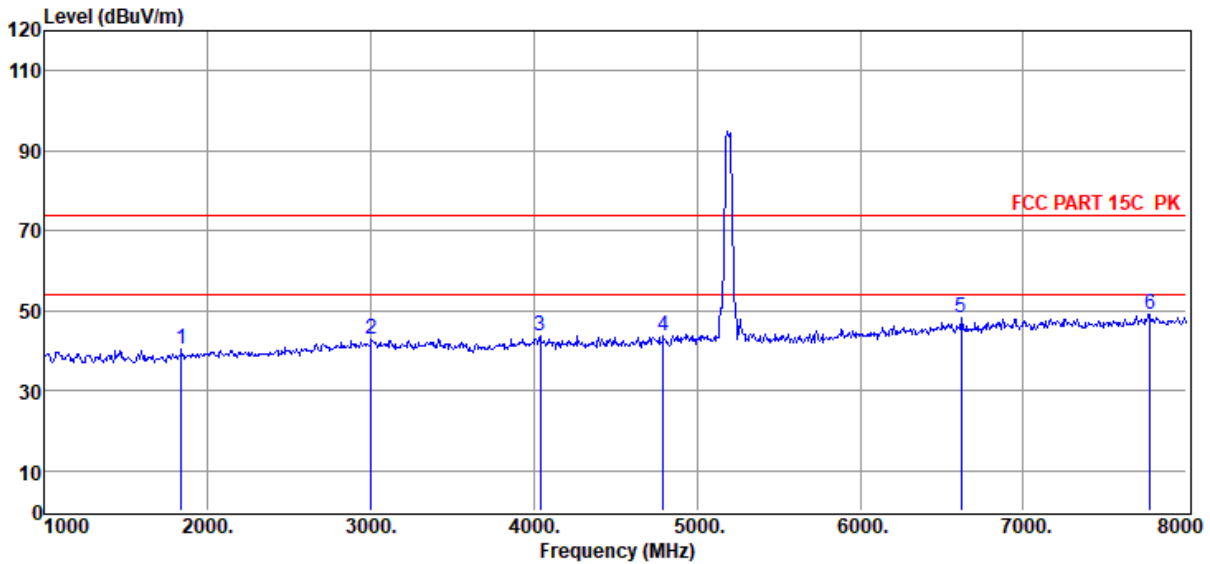
Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	56.79	44.16	11.48	3.73	27.10	40.00	-12.90	QP	VERTICAL
2	102.72	46.10	12.57	4.00	30.43	43.50	-13.07	QP	VERTICAL
3	109.03	45.17	12.99	4.04	29.97	43.50	-13.53	QP	VERTICAL
4	308.91	31.61	13.10	4.85	17.23	46.00	-28.77	QP	VERTICAL
5	636.13	32.62	19.82	5.83	25.50	46.00	-20.50	QP	VERTICAL
6	955.44	24.07	23.50	6.60	22.60	46.00	-23.40	QP	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
 2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
 3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

Radiated Emission test (above 1 GHz) TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# Test Date : 2022-08-29 EUT : Integrated video conference terminal Power Supply : AC 120V/60Hz Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa Memo : 11AC40 5190	D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC ABOVE 1G.EM6 Tested By : Bairong Model Number : UC S15 Test Mode : Tx Mode Antenna/Distance : 2021 BBHA 9120D 3#/3m/HORIZONTAL
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Data: 9



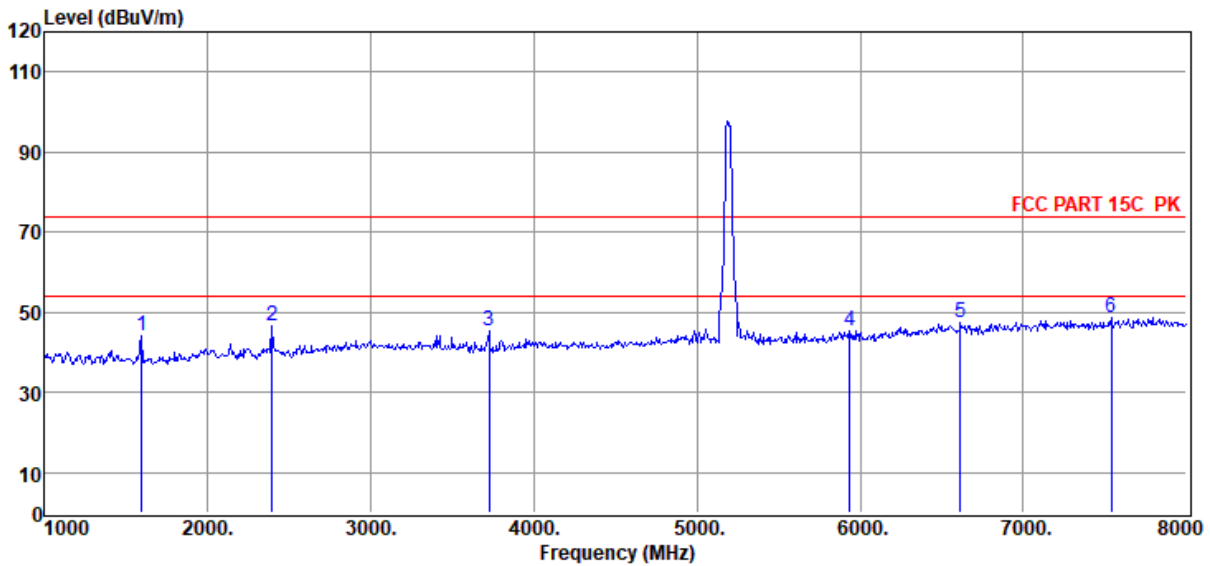
Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	1840.00	51.02	26.28	39.16	1.53	0.65	40.32	74.00	-33.68	Peak	HORIZONTAL
2	3002.00	50.49	29.50	39.90	1.87	0.79	42.75	74.00	-31.25	Peak	HORIZONTAL
3	4038.00	50.00	31.13	40.21	2.13	0.86	43.91	74.00	-30.09	Peak	HORIZONTAL
4	4794.00	48.18	32.44	40.36	2.47	0.90	43.63	74.00	-30.37	Peak	HORIZONTAL
5	6621.00	48.68	35.39	40.00	3.21	1.01	48.29	74.00	-25.71	Peak	HORIZONTAL
6	7776.00	47.88	36.73	39.78	3.17	1.12	49.12	74.00	-24.88	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\882\FCC ABOVE 1G.EM6
Test Date : 2022-08-29 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : Tx Mode
Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D 3#/3m/VERTICAL
Memo : 11AC40 5190

Data: 10



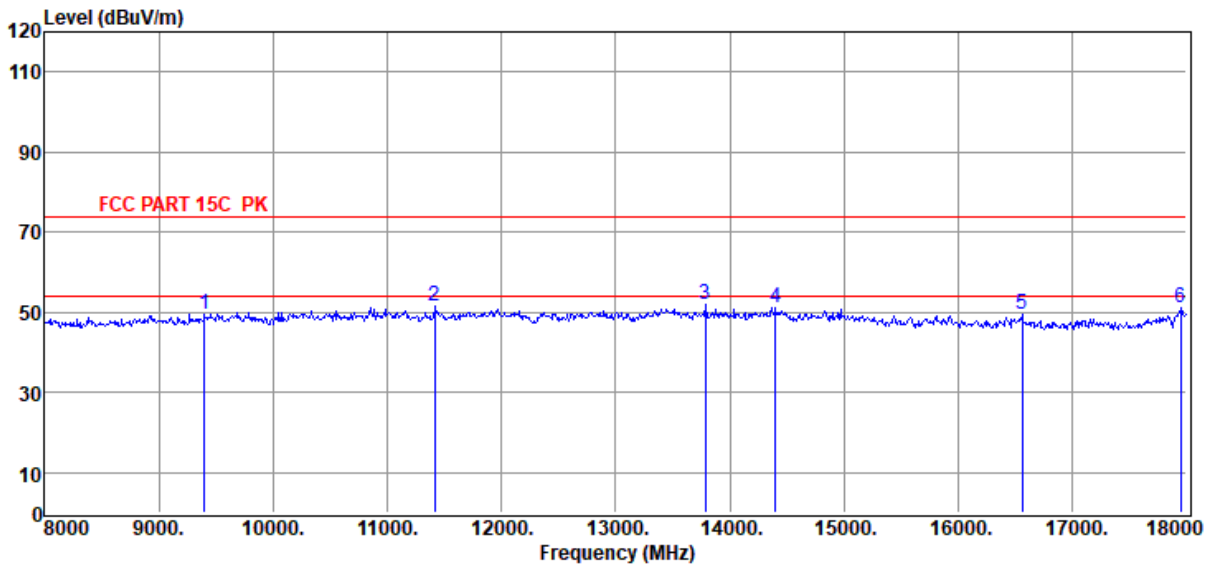
Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	1595.00	55.21	25.65	38.79	1.42	0.61	44.10	74.00	-29.90	Peak	VERTICAL
2	2393.00	56.41	27.41	39.60	1.71	0.72	46.65	74.00	-27.35	Peak	VERTICAL
3	3723.00	52.45	30.16	40.12	1.88	0.84	45.21	74.00	-28.79	Peak	VERTICAL
4	5935.00	47.96	33.84	40.49	2.97	1.13	45.41	74.00	-28.59	Peak	VERTICAL
5	6614.00	47.70	35.38	40.01	3.21	1.01	47.29	74.00	-26.71	Peak	VERTICAL
6	7538.00	47.83	36.45	39.75	3.14	1.06	48.73	74.00	-25.27	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC ABOVE 1G.EM6
Test Date : 2022-08-29 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : Tx Mode
Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D
3#/3m/HORIZONTAL
Memo : 11AC40 5190

Data: 11



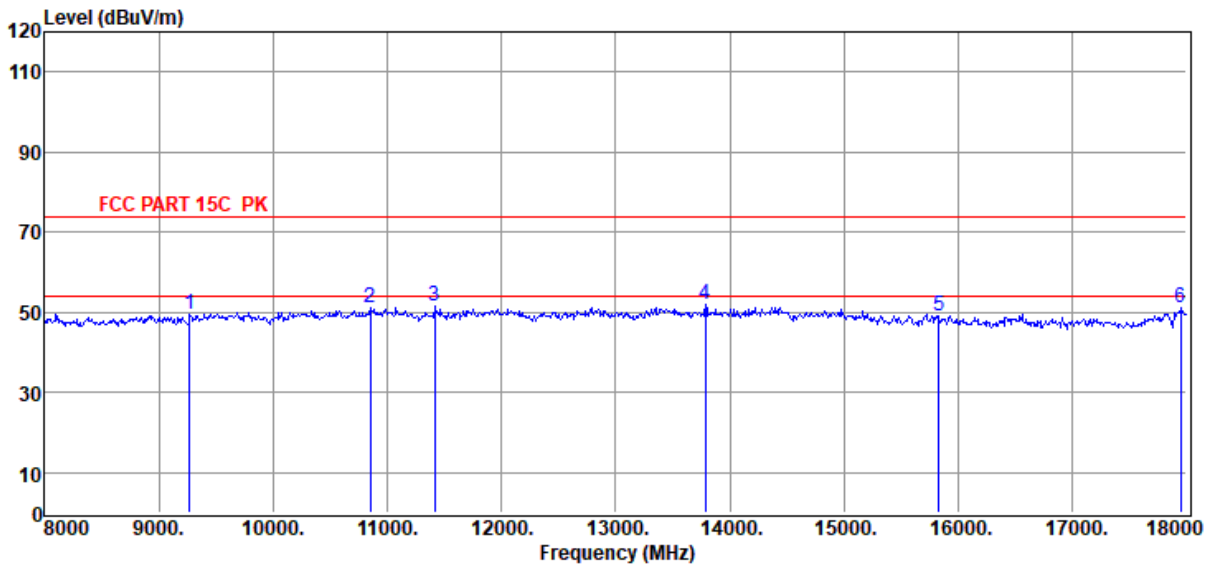
Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	9400.00	44.70	38.62	40.18	3.56	2.90	49.60	74.00	-24.40	Peak	HORIZONTAL
2	11420.00	46.28	39.05	40.16	3.94	2.51	51.62	74.00	-22.38	Peak	HORIZONTAL
3	13790.00	44.77	39.94	39.85	4.30	2.68	51.84	74.00	-22.16	Peak	HORIZONTAL
4	14400.00	43.99	39.90	39.66	4.39	2.57	51.19	74.00	-22.81	Peak	HORIZONTAL
5	16560.00	43.87	37.97	40.01	4.73	3.04	49.60	74.00	-24.40	Peak	HORIZONTAL
6	17950.00	42.18	42.19	40.67	4.95	2.65	51.30	74.00	-22.70	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC ABOVE 1G.EM6
Test Date : 2022-08-29 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : Tx Mode
Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D 3#/3m/VERTICAL
Memo : 11AC40 5190

Data: 12



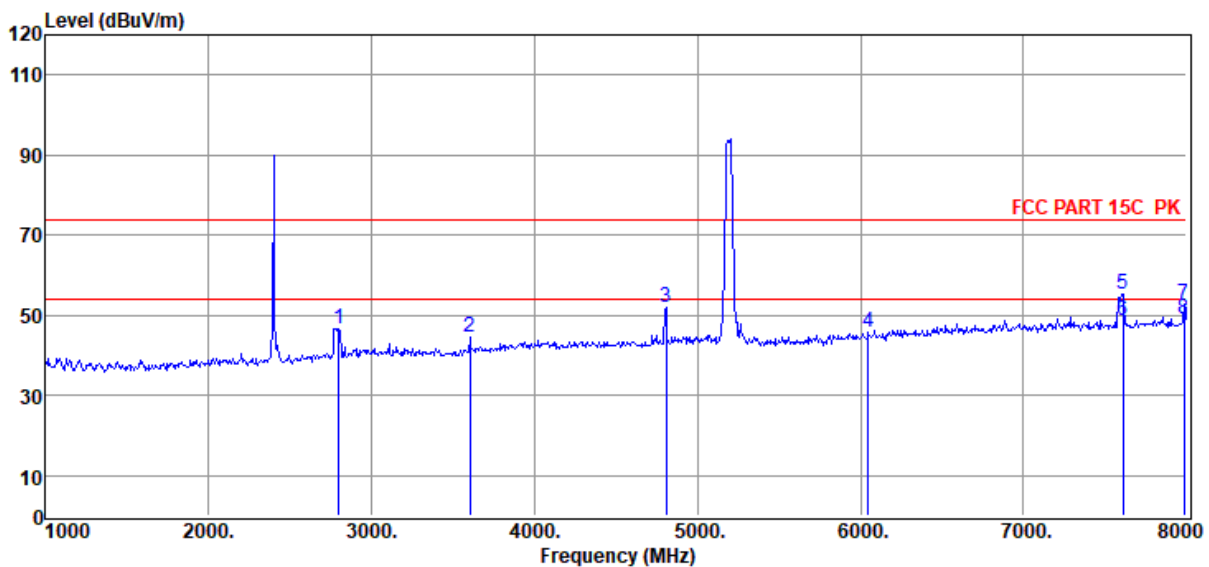
Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Filter Factor (dB)	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	9270.00	44.50	38.52	40.09	3.49	2.86	49.28	74.00	-24.72	Peak	VERTICAL
2	10850.00	45.80	39.21	40.26	3.76	2.68	51.19	74.00	-22.81	Peak	VERTICAL
3	11420.00	46.28	39.05	40.16	3.94	2.51	51.62	74.00	-22.38	Peak	VERTICAL
4	13790.00	44.77	39.94	39.85	4.30	2.68	51.84	74.00	-22.16	Peak	VERTICAL
5	15830.00	43.55	38.21	39.85	4.59	2.56	49.06	74.00	-24.94	Peak	VERTICAL
6	17950.00	42.18	42.19	40.67	4.95	2.65	51.30	74.00	-22.70	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC ABOVE 1G.EM6
Test Date : 2022-09-22 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : Tx Mode
Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D
3#/3m/HORIZONTAL
Memo : 8800 DH5 2402+8822 11AC40 5190

Data: 21



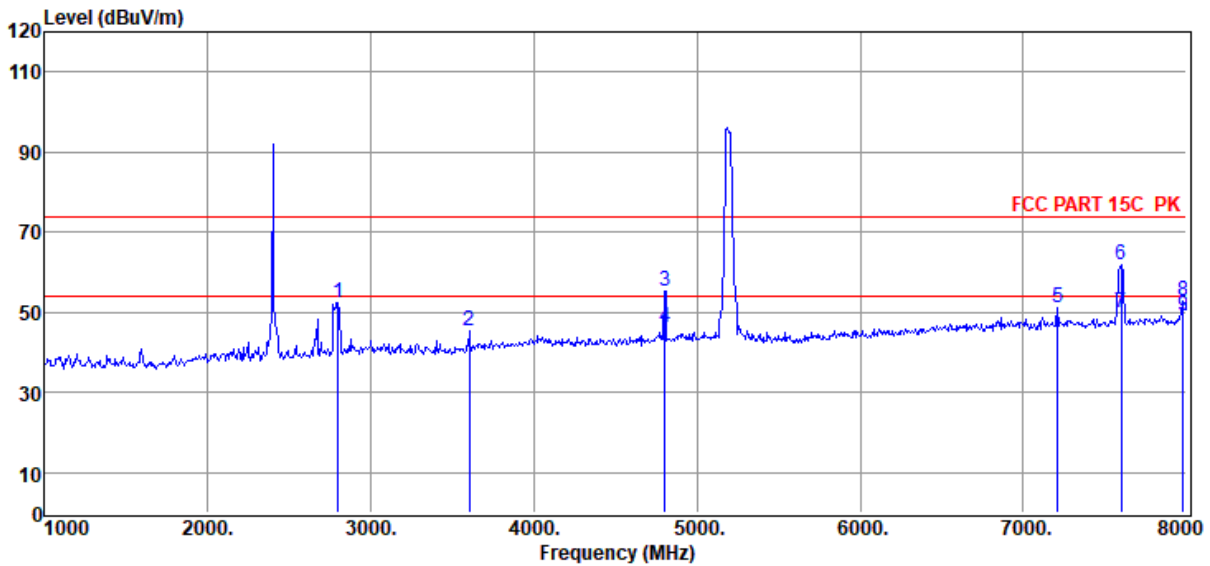
Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Filter Factor (dB)	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2799.00	55.07	28.74	39.80	1.82	0.77	46.60	74.00	-27.40	Peak	HORIZONTAL
2	3604.00	52.24	29.75	40.08	1.78	0.83	44.52	74.00	-29.48	Peak	HORIZONTAL
3	4808.00	56.26	32.49	40.36	2.47	0.90	51.76	74.00	-22.24	Peak	HORIZONTAL
4	6047.00	47.75	34.11	40.46	3.05	1.13	45.58	74.00	-28.42	Peak	HORIZONTAL
5	7608.00	54.12	36.53	39.76	3.15	1.08	55.12	74.00	-18.88	Peak	HORIZONTAL
6	7608.00	47.67	36.53	39.76	3.15	1.08	48.67	54.00	-5.33	Average	HORIZONTAL
7	7986.00	51.20	36.98	39.80	3.19	1.18	52.75	74.00	-21.25	Peak	HORIZONTAL
8	7986.00	47.70	36.98	39.80	3.19	1.18	49.25	54.00	-4.75	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC ABOVE 1G.EM6
Test Date : 2022-09-22 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : Tx Mode
Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D 3#/3m/VERTICAL
Memo : 8800 DH5 2402+8822 11AC40 5190

Data: 22



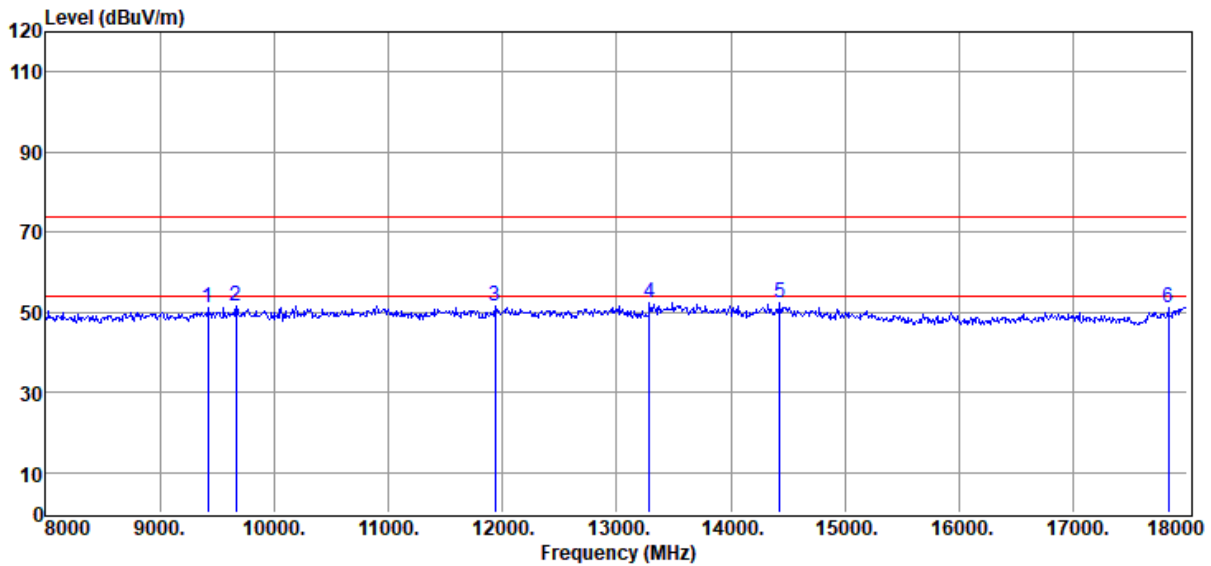
Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Filter Factor (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2799.00	60.80	28.74	39.80	1.82	0.77	52.33	74.00	-21.67	Peak	VERTICAL
2	3604.00	53.21	29.75	40.08	1.78	0.83	45.49	74.00	-28.51	Peak	VERTICAL
3	4801.00	59.89	32.46	40.36	2.47	0.90	55.36	74.00	-18.64	Peak	VERTICAL
4	4801.00	50.79	32.46	40.36	2.47	0.90	46.26	54.00	-7.74	Average	VERTICAL
5	7209.00	50.57	36.17	39.72	3.07	0.98	51.07	74.00	-22.93	Peak	VERTICAL
6	7601.00	61.06	36.52	39.76	3.15	1.08	62.05	74.00	-11.95	Peak	VERTICAL
7	7601.00	48.76	36.52	39.76	3.15	1.08	49.75	54.00	-4.25	Average	VERTICAL
8	7979.00	51.38	36.97	39.80	3.19	1.17	52.91	74.00	-21.09	Peak	VERTICAL
9	7979.00	47.61	36.97	39.80	3.19	1.17	49.14	54.00	-4.86	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC ABOVE 1G.EM6
Test Date : 2022-09-19 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : Tx Mode
Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D
3#/3m/HORIZONTAL
Memo : 8800 DH5 2402+8822 11AC40 5190

Data: 23



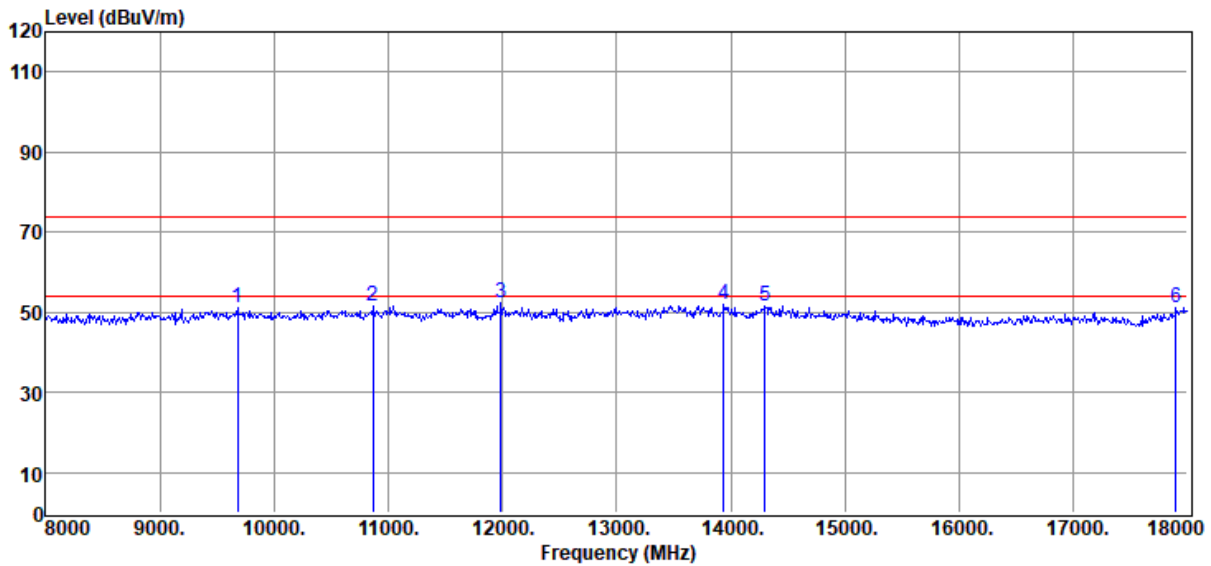
Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Filter Factor (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	9420.00	46.11	38.64	40.19	3.57	2.90	51.03	74.00	-22.97	Peak	HORIZONTAL
2	9670.00	46.71	38.60	40.37	3.64	2.96	51.54	74.00	-22.46	Peak	HORIZONTAL
3	11940.00	46.06	39.18	40.11	4.04	2.38	51.55	74.00	-22.45	Peak	HORIZONTAL
4	13290.00	45.99	39.83	40.20	4.16	2.66	52.44	74.00	-21.56	Peak	HORIZONTAL
5	14430.00	45.06	39.90	39.66	4.38	2.56	52.24	74.00	-21.76	Peak	HORIZONTAL
6	17830.00	42.52	41.45	40.60	4.91	2.74	51.02	74.00	-22.98	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC ABOVE 1G.EM6
Test Date : 2022-09-19 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : Tx Mode
Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D 3#/3m/VERTICAL
Memo : 8800 DH5 2402+8822 11AC40 5190

Data: 24



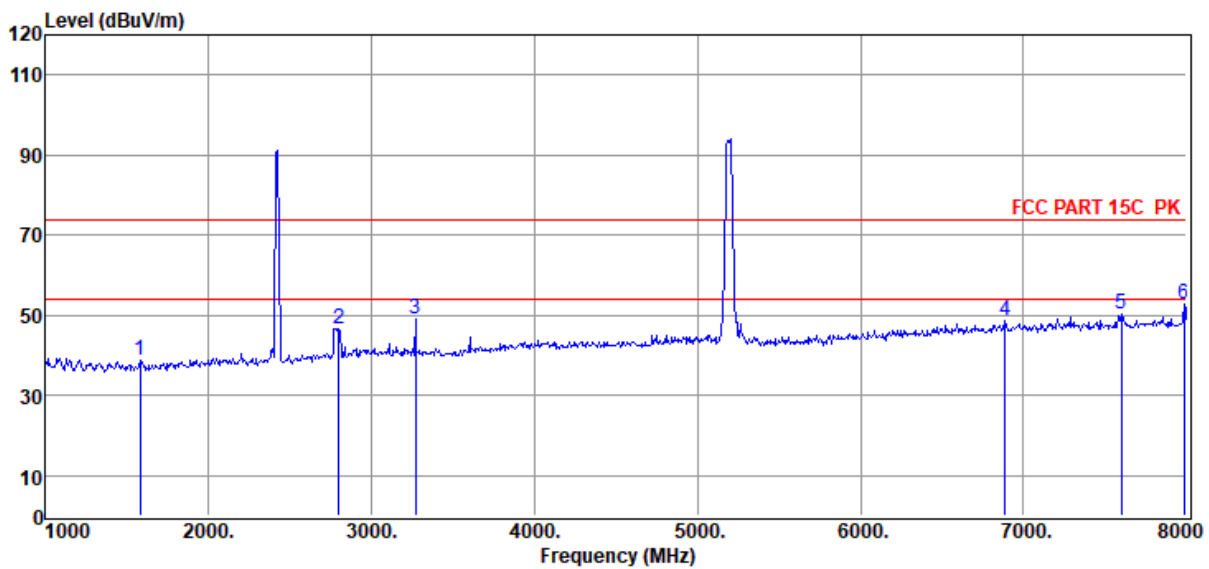
Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Filter Factor (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	9680.00	46.18	38.59	40.38	3.64	2.96	50.99	74.00	-23.01	Peak	VERTICAL
2	10870.00	46.03	39.22	40.25	3.77	2.67	51.44	74.00	-22.56	Peak	VERTICAL
3	11990.00	46.66	39.20	40.10	4.05	2.37	52.18	74.00	-21.82	Peak	VERTICAL
4	13940.00	44.77	39.91	39.74	4.47	2.69	52.10	74.00	-21.90	Peak	VERTICAL
5	14300.00	44.22	39.90	39.67	4.42	2.60	51.47	74.00	-22.53	Peak	VERTICAL
6	17900.00	42.26	41.88	40.64	4.93	2.69	51.12	74.00	-22.88	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC ABOVE 1G.EM6
Test Date : 2022-09-22 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : Tx Mode
Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D
3#/3m/HORIZONTAL
Memo : 8800 11B 2412+8822 11AC40 5190

Data: 29



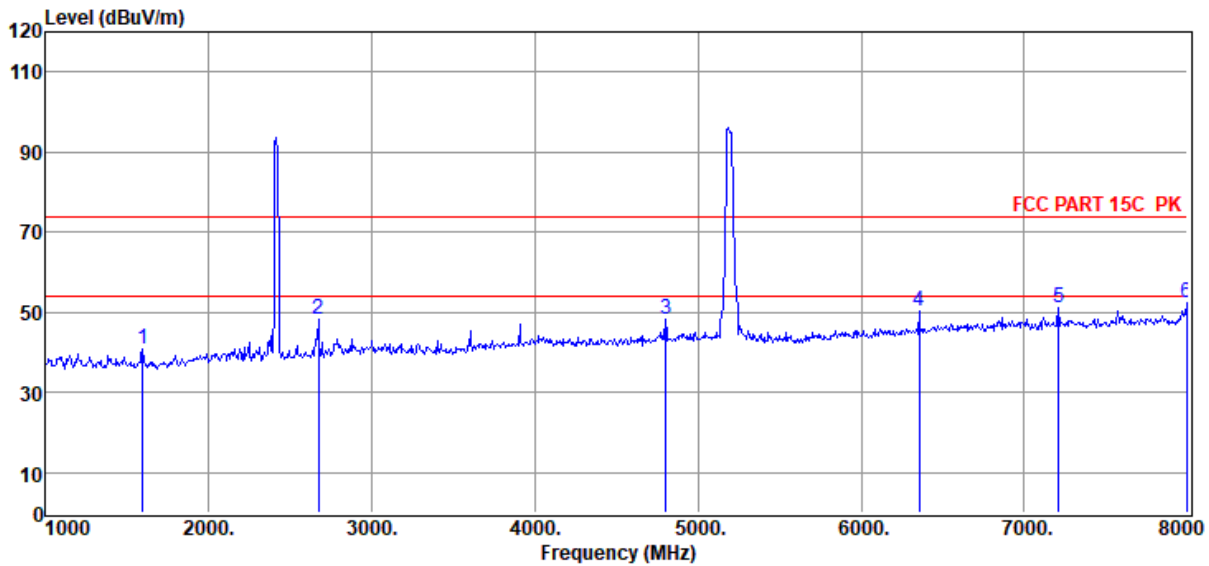
Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Filter Factor (dB)	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	1581.00	49.87	25.61	38.77	1.42	0.60	38.73	74.00	-35.27	Peak	HORIZONTAL
2	2799.00	55.07	28.74	39.80	1.82	0.77	46.60	74.00	-27.40	Peak	HORIZONTAL
3	3268.00	56.93	29.45	39.98	1.77	0.81	48.98	74.00	-25.02	Peak	HORIZONTAL
4	6887.00	48.73	35.82	39.79	3.08	0.95	48.79	74.00	-25.21	Peak	HORIZONTAL
5	7601.00	49.12	36.52	39.76	3.15	1.08	50.11	74.00	-23.89	Peak	HORIZONTAL
6	7986.00	51.20	36.98	39.80	3.19	1.18	52.75	74.00	-21.25	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC ABOVE 1G.EM6
Test Date : 2022-09-22 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : Tx Mode
Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D 3#/3m/VERTICAL
Memo : 8800 11B 2412+8822 11AC40 5190

Data: 30



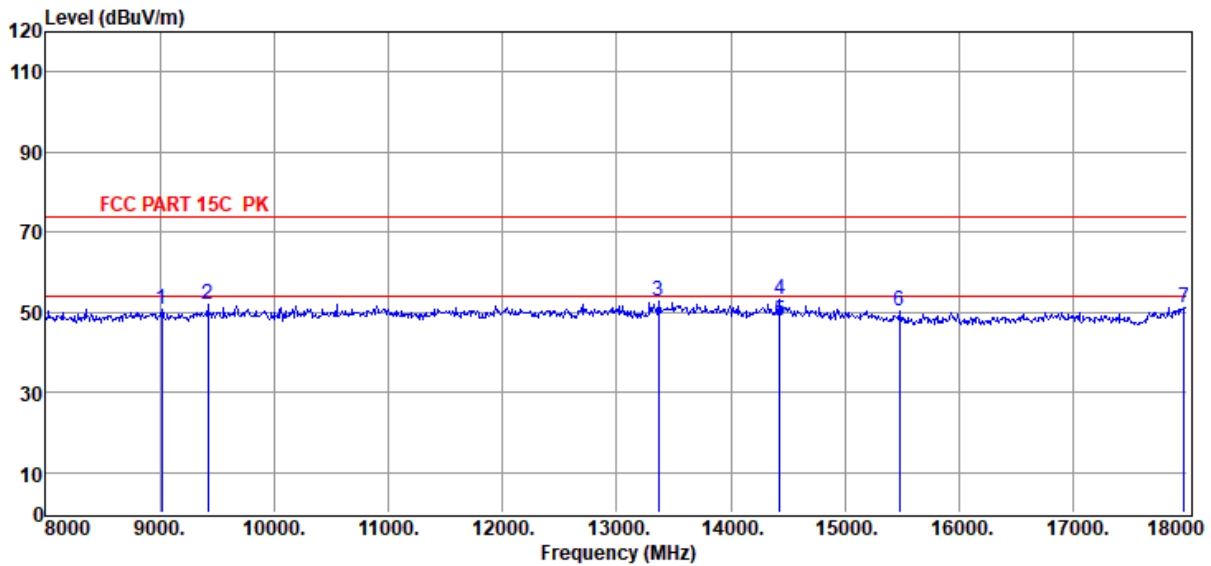
Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Filter Factor (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	1595.00	51.89	25.65	38.79	1.42	0.61	40.78	74.00	-33.22	Peak	VERTICAL
2	2673.00	57.27	28.26	39.74	1.78	0.75	48.32	74.00	-25.68	Peak	VERTICAL
3	4801.00	52.89	32.46	40.36	2.47	0.90	48.36	74.00	-25.64	Peak	VERTICAL
4	6355.00	51.61	34.85	40.22	3.20	1.07	50.51	74.00	-23.49	Peak	VERTICAL
5	7209.00	50.57	36.17	39.72	3.07	0.98	51.07	74.00	-22.93	Peak	VERTICAL
6	7993.00	50.95	36.99	39.80	3.19	1.18	52.51	74.00	-21.49	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC ABOVE 1G.EM6
Test Date : 2022-09-22 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : Tx Mode
Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D
3#/3m/HORIZONTAL
Memo : 8800 11B 2412+8822 11AC40 5190

Data: 31



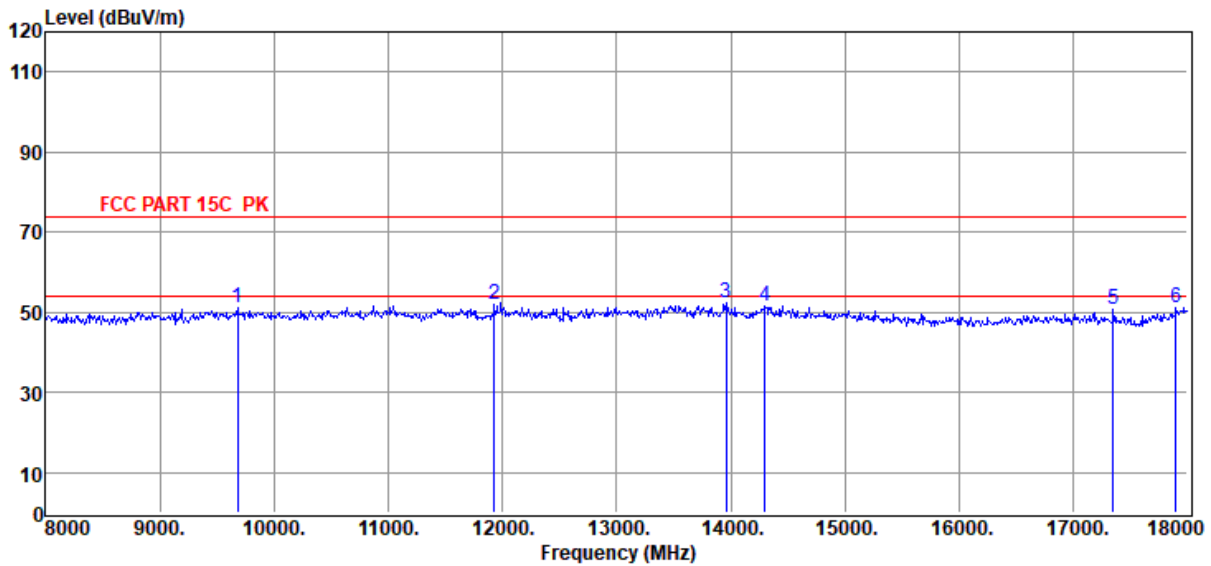
Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Filter Factor (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	9020.00	46.22	38.32	39.91	3.34	2.80	50.77	74.00	-23.23	Peak	HORIZONTAL
2	9420.00	47.11	38.64	40.19	3.57	2.90	52.03	74.00	-21.97	Peak	HORIZONTAL
3	13370.00	46.11	39.90	40.14	4.10	2.66	52.63	74.00	-21.37	Peak	HORIZONTAL
4	14430.00	46.06	39.90	39.66	4.38	2.56	53.24	74.00	-20.76	Peak	HORIZONTAL
5	14430.00	40.55	39.90	39.66	4.38	2.56	47.73	54.00	-6.27	Average	HORIZONTAL
6	15480.00	44.06	38.83	39.74	4.56	2.49	50.20	74.00	-23.80	Peak	HORIZONTAL
7	17970.00	42.11	42.31	40.68	4.95	2.63	51.32	74.00	-22.68	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC ABOVE 1G.EM6
Test Date : 2022-09-22 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : Tx Mode
Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D 3#/3m/VERTICAL
Memo : 8800 11B 2412+8822 11AC40 5190

Data: 32

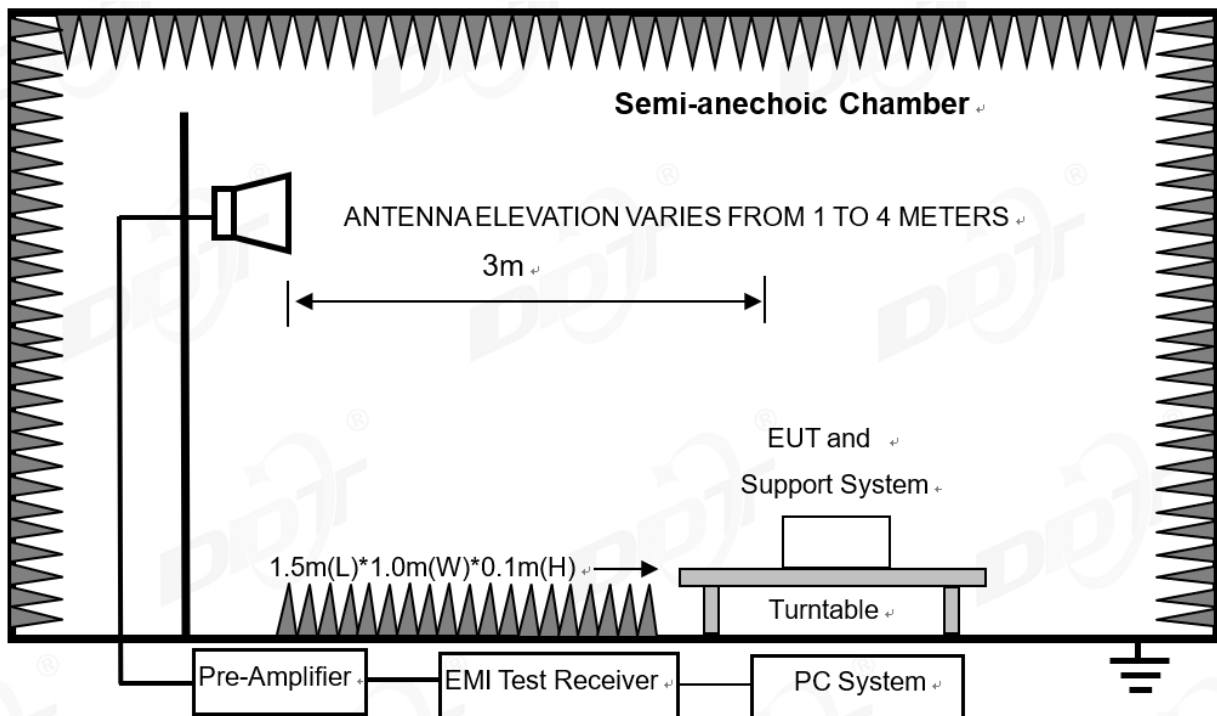


Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Filter Factor (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	9680.00	46.18	38.59	40.38	3.64	2.96	50.99	74.00	-23.01	Peak	VERTICAL
2	11930.00	46.27	39.17	40.11	4.04	2.39	51.76	74.00	-22.24	Peak	VERTICAL
3	13960.00	44.80	39.91	39.73	4.49	2.69	52.16	74.00	-21.84	Peak	VERTICAL
4	14300.00	44.22	39.90	39.67	4.42	2.60	51.47	74.00	-22.53	Peak	VERTICAL
5	17350.00	44.13	39.13	40.31	4.79	3.12	50.86	74.00	-23.14	Peak	VERTICAL
6	17900.00	42.26	41.88	40.64	4.93	2.69	51.12	74.00	-22.88	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

9. Band Edge Compliance

9.1. Block diagram of test setup



9.2. Limit

For transmitters operating in the 5.15-5.25 GHz and 5.725-5.85 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

$$-27 \text{ dBm/MHz Limit} = 95.2 + \text{EIRP}[\text{dBm}] = 95.2 - 27 = 68.2 \text{ dB}\mu\text{V/m}$$

9.3. Test Procedure

Same with clause 8.3 except change investigated frequency range from 5.15-5.25 GHz, 5.725-5.85 GHz.

Remark: All restriction band have been tested, and only the worst case is shown in report.

9.4. Test result

Pass. (See below detailed test result)

Note: As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit

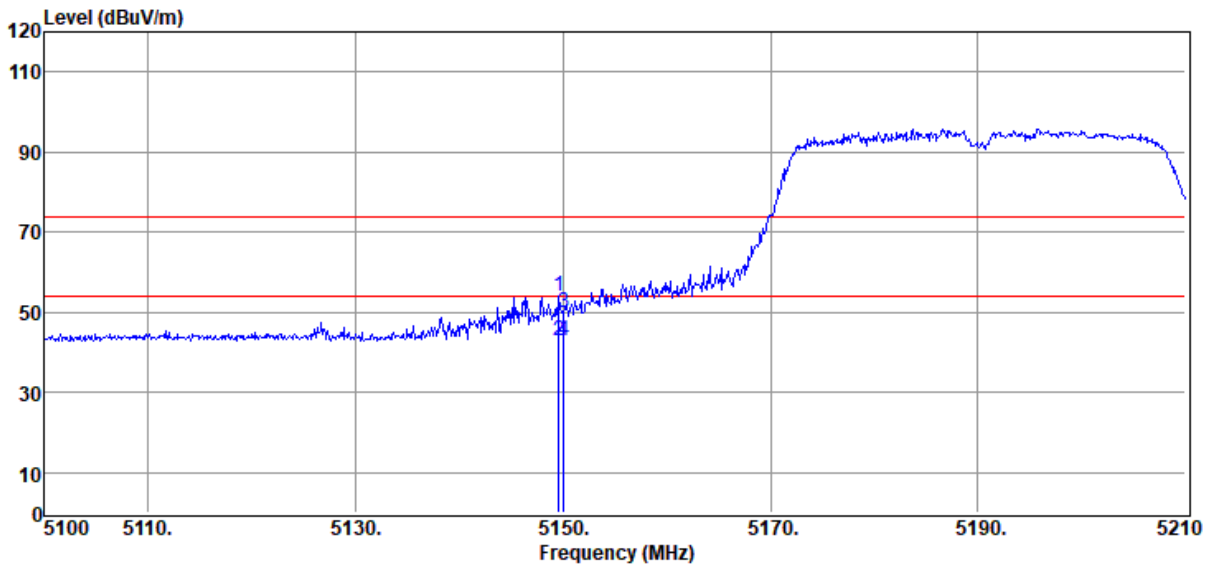
TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#
Test Date : 2022-09-22
EUT : Integrated video conference terminal
Power Supply : AC 120V/60Hz
Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa
Memo : 11AC40 5190

Tested By : Bairong
Model Number : UC S15
Test Mode : Tx Mode
Antenna/Distance : 2021 BBHA 9120D
 3#/3m/HORIZONTAL

D:\E3 6.111\2022 Report Data\Q22062203-2E
 UCS15\8822\FCC ABOVE 1G.EM6

Data: 27



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Filter Factor (dB)	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5149.61	57.79	33.01	40.41	2.55	0.94	53.88	74.00	-20.12	Peak	HORIZONTAL
2	5149.61	46.76	33.01	40.41	2.55	0.94	42.85	54.00	-11.15	Average	HORIZONTAL
3	5150.05	53.97	33.01	40.42	2.55	0.94	50.05	74.00	-23.95	Peak	HORIZONTAL
4	5150.05	46.82	33.01	40.42	2.55	0.94	42.90	54.00	-11.10	Average	HORIZONTAL

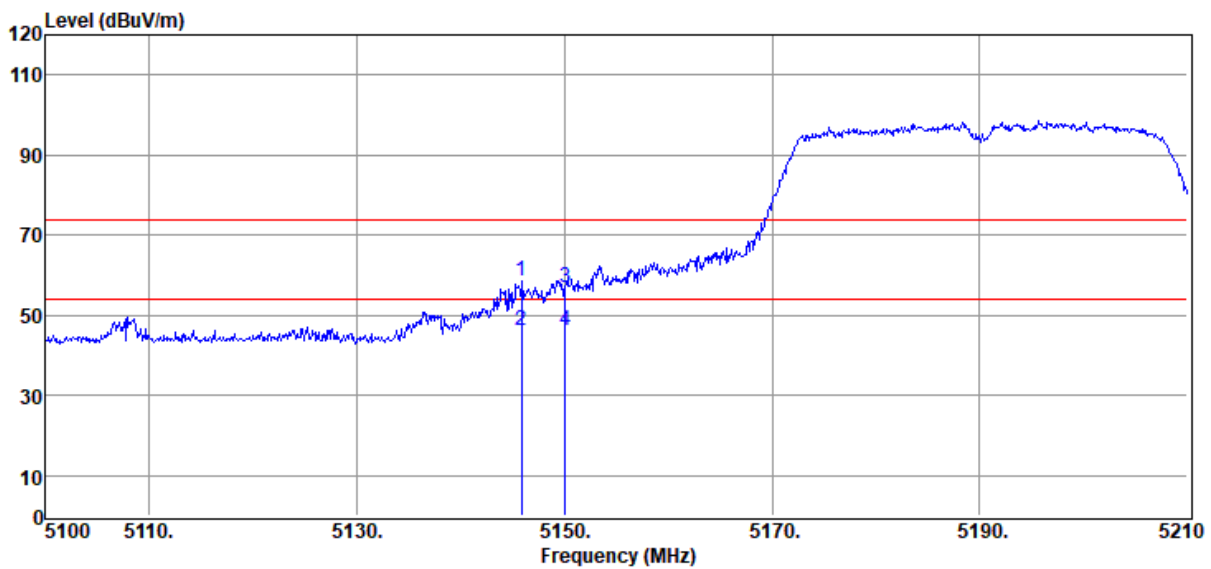
Note:

1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC ABOVE 1G.EM6
Test Date : 2022-09-19 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : Tx Mode
Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D 3#/3m/VERTICAL
Memo : 11AC40 5190

Data: 28



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Filter Factor (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5145.87	62.54	33.01	40.41	2.55	0.94	58.63	74.00	-15.37	Peak	VERTICAL
2	5145.87	49.92	33.01	40.41	2.55	0.94	46.01	54.00	-7.99	Average	VERTICAL
3	5150.05	60.66	33.01	40.42	2.55	0.94	56.74	74.00	-17.26	Peak	VERTICAL
4	5150.05	50.20	33.01	40.42	2.55	0.94	46.28	54.00	-7.72	Average	VERTICAL

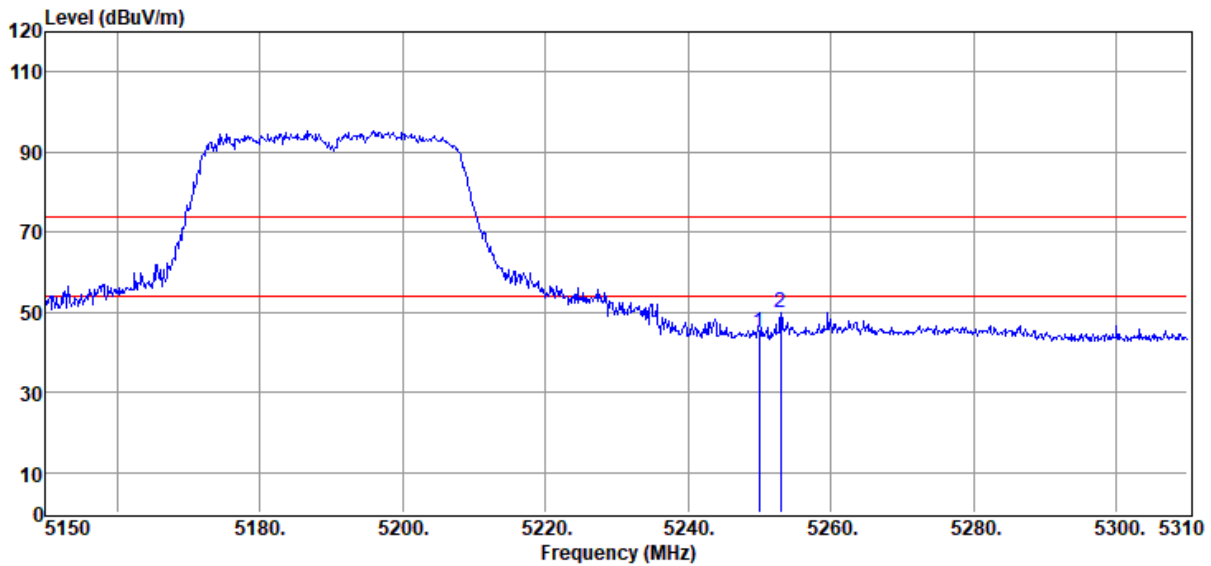
Note:

1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC ABOVE 1G.EM6
Test Date : 2022-09-19 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : Tx Mode
Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D
3#/3m/HORIZONTAL
Memo : 11AC40 5190

Data: 25



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Filter Factor (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5250.00	48.80	32.95	40.43	2.55	0.97	44.84	74.00	-29.16	Peak	HORIZONTAL
2	5253.04	53.81	32.95	40.43	2.56	0.97	49.86	74.00	-24.14	Peak	HORIZONTAL

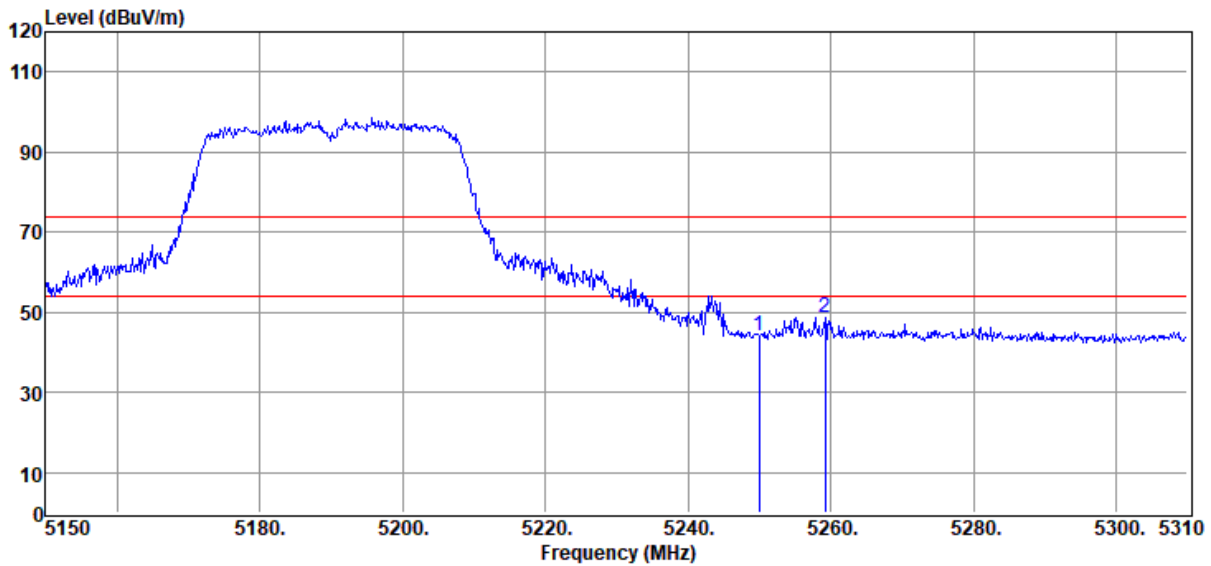
Note:

1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# D:\E3 6.111\2022 Report Data\Q22062203-2E UCS15\8822\FCC ABOVE 1G.EM6
Test Date : 2022-09-19 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : Tx Mode
Condition : Temp:23.1°C,Humi:51.5%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D 3#/3m/VERTICAL
Memo : 11AC40 5190

Data: 26



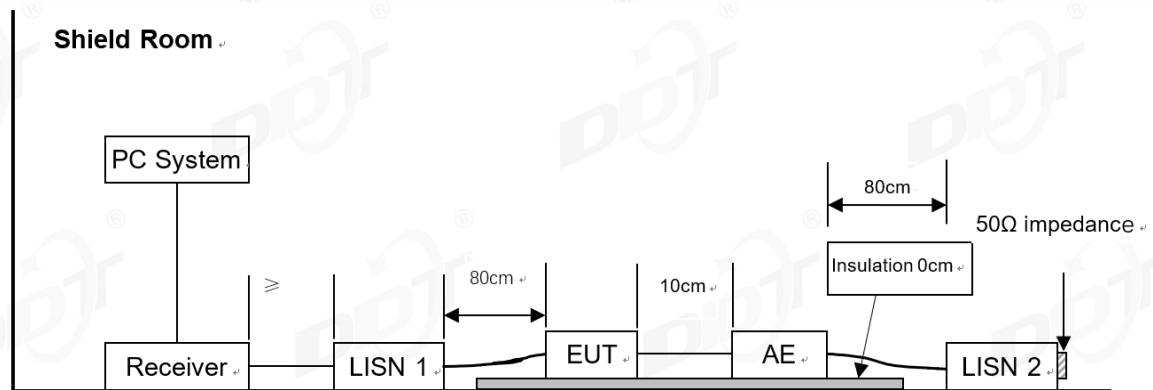
Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Filter Factor (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5250.00	48.17	32.95	40.43	2.55	0.97	44.21	74.00	-29.79	Peak	VERTICAL
2	5259.28	52.77	32.94	40.43	2.56	0.97	48.81	74.00	-25.19	Peak	VERTICAL

Note:

1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

10. Power Line Conducted Emission

10.1. Block diagram of test setup



10.2. Power Line Conducted Emission Limits (Class B)

Frequency	Quasi-Peak Level dB(μ V)	Average Level dB(μ V)
150 kHz ~ 500 kHz	66 ~ 56*	56 ~ 46*
500 kHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

10.3. Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.3 and test equipment as described in clause 10.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.3 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest

emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

10.4. Test Result

Pass. (See below detailed test result)

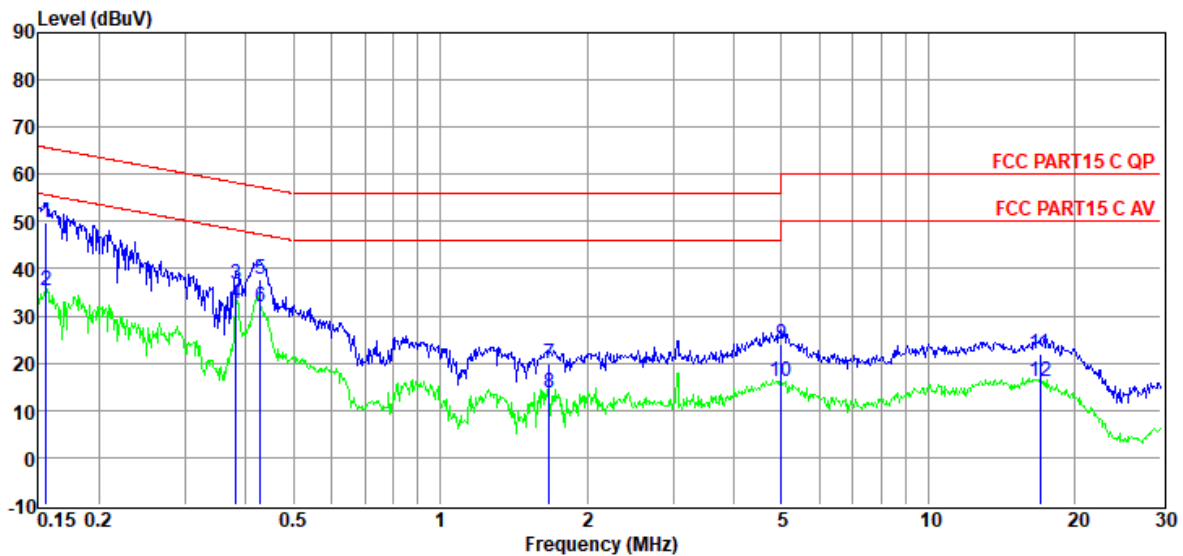
Note1: All emissions not reported below are too low against the prescribed limits.

Note2: "----" means peak detection; "----" means average detection

Note3: Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/50Hz, recorded worse case (AC 120V/60Hz).

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 1# Shield Room D:\2022 CE report date\Q22062203-2E UCS15\FCC.EM6
Test Date : 2022-08-16 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : TX mode
Condition : TEMP:23.8°C, RH:62.0%, BP:101.2kPa **LISN** : 2021 1# ENV216/LINE
Memo : 5GWIFI



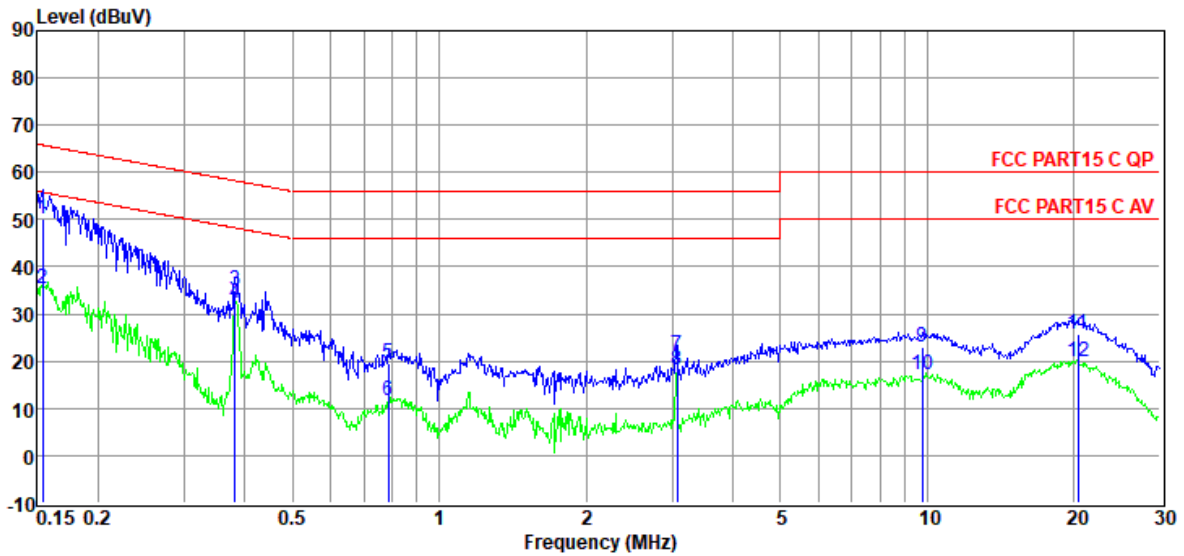
Item (Mark)	Freq. (MHz)	Read Level (dBμV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBμV)	Limit Line (dBμV)	Over Limit (dB)	Detector	Phase
1	0.16	30.37	9.63	0.01	9.92	49.93	65.69	-15.76	QP	LINE
2	0.16	15.85	9.63	0.01	9.92	35.41	55.69	-20.28	Average	LINE
3	0.38	17.03	9.66	0.02	9.91	36.62	58.25	-21.63	QP	LINE
4	0.38	12.93	9.66	0.02	9.91	32.52	48.25	-15.73	Average	LINE
5	0.43	18.38	9.63	0.02	9.91	37.94	57.29	-19.35	QP	LINE
6	0.43	12.45	9.63	0.02	9.91	32.01	47.29	-15.28	Average	LINE
7	1.67	0.34	9.53	0.04	9.89	19.80	56.00	-36.20	QP	LINE
8	1.67	-5.68	9.53	0.04	9.89	13.78	46.00	-32.22	Average	LINE
9	5.01	4.44	9.56	0.06	9.93	23.99	60.00	-36.01	QP	LINE
10	5.01	-3.45	9.56	0.06	9.93	16.10	50.00	-33.90	Average	LINE
11	16.93	2.29	9.72	0.16	9.94	22.11	60.00	-37.89	QP	LINE
12	16.93	-3.65	9.72	0.16	9.94	16.17	50.00	-33.83	Average	LINE

Note:

1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 1# Shield Room D:\2022 CE report date\Q22062203-2E UCS15\FCC.EM6
Test Date : 2022-08-16 **Tested By** : Bairong
EUT : Integrated video conference terminal **Model Number** : UC S15
Power Supply : AC 120V/60Hz **Test Mode** : TX mode
Condition : TEMP:23.8°C, RH:62.0%, BP:101.2kPa **LISN** : 2021 1# ENV216/NEUTRAL
Memo : 5GWIFI



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Detector	Phase
1	0.15	30.42	9.80	0.01	9.92	50.15	65.78	-15.63	QP	NEUTRAL
2	0.15	15.48	9.80	0.01	9.92	35.21	55.78	-20.57	Average	NEUTRAL
3	0.38	15.34	9.59	0.02	9.91	34.86	58.25	-23.39	QP	NEUTRAL
4	0.38	12.77	9.59	0.02	9.91	32.29	48.25	-15.96	Average	NEUTRAL
5	0.79	-0.03	9.77	0.03	9.90	19.67	56.00	-36.33	QP	NEUTRAL
6	0.79	-8.17	9.77	0.03	9.90	11.53	46.00	-34.47	Average	NEUTRAL
7	3.07	1.52	9.72	0.05	9.91	21.20	56.00	-34.80	QP	NEUTRAL
8	3.07	-1.48	9.72	0.05	9.91	18.20	46.00	-27.80	Average	NEUTRAL
9	9.76	3.20	9.79	0.11	9.94	23.04	60.00	-36.96	QP	NEUTRAL
10	9.76	-2.72	9.79	0.11	9.94	17.12	50.00	-32.88	Average	NEUTRAL
11	20.38	5.87	9.80	0.17	9.96	25.80	60.00	-34.20	QP	NEUTRAL
12	20.38	-0.13	9.80	0.17	9.96	19.80	50.00	-30.20	Average	NEUTRAL

Note:

1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

11. Antenna Requirements

11.1. Limit

For intentional device, according to FCC 47 CFR Section 15.203, 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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

11.2. Result

The device support 2T2R MIMO, the antennas both used for this product are FPCB antennas and no antenna other than that furnished by the responsible party shall be used with the device, maximum antenna gain is 5.17 dBi for antenna 1, 5.17 dBi for antenna 2.

12. Dynamic Frequency Selection

12.1. Applicability of DFS requirements

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode		
	<input type="checkbox"/> Master	<input checked="" type="checkbox"/> Client Without Radar Detection	<input type="checkbox"/> Client with Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode	
	<input type="checkbox"/> Master Device or Client with Radar Detection	<input checked="" type="checkbox"/> Client Without Radar Detection
DFS Detection Threshold	Yes	Not required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required

Additional requirements for devices with multiple bandwidth modes	<input type="checkbox"/> Master Device or Client with Radar Detection	<input checked="" type="checkbox"/> Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required

Note: Frequencies selected for statistical performance check should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.

12.2. Limit

(1) DFS Detection Thresholds

Table 3: DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP \geq 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.

Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

(2) DFS Response Requirements

Table 4: DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required facilitating a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

12.3. Parameters of radar test waveforms

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

Table 5 Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A	Roundup $\left\{ \left(\frac{1}{360} \right) \cdot \left(\frac{19 \cdot 10^6}{\text{PRI}_{\mu\text{sec}}} \right) \right\}$	60%	30
		Test B			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120
Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.					
Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a					
Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A					

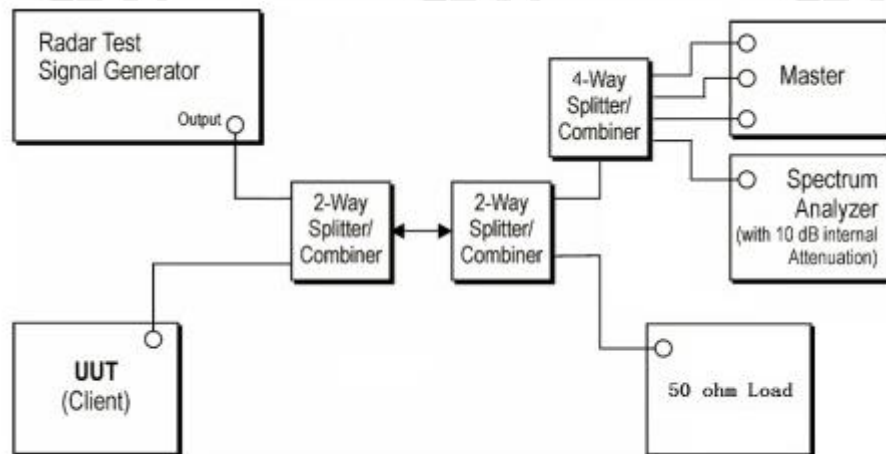
A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B. Test aggregate is average of the percentage of successful detections of short pulse radar types 1-4

12.4. Calibration of radar waveform

Radar Waveform Calibration Procedure:

- (1) A 50 ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to place of the master
- (2) The interference Radar Detection Threshold Level is $-62\text{dBm} + 0\text{dBi} + 1\text{dB} = -61\text{dBm}$ that had been taken into account the output power range and antenna gain.
- (3) The following equipment setup was used to calibrate the conducted radar waveform. A vector signal generator was utilized to establish the test signal level for radar type 0. During this process there were no transmissions by either the master or client device. The spectrum analyzer was switched to the zero spans (time domain) at the frequency of the radar waveform generator. Peak detection was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3 MHz. The spectrum analyzer had offset -1.0dB to compensate RF cable loss 1.0dB.
- (4) The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was $-62\text{dBm} + 0\text{dBi} + 1\text{dB} = -61\text{dBm}$. Capture the spectrum analyzer plots on short pulse radar waveform.

Conducted Calibration Setup:



- Note: 1. Use the software "Web" to set the frequency channel.
2. EUT is not support TPC and not with Radar detection.

12.5. Channel closing transmission time, channel move time and non-occupancy period

Block diagram of test setup Test Procedure:

- (1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.
- (2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.
- (3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
- (4) EUT will associate with the master at channel. The file "iperf.exe" specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Test Software in order to properly load the network for the entire period of the test.
- (5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.
- (6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.

(7) Measurement of the aggregate duration of the Channel Closed Transmission Time method.

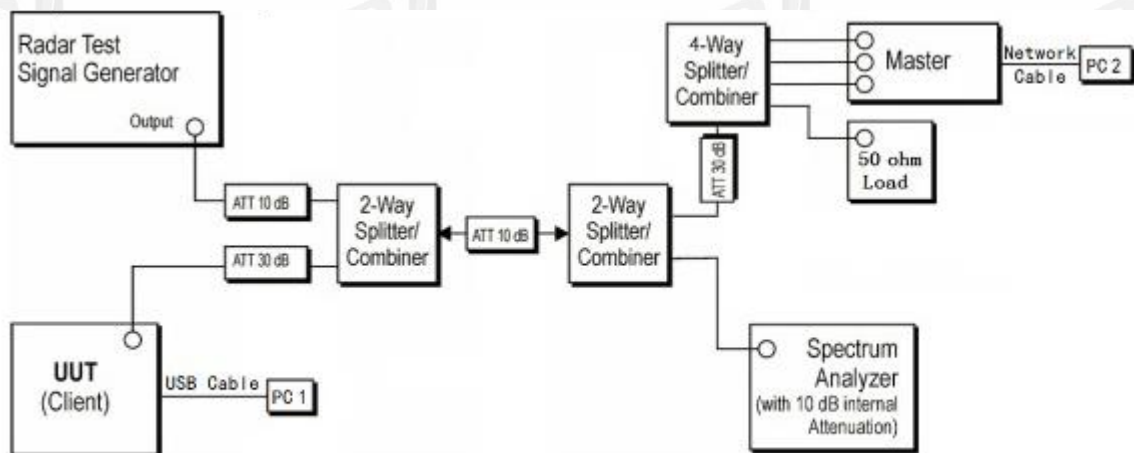
With the

(8) spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: $Dwell (0.3ms) = S (12000ms) / B (4000)$; where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: $C (ms) = N \times Dwell (0.3ms)$; where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

12.6. Test setup

Setup for Client with injection at the Master



12.7. Test result

N/A

Note: The operation frequency is 5190MHz, it does not support DFS