

Test Mode:	3DH5 - Ant 1	Test Date:	2023-05-05
Test Channel:	00	Test Engineer:	Amos Xia
Remark:	Average measurement was not performed if peak level lower than average limit. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. This is the worst case of Radiated Emission for 1-18GHz.		

Frequency (MHz)	Level (dBμV)	Factor (dB)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
5970.0000	46.44	10.65	74.00	27.56	Peak	Horizontal
7185.0000	50.58	14.63	74.00	23.42	Peak	Horizontal
8210.0000	51.33	15.21	74.00	22.67	Peak	Horizontal
10655.0000	55.44	18.81	74.00	18.56	Peak	Horizontal
3200.0000	43.24	3.81	74.00	30.76	Peak	Vertical
4560.0000	44.11	7.05	74.00	29.89	Peak	Vertical
6395.0000	46.63	12.32	74.00	27.37	Peak	Vertical
7335.0000	50.49	15.00	74.00	23.51	Peak	Vertical

Test Mode:	3DH5 - Ant 1	Test Date:	2023-05-05
Test Channel:	39	Test Engineer:	Amos Xia
Remark:	Average measurement was not performed if peak level lower than average limit. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. This is the worst case of Radiated Emission for 1-18GHz.		

Frequency (MHz)	Level (dBμV)	Factor (dB)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
3180.0000	40.13	3.80	74.00	33.87	Peak	Horizontal
4555.0000	42.70	7.07	74.00	31.30	Peak	Horizontal
5470.0000	45.65	9.93	74.00	28.35	Peak	Horizontal
7930.0000	51.56	15.38	74.00	22.44	Peak	Horizontal
5460.0000	44.67	9.87	74.00	29.33	Peak	Vertical
6340.0000	47.06	12.09	74.00	26.94	Peak	Vertical
8315.0000	53.36	15.61	74.00	20.64	Peak	Vertical
10545.0000	55.17	19.21	74.00	18.83	Peak	Vertical

Test Mode:	3DH5 - Ant 1	Test Date:	2023-05-05
Test Channel:	78	Test Engineer:	Amos Xia
Remark:	Average measurement was not performed if peak level lower than average limit. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. This is the worst case of Radiated Emission for 1-18GHz.		

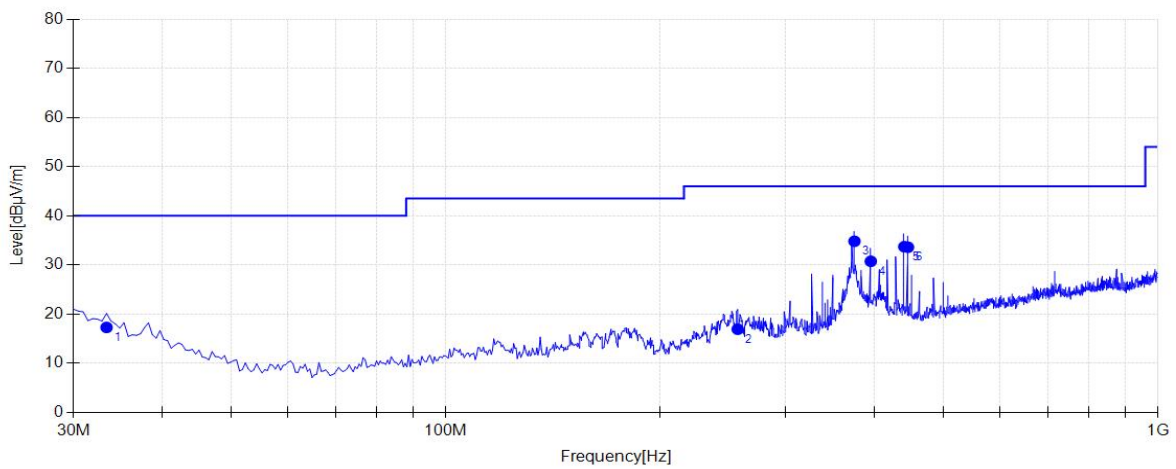
Frequency (MHz)	Level (dB μ V)	Factor (dB)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
4560.0000	43.38	7.05	74.00	30.62	Peak	Horizontal
7375.0000	50.40	15.00	74.00	23.60	Peak	Horizontal
10690.0000	55.68	19.07	74.00	18.32	Peak	Horizontal
12290.0000	56.09	19.73	74.00	17.91	Peak	Horizontal
4675.0000	42.95	6.92	74.00	31.05	Peak	Vertical
7345.0000	50.36	15.08	74.00	23.64	Peak	Vertical
8335.0000	51.74	15.75	74.00	22.26	Peak	Vertical
9515.0000	52.43	17.06	74.00	21.57	Peak	Vertical

The Worst Case of Radiated Emission below 1GHz:

EUT:	LED Playback Control Processor	Polarity:	Horizontal
Model:	TU20 Pro	SN:	N/A
Mode:	Transmit by 3DH5 at Channel 2402MHz	Voltage:	DC 12V
Environment:	Temp: 22℃; Humi:52%	Engineer:	Amos Xia

Start of Test:2023-05-05 11:08:01

Test Graph



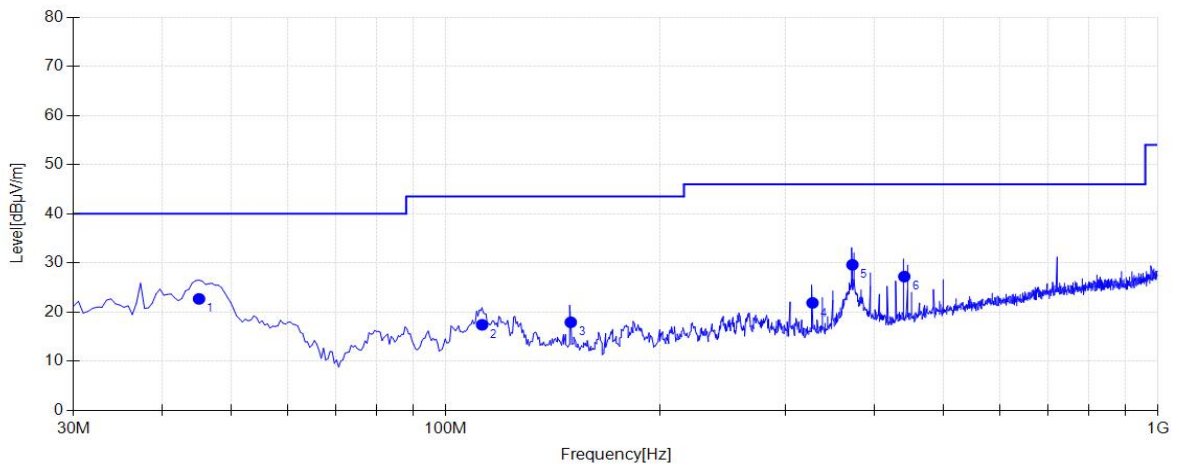
Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	33.3950	17.99	17.30	40.00	22.70	100	157	Horizontal
2	256.980	11.88	16.93	46.00	29.07	100	207	Horizontal
3	374.835	15.33	34.83	46.00	11.17	100	336	Horizontal
4	395.205	15.66	30.76	46.00	15.24	100	1	Horizontal
5	440.310	17.24	33.72	46.00	12.28	100	356	Horizontal
6	445.645	17.44	33.61	46.00	12.39	100	350	Horizontal

Note 1: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

EUT:	LED Playback Control	Polarity:	Vertical
Model:	TU20 Pro	SN:	N/A
Mode:	Transmit by 3DH5 at Channel 2402MHz	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia

Start of Test:2023-05-05 11:10:05

Test Graph



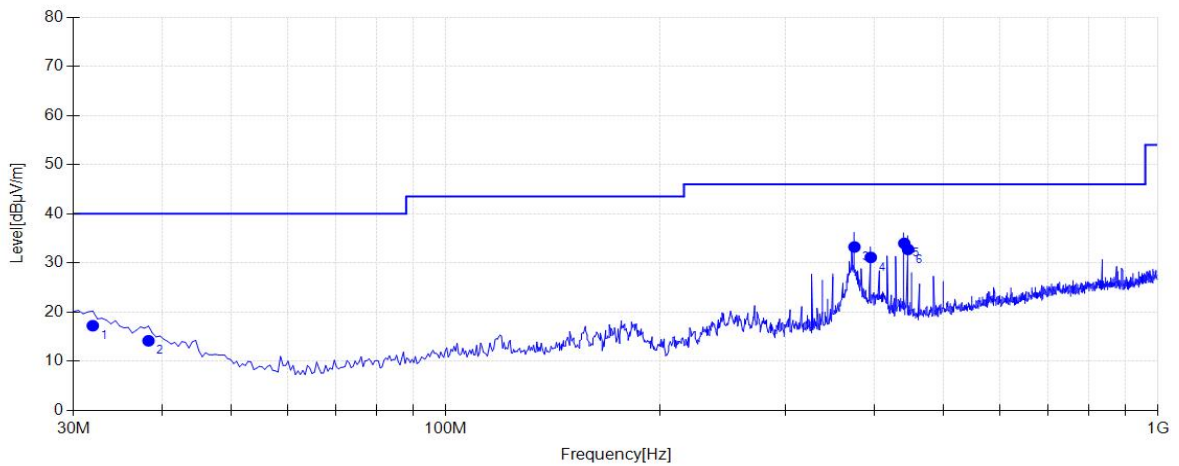
Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	45.0350	12.06	22.70	40.00	17.30	100	148	Vertical
2	112.450	11.50	17.43	43.50	26.07	100	354	Vertical
3	149.795	10.84	17.93	43.50	25.57	200	46	Vertical
4	327.305	14.39	21.88	46.00	24.12	200	227	Vertical
5	372.410	15.29	29.63	46.00	16.37	200	206	Vertical
6	440.310	17.24	27.23	46.00	18.77	200	206	Vertical

Note 1: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

EUT:	LED Playback Control Processor	Polarity:	Horizontal
Model:	TU20 Pro	SN:	N/A
Mode:	Transmit by 3DH5 at Channel 2480MHz	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia

Start of Test:2023-05-05 11:12:24

Test Graph



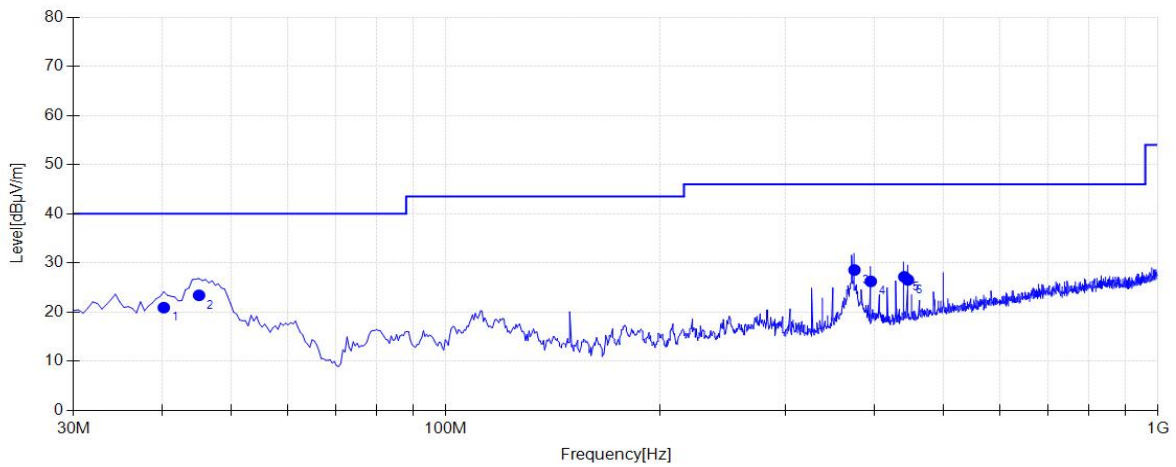
Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	31.9400	18.73	17.24	40.00	22.76	100	157	Horizontal
2	38.2450	15.53	14.17	40.00	25.83	100	337	Horizontal
3	374.835	15.33	33.25	46.00	12.75	100	356	Horizontal
4	395.205	15.66	31.13	46.00	14.87	100	330	Horizontal
5	440.310	17.24	33.98	46.00	12.02	100	351	Horizontal
6	445.645	17.44	32.76	46.00	13.24	100	351	Horizontal

Note 1: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

EUT:	LED Playback Control	Polarity:	Vertical
Model:	TU20 Pro	SN:	N/A
Mode:	Transmit by 3DH5 at Channel 2480MHz	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia

Start of Test:2023-05-05 11:14:27

Test Graph



Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	40.1850	14.54	20.92	40.00	19.08	100	36	Vertical
2	45.0350	12.06	23.42	40.00	16.58	100	216	Vertical
3	374.835	15.33	28.57	46.00	17.43	200	220	Vertical
4	395.205	15.66	26.25	46.00	19.75	200	240	Vertical
5	440.310	17.24	27.18	46.00	18.82	200	220	Vertical
6	445.645	17.44	26.55	46.00	19.45	200	179	Vertical

Note 1: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

7.10. Radiated Restricted Band Edge Measurement

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (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	8.25 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 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 - 156.525	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	--	--	--

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

7.10.1. Test Procedure Used

ANSI C63.10 Section 6.3 (General Requirements)

ANSI C63.10 Section 6.6 (Standard test method above 1GHz)

7.10.2. Test Setting

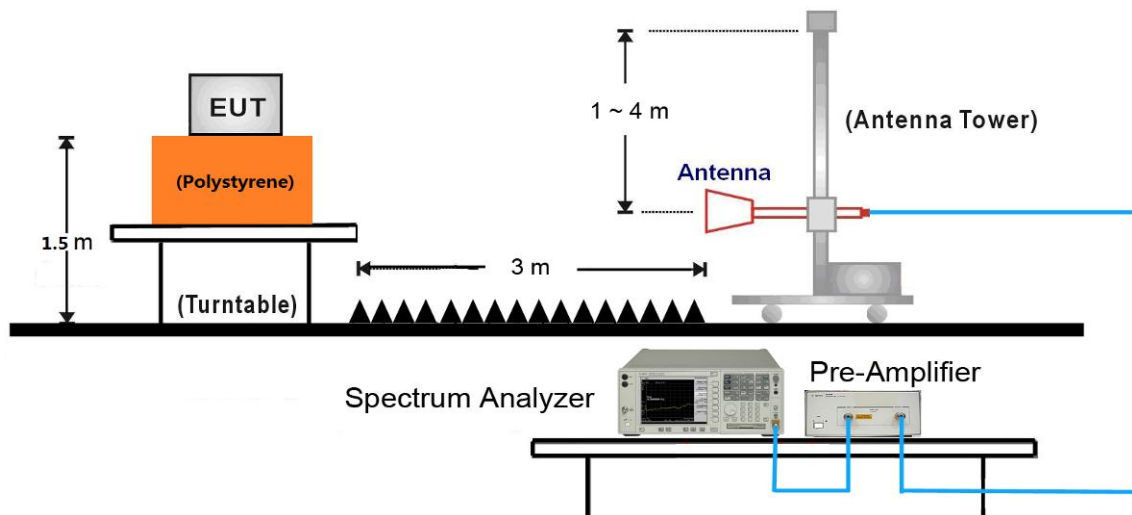
Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.
If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration.
4. Detector = Peak
5. Sweep time = auto
6. Trace mode = max hold
7. Trace was allowed to stabilize

7.10.3. Test Setup

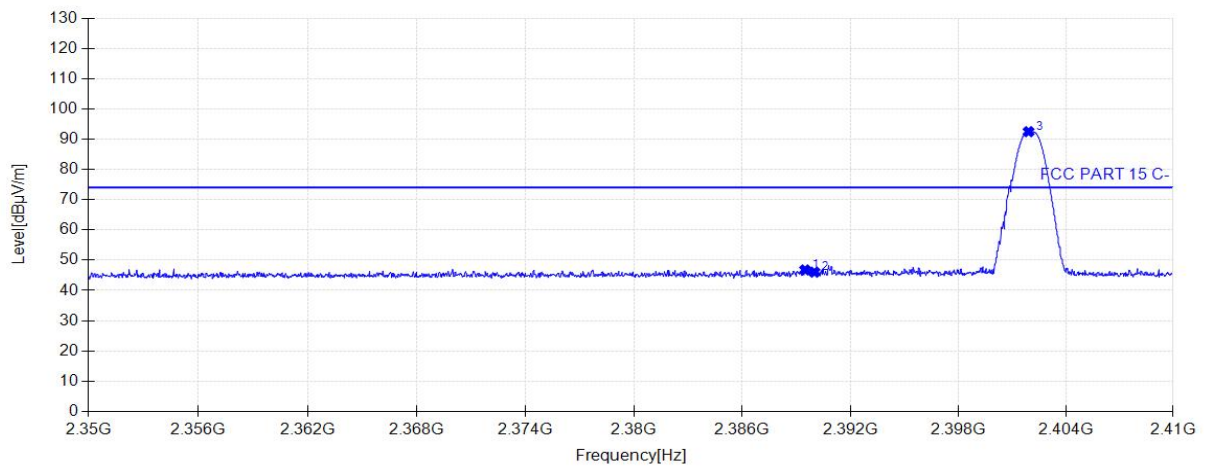


7.10.4. Test Result

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by DH5 at Channel 2402MHz		

Start of Test:2023-05-05 09:13:49

Test Graph



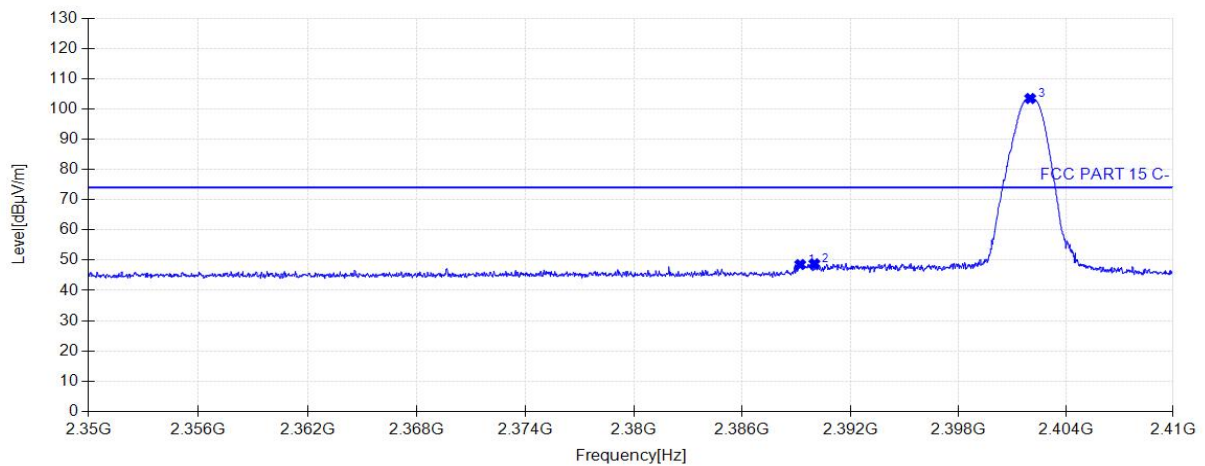
Suspected Data List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2389.48	46.78	32.74	74.00	27.22	160	107	Horizontal
2	2390.00	46.04	32.74	74.00	27.96	160	141	Horizontal
3	2401.93	92.47	32.80	74.00	-18.47	160	230	Horizontal

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by DH5 at Channel 2402MHz		

Start of Test:2023-05-05 09:14:48

Test Graph

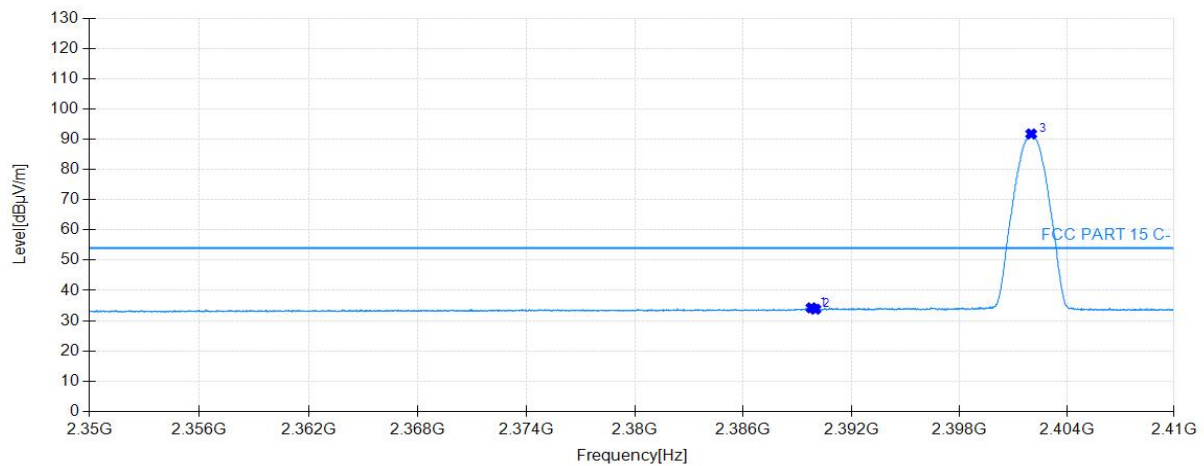


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2389.21	48.55	32.74	74.00	25.45	160	137	Vertical
2	2390.00	48.80	32.74	74.00	25.20	160	144	Vertical
3	2402.02	103.44	32.80	74.00	-29.44	160	262	Vertical

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by DH5 at Channel 2402MHz		

Start of Test:2023-05-05 09:15:55

Test Graph

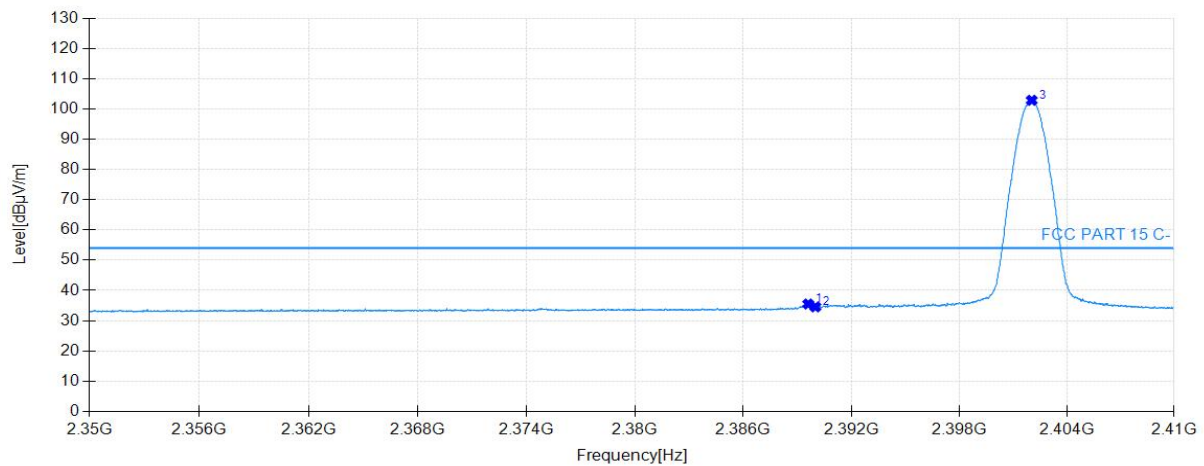


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2389.78	34.25	32.74	54.00	19.75	160	84	Horizontal
2	2390.00	33.81	32.74	54.00	20.19	160	140	Horizontal
3	2402.02	91.72	32.80	54.00	-37.72	160	230	Horizontal

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by DH5 at Channel 2402MHz		

Start of Test:2023-05-05 09:16:47

Test Graph

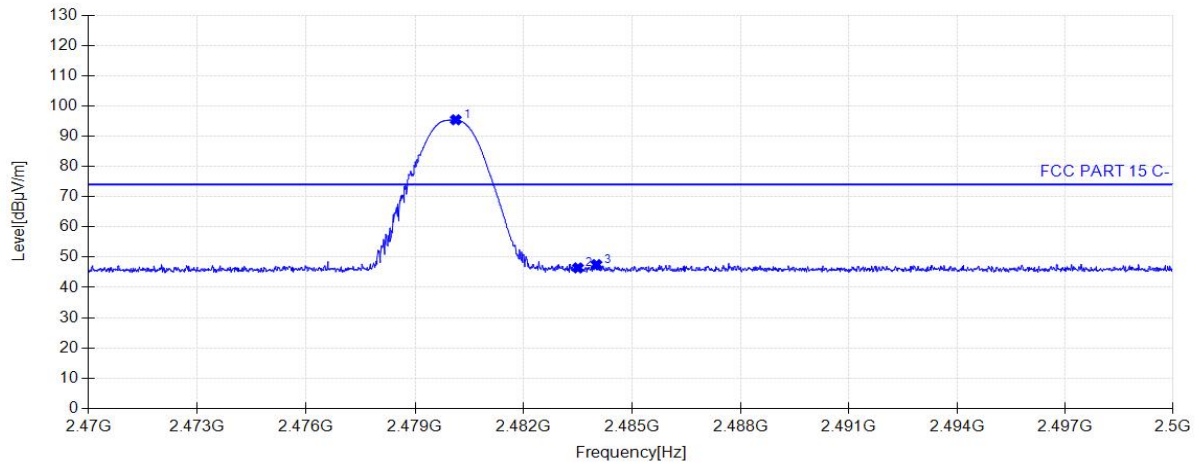


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2389.60	35.51	32.74	54.00	18.49	160	144	Vertical
2	2390.00	34.57	32.74	54.00	19.43	160	96	Vertical
3	2402.05	102.84	32.80	54.00	-48.84	160	310	Vertical

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by DH5 at Channel 2480MHz		

Start of Test:2023-05-05 09:21:09

Test Graph

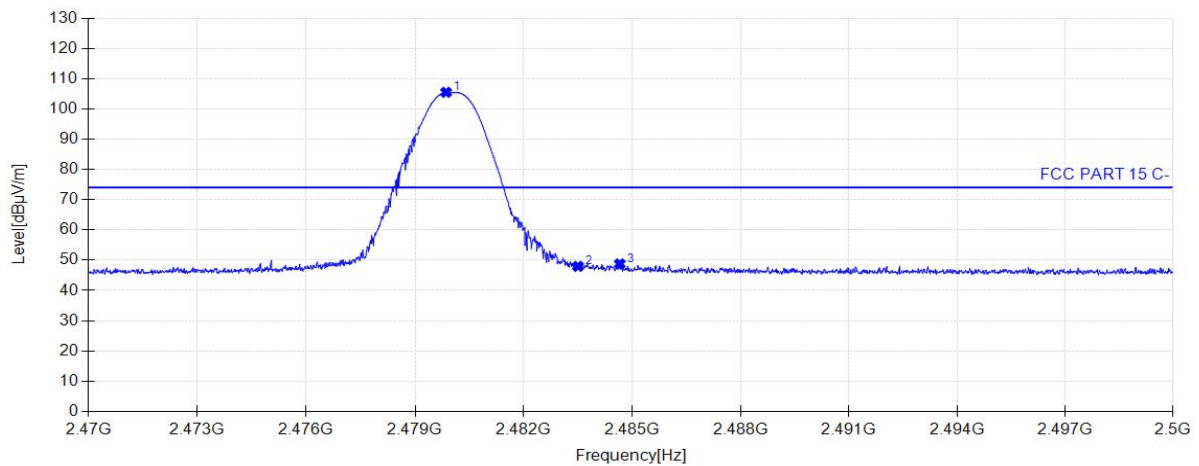


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.12	95.41	33.22	74.00	-21.41	160	216	Horizontal
2	2483.50	46.45	33.23	74.00	27.55	160	92	Horizontal
3	2484.01	47.54	33.24	74.00	26.46	160	273	Horizontal

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by DH5 at Channel 2480MHz		

Start of Test:2023-05-05 09:22:01

Test Graph

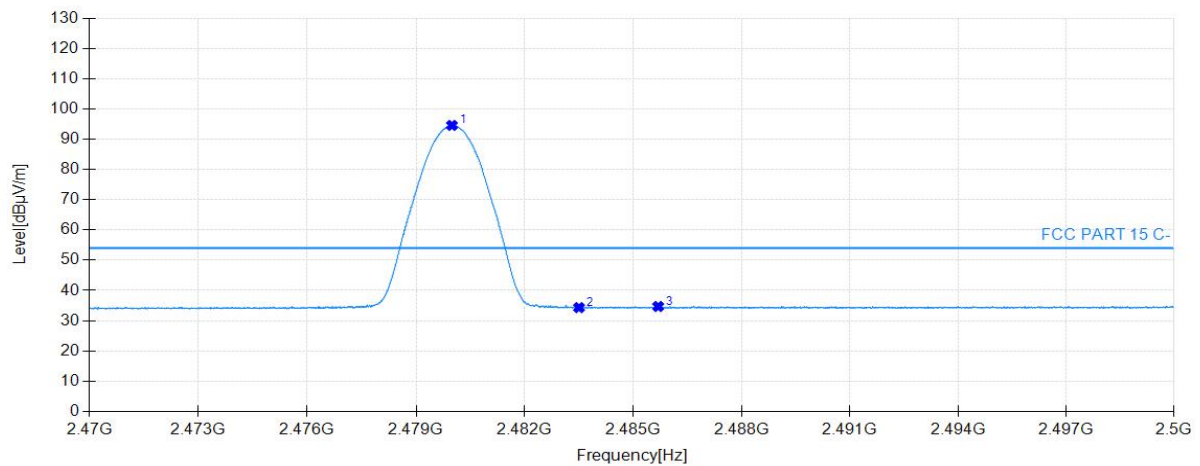


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2479.85	105.48	33.21	74.00	-31.48	160	302	Vertical
2	2483.50	47.96	33.23	74.00	26.04	160	282	Vertical
3	2484.65	48.77	33.24	74.00	25.23	160	240	Vertical

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by DH5 at Channel 2480MHz		

Start of Test:2023-05-05 09:23:30

Test Graph

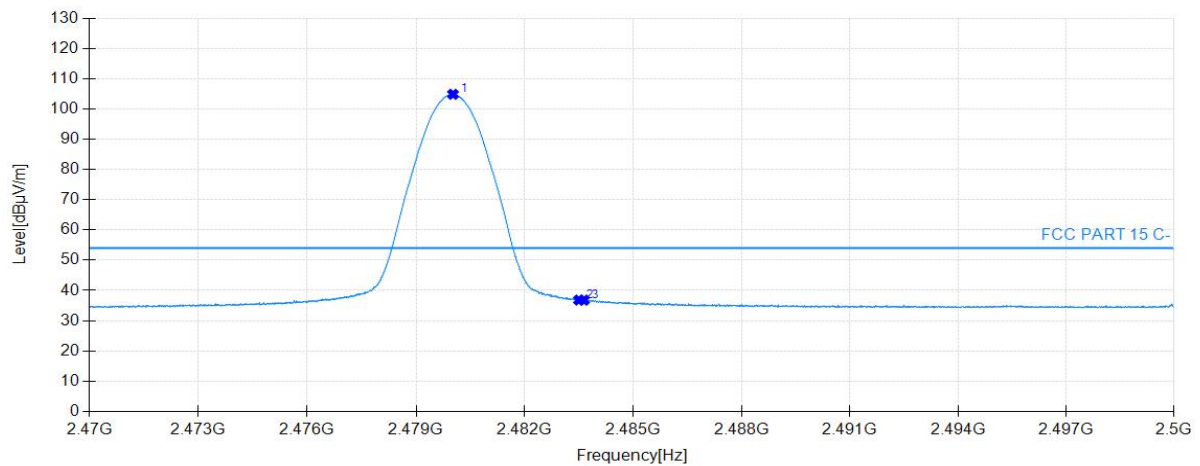


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2479.99	94.55	33.21	54.00	-40.55	160	216	Horizontal
2	2483.50	34.33	33.23	54.00	19.67	160	355	Horizontal
3	2485.69	34.70	33.24	54.00	19.30	160	189	Horizontal

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by DH5 at Channel 2480MHz		

Start of Test:2023-05-05 09:24:22

Test Graph

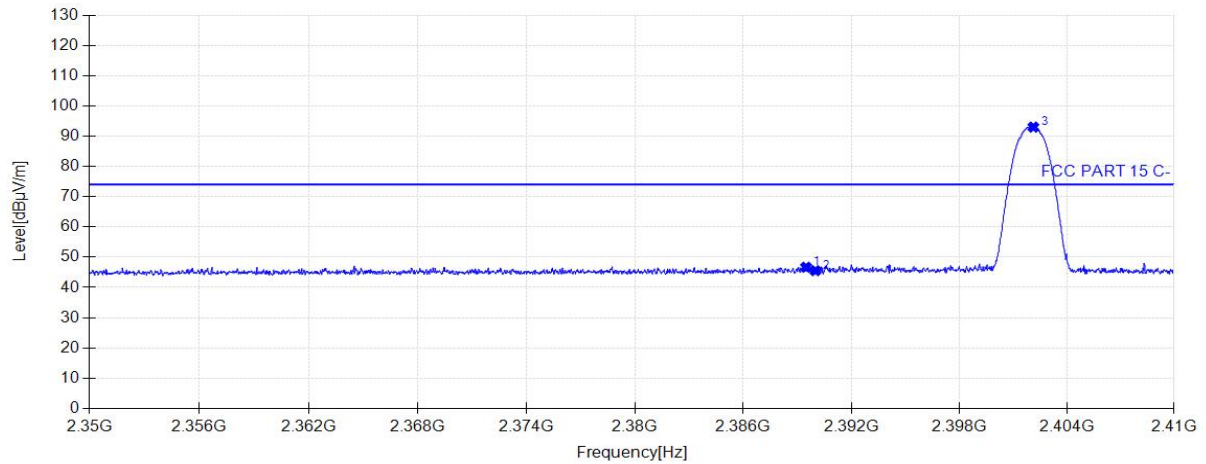


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.02	104.83	33.21	54.00	-50.83	160	302	Vertical
2	2483.50	36.82	33.23	54.00	17.18	160	283	Vertical
3	2483.63	36.80	33.23	54.00	17.20	160	288	Vertical

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 2DH5 at Channel 2402MHz		

Start of Test:2023-05-05 09:27:52

Test Graph

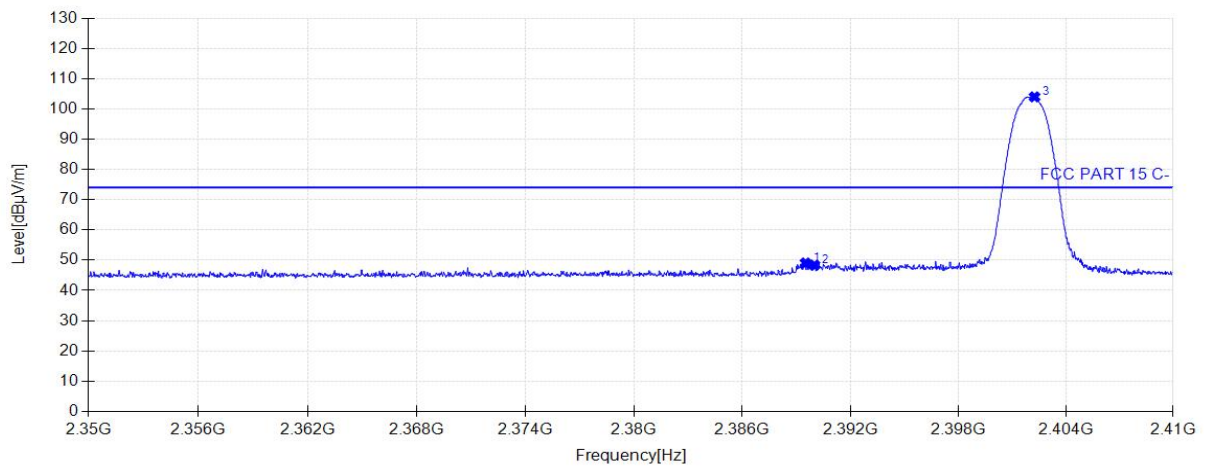


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2389.48	46.68	32.74	74.00	27.32	160	134	Horizontal
2	2390.00	45.54	32.74	74.00	28.46	160	314	Horizontal
3	2402.14	92.99	32.81	74.00	-18.99	160	230	Horizontal

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 2DH5 at Channel 2402MHz		

Start of Test:2023-05-05 09:28:45

Test Graph

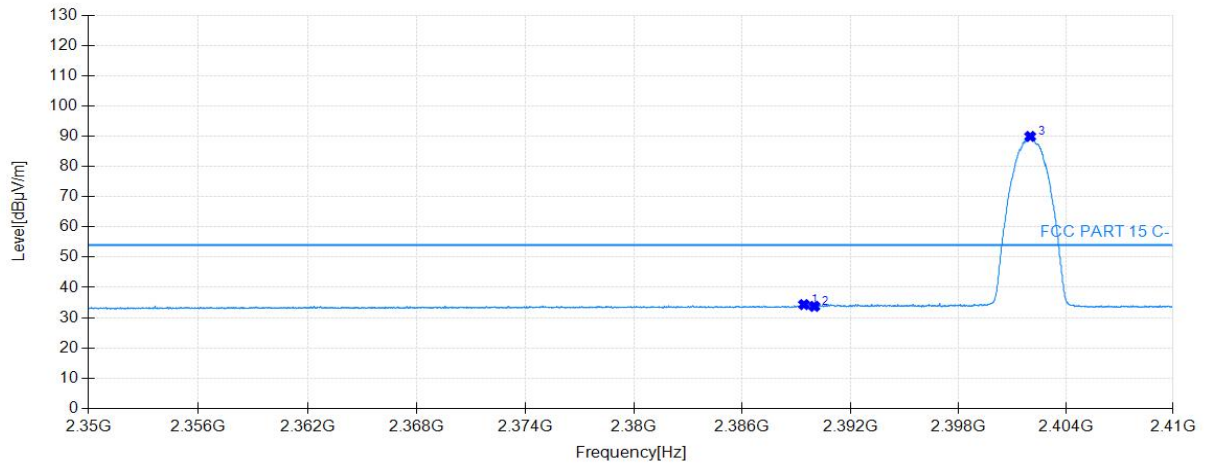


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2389.51	49.07	32.74	74.00	24.93	160	142	Vertical
2	2390.00	48.36	32.74	74.00	25.64	160	109	Vertical
3	2402.26	103.97	32.81	74.00	-29.97	160	260	Vertical

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 2DH5 at Channel 2402MHz		

Start of Test:2023-05-05 09:29:59

Test Graph

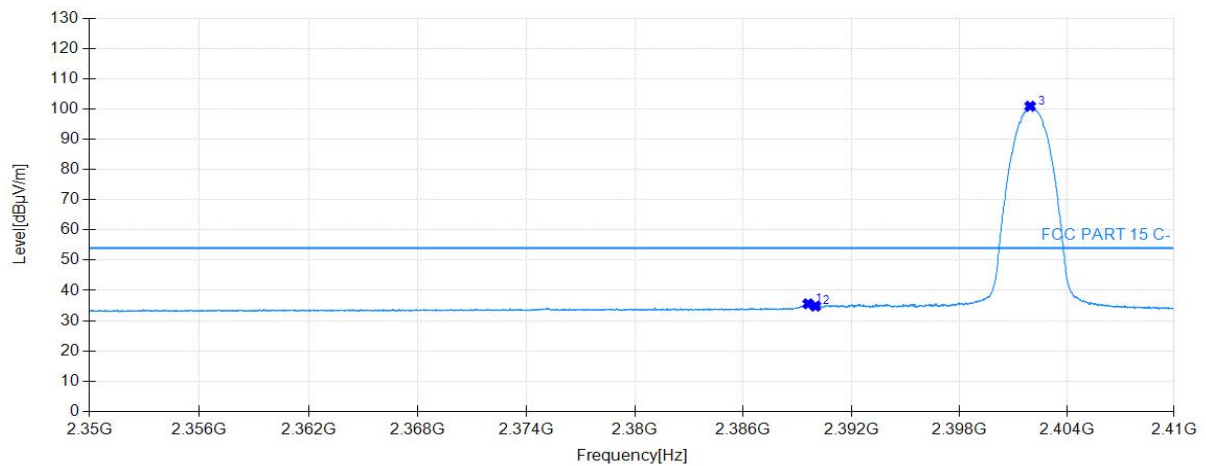


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2389.42	34.33	32.74	54.00	19.67	160	140	Horizontal
2	2390.00	33.75	32.74	54.00	20.25	160	92	Horizontal
3	2402.02	89.90	32.80	54.00	-35.90	160	230	Horizontal

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 2DH5 at Channel 2402MHz		

Start of Test:2023-05-05 09:30:52

Test Graph

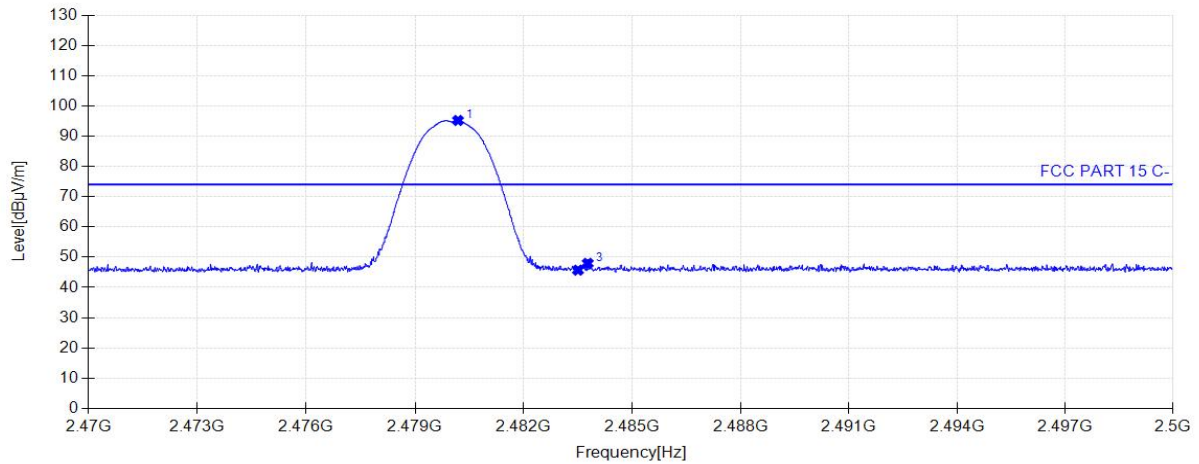


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2389.60	35.57	32.74	54.00	18.43	160	135	Vertical
2	2390.00	34.81	32.74	54.00	19.19	160	108	Vertical
3	2401.96	100.88	32.80	54.00	-46.88	160	267	Vertical

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 2DH5 at Channel 2480MHz		

Start of Test:2023-05-05 09:33:44

Test Graph

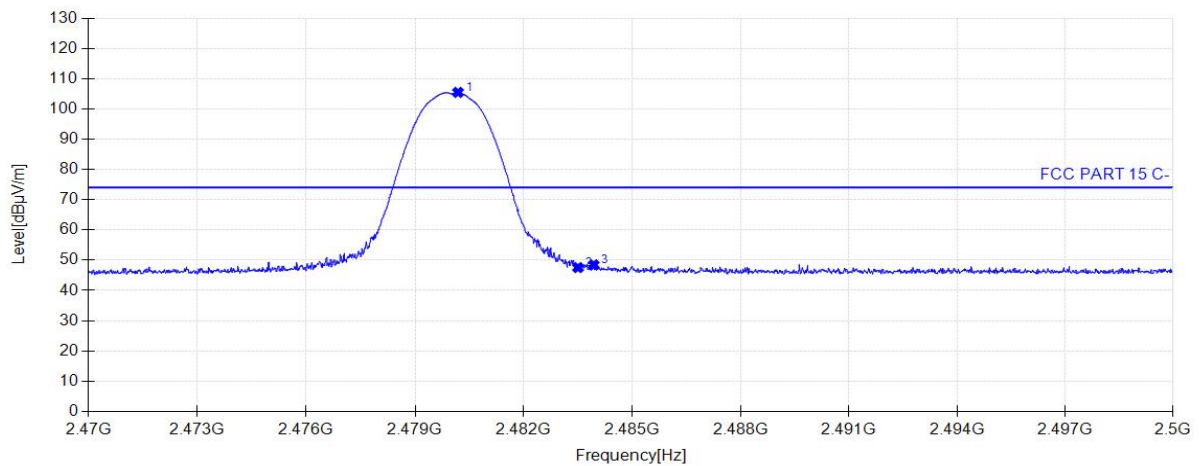


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.18	95.19	33.22	74.00	-21.19	160	216	Horizontal
2	2483.50	45.71	33.23	74.00	28.29	160	360	Horizontal
3	2483.77	47.96	33.23	74.00	26.04	160	78	Horizontal

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 2DH5 at Channel 2480MHz		

Start of Test:2023-05-05 09:34:36

Test Graph

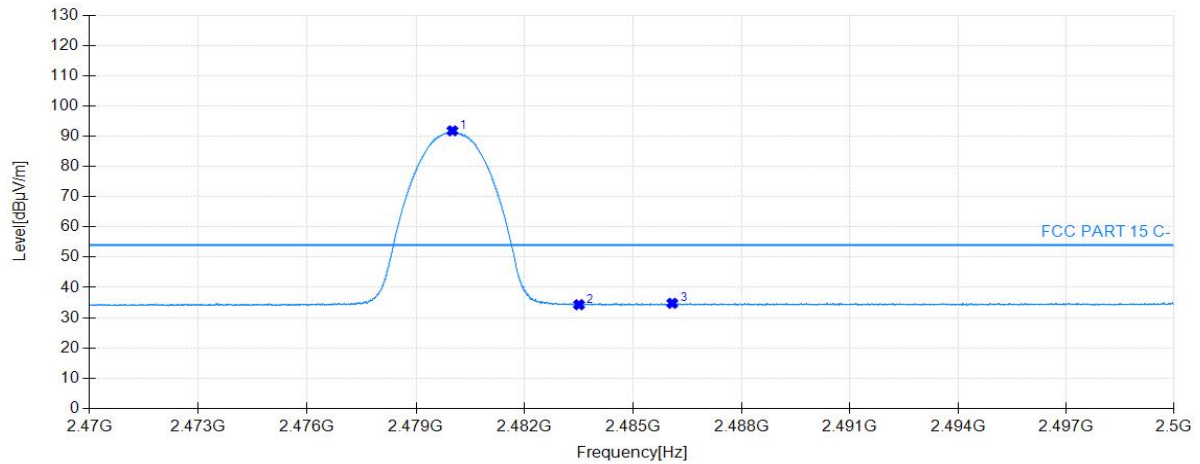


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.18	105.46	33.22	74.00	-31.46	160	303	Vertical
2	2483.50	47.55	33.23	74.00	26.45	160	234	Vertical
3	2483.93	48.45	33.24	74.00	25.55	160	296	Vertical

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 2DH5 at Channel 2480MHz		

Start of Test:2023-05-05 09:35:51

Test Graph

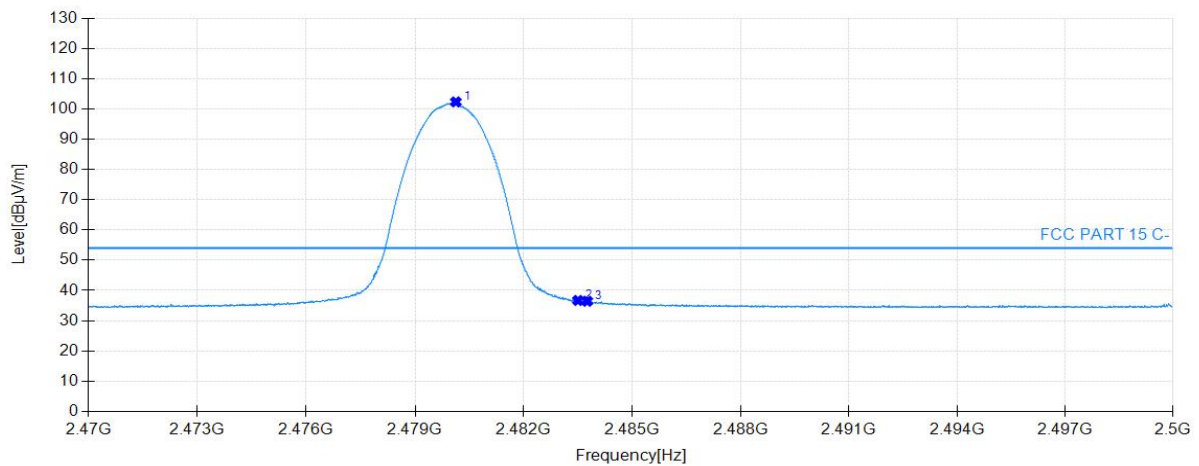


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.00	91.76	33.21	54.00	-37.76	160	222	Horizontal
2	2483.50	34.30	33.23	54.00	19.70	160	244	Horizontal
3	2486.08	34.76	33.25	54.00	19.24	160	44	Horizontal

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 2DH5 at Channel 2480MHz		

Start of Test:2023-05-05 09:36:43

Test Graph

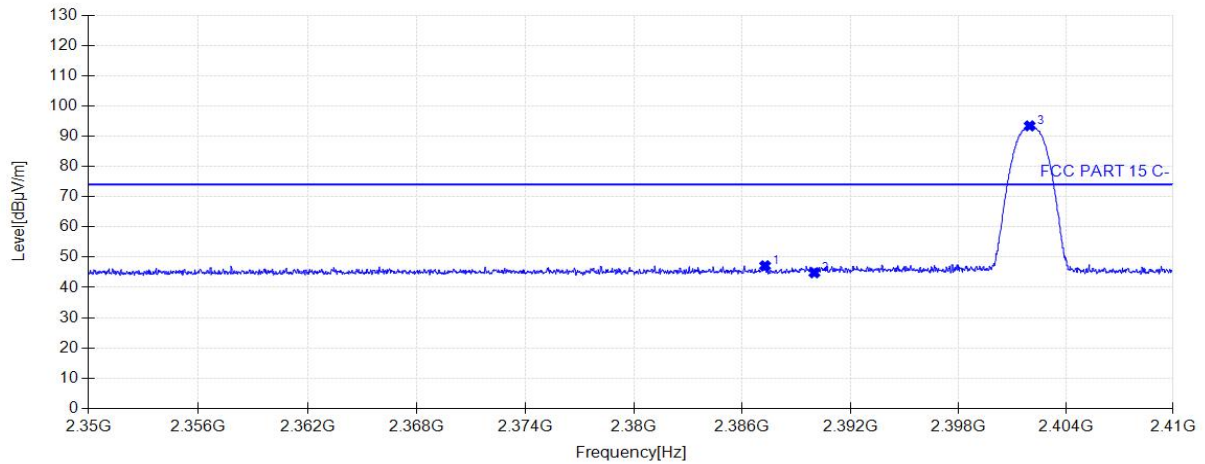


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.12	102.31	33.22	54.00	-48.31	160	282	Vertical
2	2483.50	36.69	33.23	54.00	17.31	160	310	Vertical
3	2483.75	36.43	33.23	54.00	17.57	160	289	Vertical

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 3DH5 at Channel 2402MHz		

Start of Test:2023-05-05 09:39:01

Test Graph

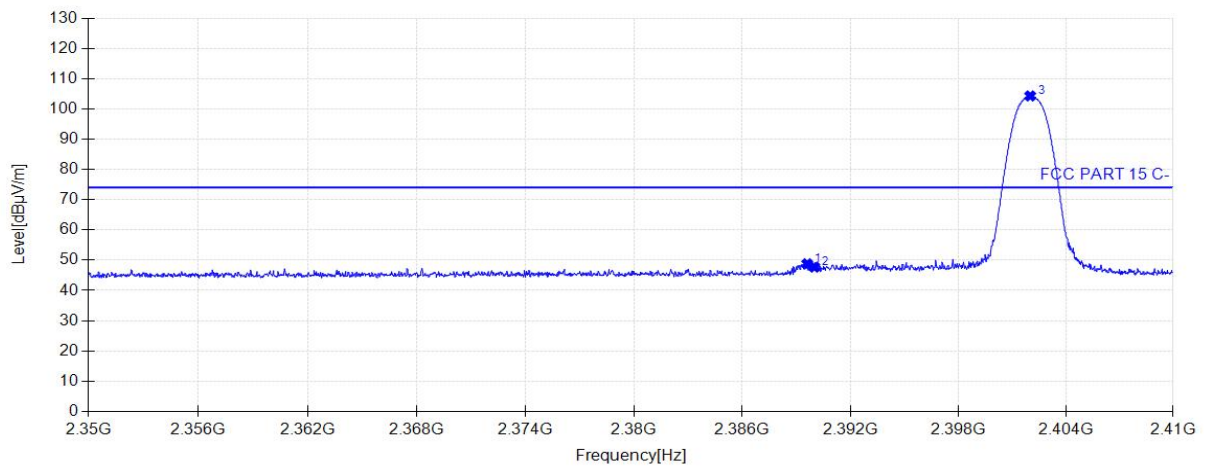


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2387.26	47.16	32.73	74.00	26.84	160	170	Horizontal
2	2390.00	44.84	32.74	74.00	29.16	160	360	Horizontal
3	2401.99	93.39	32.80	74.00	-19.39	160	233	Horizontal

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 3DH5 at Channel 2402MHz		

Start of Test:2023-05-05 09:39:54

Test Graph

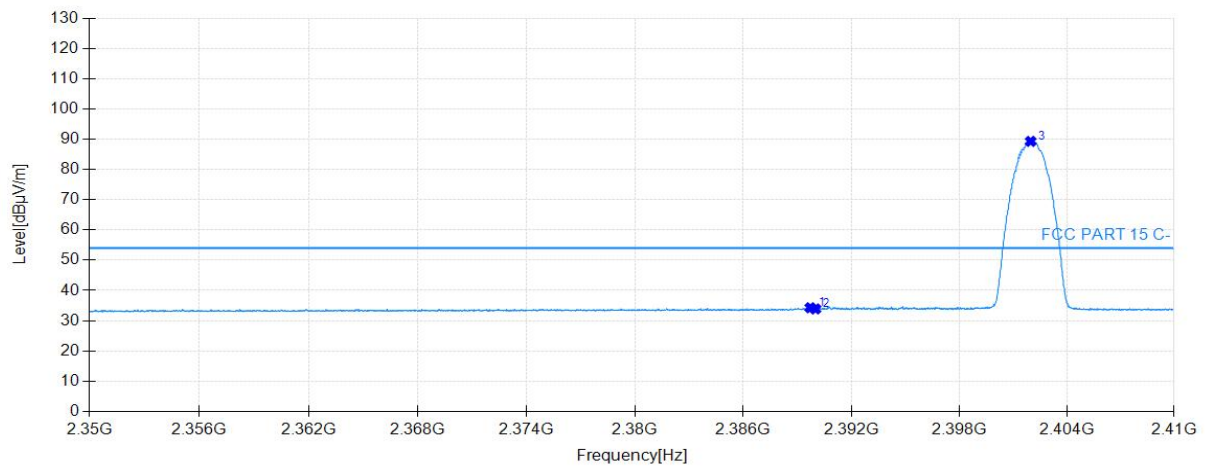


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2389.60	48.80	32.74	74.00	25.20	160	143	Vertical
2	2390.00	47.71	32.74	74.00	26.29	160	136	Vertical
3	2402.02	104.28	32.80	74.00	-30.28	160	268	Vertical

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 3DH5 at Channel 2402MHz		

Start of Test:2023-05-05 09:41:02

Test Graph

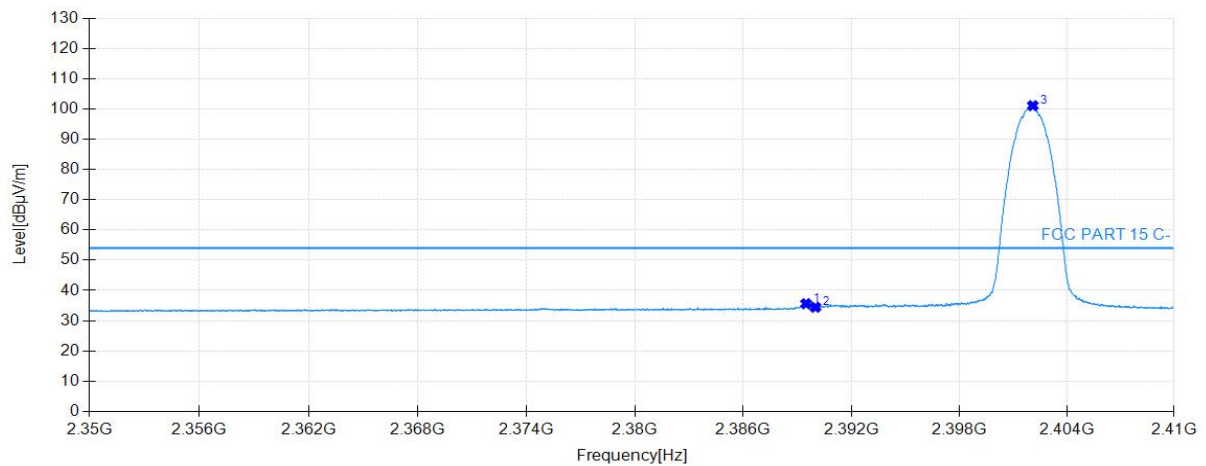


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2389.72	34.28	32.74	54.00	19.72	160	141	Horizontal
2	2390.00	33.88	32.74	54.00	20.12	160	64	Horizontal
3	2401.99	89.27	32.80	54.00	-35.27	160	232	Horizontal

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 3DH5 at Channel 2402MHz		

Start of Test:2023-05-05 09:41:55

Test Graph

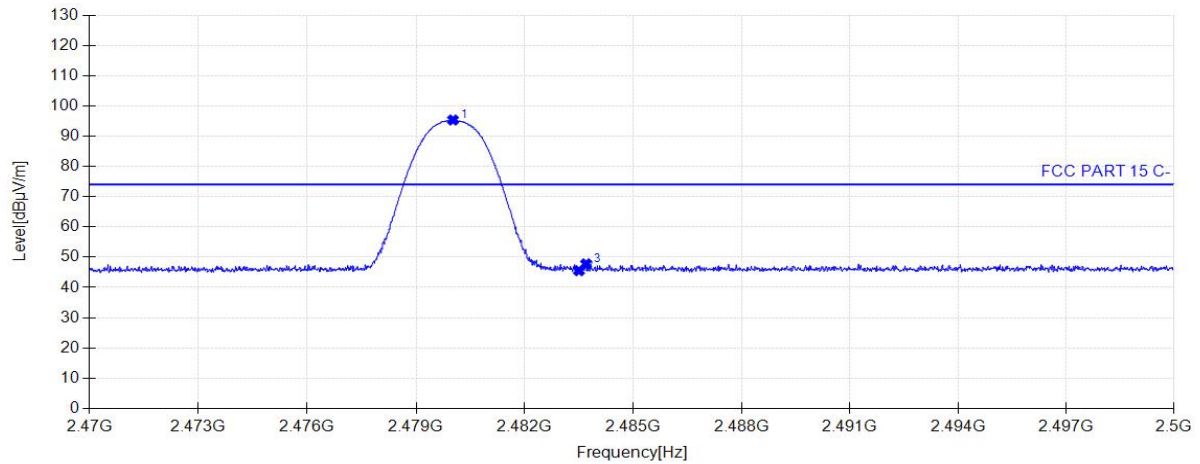


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2389.48	35.60	32.74	54.00	18.40	160	144	Vertical
2	2390.00	34.45	32.74	54.00	19.55	160	130	Vertical
3	2402.11	101.05	32.81	54.00	-47.05	160	261	Vertical

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 3DH5 at Channel 2480MHz		

Start of Test:2023-05-05 09:44:20

Test Graph

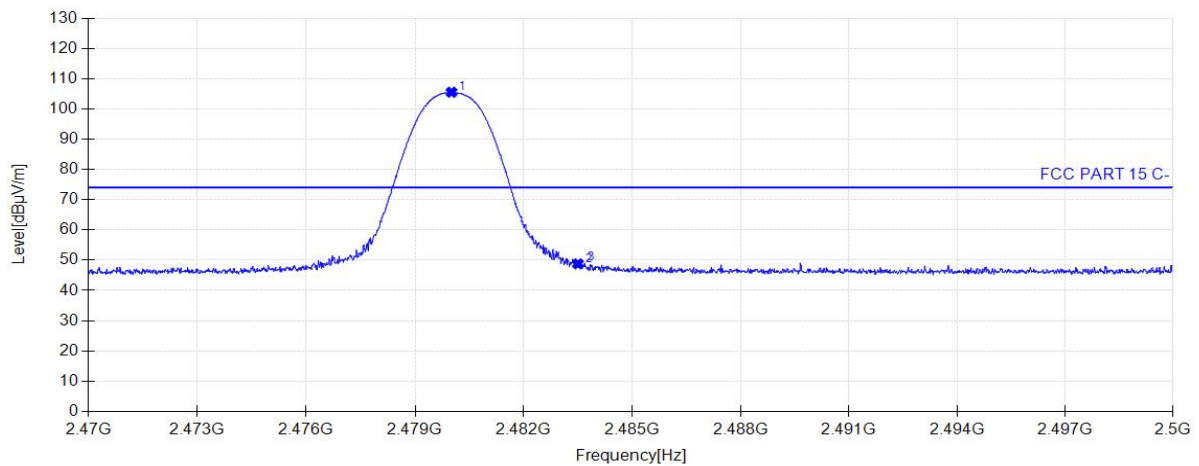


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.02	95.33	33.21	74.00	-21.33	160	216	Horizontal
2	2483.50	45.55	33.23	74.00	28.45	160	209	Horizontal
3	2483.69	47.78	33.23	74.00	26.22	160	203	Horizontal

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 3DH5 at Channel 2480MHz		

Start of Test:2023-05-05 09:45:13

Test Graph

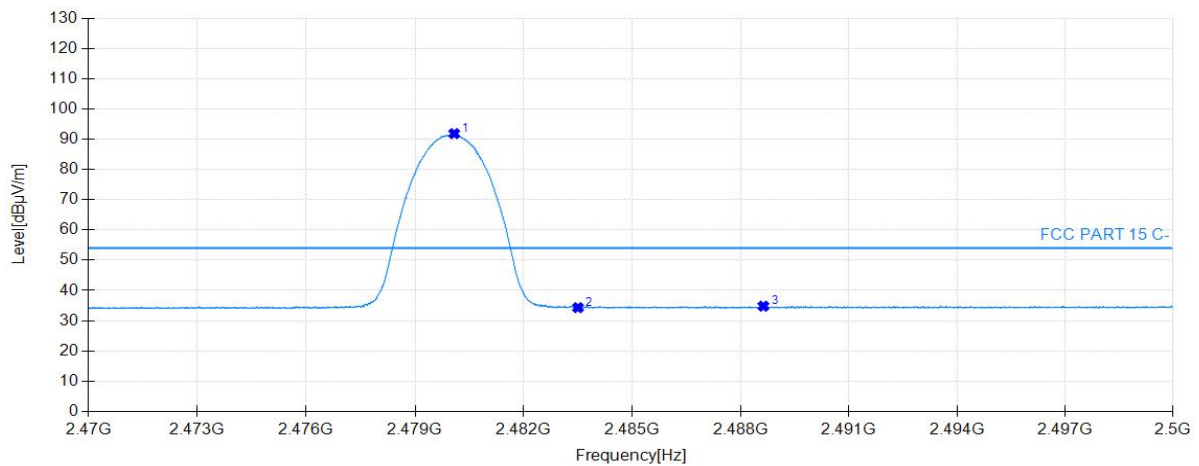


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.00	105.52	33.21	74.00	-31.52	160	283	Vertical
2	2483.50	48.80	33.23	74.00	25.20	160	290	Vertical
3	2483.56	49.47	33.23	74.00	24.53	160	254	Vertical

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 3DH5 at Channel 2480MHz		

Start of Test:2023-05-05 09:46:22

Test Graph

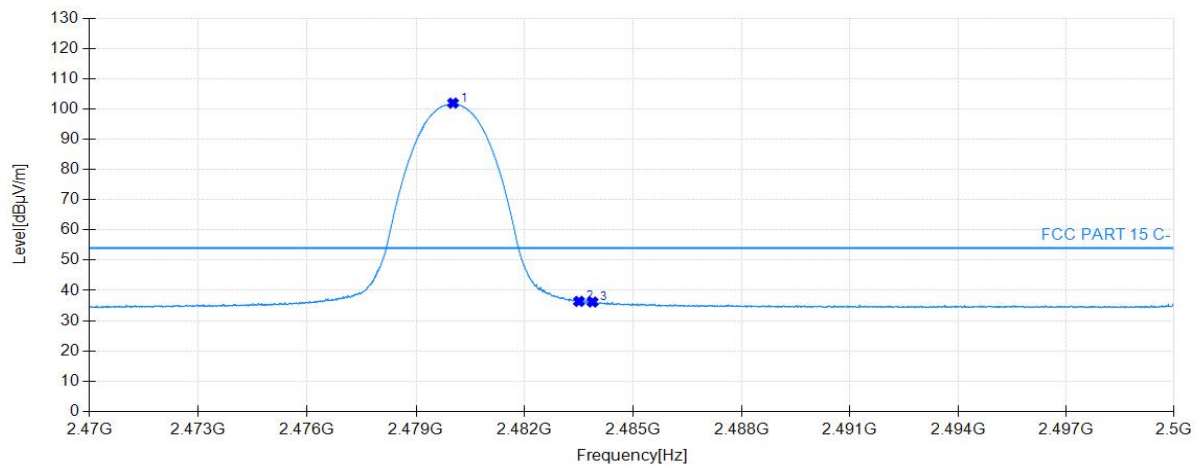


Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.08	91.83	33.22	54.00	-37.83	160	213	Horizontal
2	2483.50	34.31	33.23	54.00	19.69	160	52	Horizontal
3	2488.63	34.80	33.26	54.00	19.20	160	108	Horizontal

Project Information			
EUT:	LED Playback Control	Model:	TU20 Pro
SN:	N/A	Voltage:	DC 12V
Environment:	Temp: 22°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 3DH5 at Channel 2480MHz		

Start of Test:2023-05-05 09:47:14

Test Graph



Suspected Data List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.02	101.91	33.21	54.00	-47.91	160	287	Vertical
2	2483.50	36.39	33.23	54.00	17.61	160	294	Vertical
3	2483.87	36.17	33.24	54.00	17.83	160	294	Vertical

7.11. AC Conducted Emissions Measurement

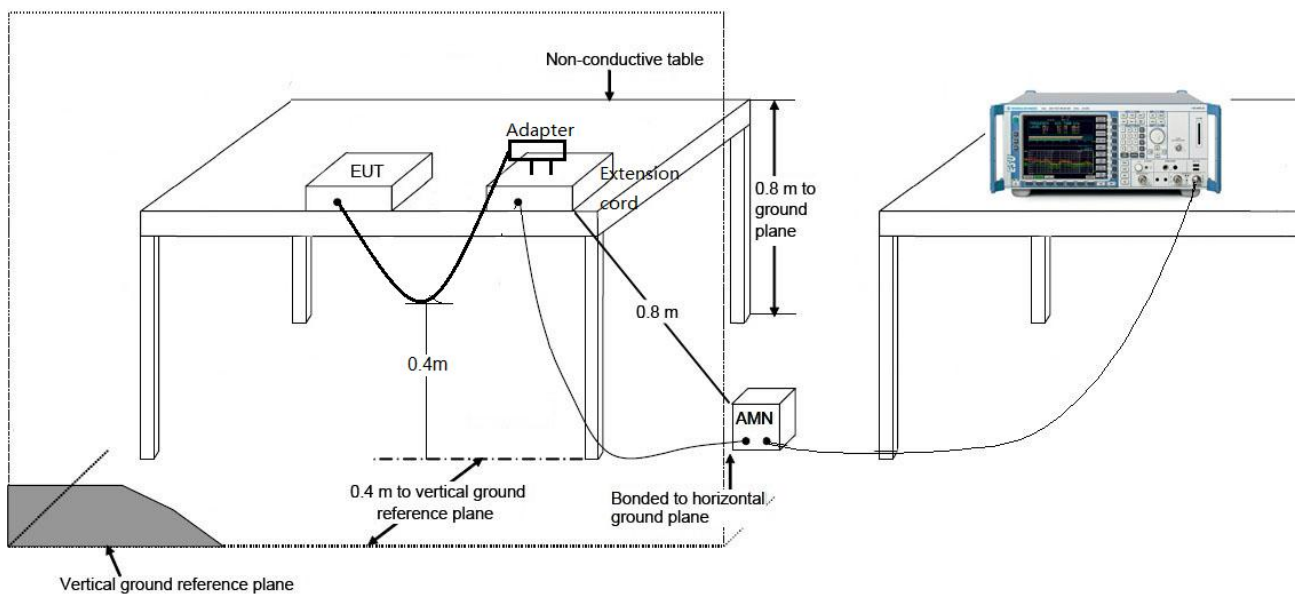
7.11.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBμV)	Average (dBμV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

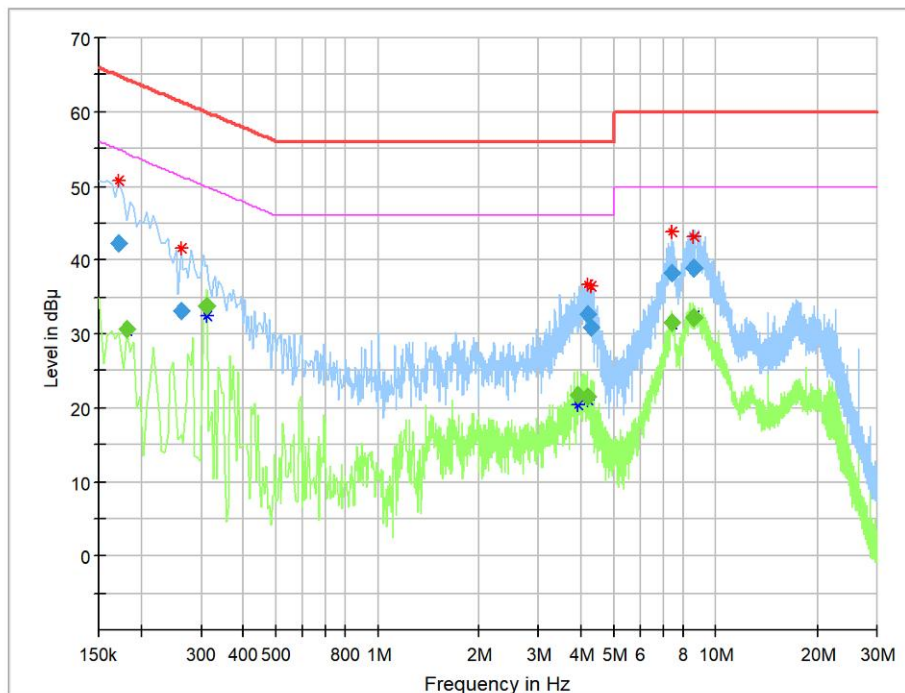
7.11.2. Test Setup



7.11.3. Test Result

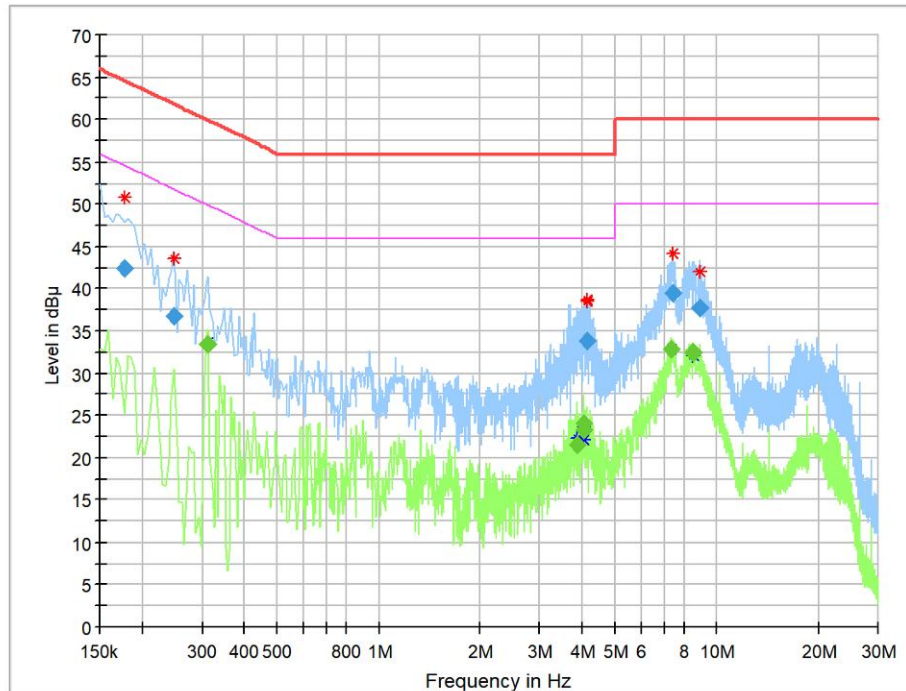
The worst case of Conducted Emissions:

EUT:	LED Playback Control Processor	Polarity:	LINE
Model:	TU20 Pro	Power Supply:	ADS-36MG-12
Mode:	Mode 1	Voltage:	120V/60Hz
Environment:	Temp: 24°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 3DH5 at Channel 2402MHz		



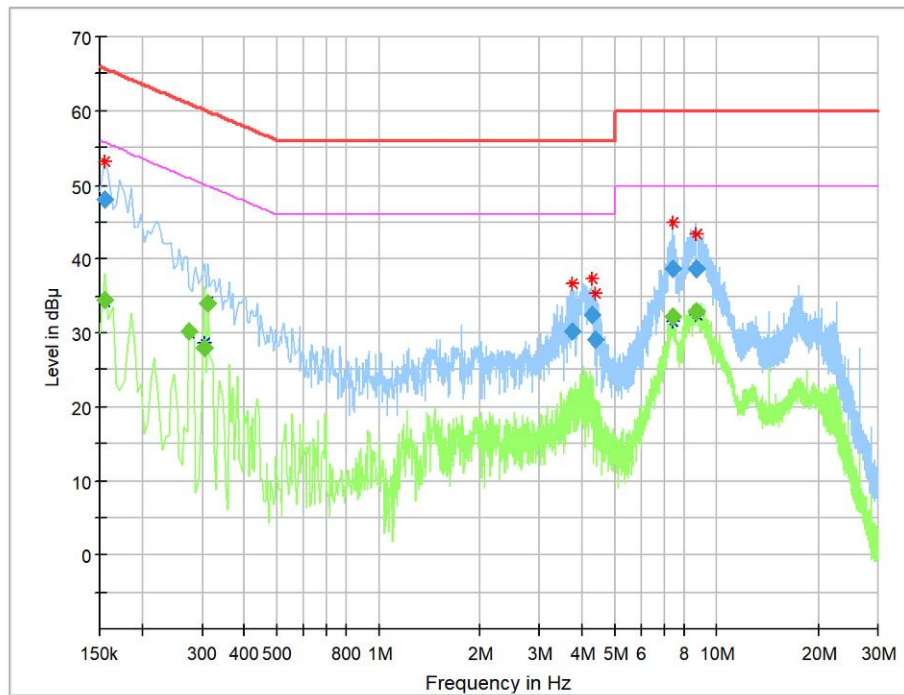
Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.172500	42.26	---	64.84	22.58	100.0	9.000	L1	ON	9.6
0.181500	---	30.68	54.42	23.73	100.0	9.000	L1	ON	9.6
0.262500	33.08	---	61.35	28.28	100.0	9.000	L1	ON	9.6
0.312000	---	33.79	49.92	16.13	100.0	9.000	L1	ON	9.6
3.912000	---	21.70	46.00	24.30	100.0	9.000	L1	ON	9.6
4.177500	32.71	---	56.00	23.29	100.0	9.000	L1	ON	9.7
4.177500	---	21.42	46.00	24.58	100.0	9.000	L1	ON	9.7
4.308000	30.99	---	56.00	25.01	100.0	9.000	L1	ON	9.7
7.431000	38.35	---	60.00	21.65	100.0	9.000	L1	ON	9.7
7.471500	---	31.57	50.00	18.43	100.0	9.000	L1	ON	9.7
8.601000	---	32.20	50.00	17.80	100.0	9.000	L1	ON	9.7
8.637000	38.86	---	60.00	21.14	100.0	9.000	L1	ON	9.7

EUT:	LED Playback Control Processor	Polarity:	NEUTRAL
Model:	TU20 Pro	Power Supply:	ADS-36MG-12
Mode:	Mode 1	Voltage:	120V/60Hz
Environment:	Temp: 24°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 3DH5 at Channel 2402MHz		



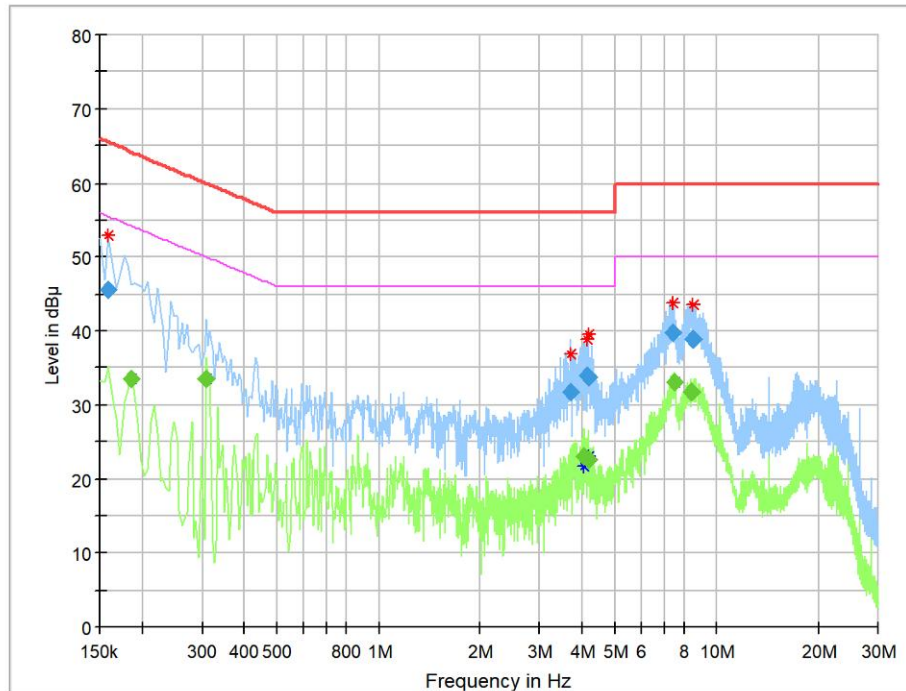
Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.177000	42.40	---	64.63	22.22	100.0	9.000	N	ON	9.6
0.249000	36.85	---	61.79	24.94	100.0	9.000	N	ON	9.6
0.312000	---	33.48	49.92	16.43	100.0	9.000	N	ON	9.6
3.889500	---	21.56	46.00	24.44	100.0	9.000	N	ON	9.6
4.038000	---	23.18	46.00	22.82	100.0	9.000	N	ON	9.7
4.056000	---	24.03	46.00	21.97	100.0	9.000	N	ON	9.7
4.128000	33.82	---	56.00	22.18	100.0	9.000	N	ON	9.7
4.155000	33.83	---	56.00	22.17	100.0	9.000	N	ON	9.7
7.363500	---	32.77	50.00	17.23	100.0	9.000	N	ON	9.7
7.444500	39.54	---	60.00	20.46	100.0	9.000	N	ON	9.7
8.493000	---	32.47	50.00	17.53	100.0	9.000	N	ON	9.7
8.893500	37.69	---	60.00	22.31	100.0	9.000	N	ON	9.7

EUT:	LED Playback Control Processor	Polarity:	LINE
Model:	TU20 Pro	Power Supply:	ADS-36MG-12
Mode:	Mode 1	Voltage:	120V/60Hz
Environment:	Temp: 24°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 3DH5 at Channel 2441MHz		



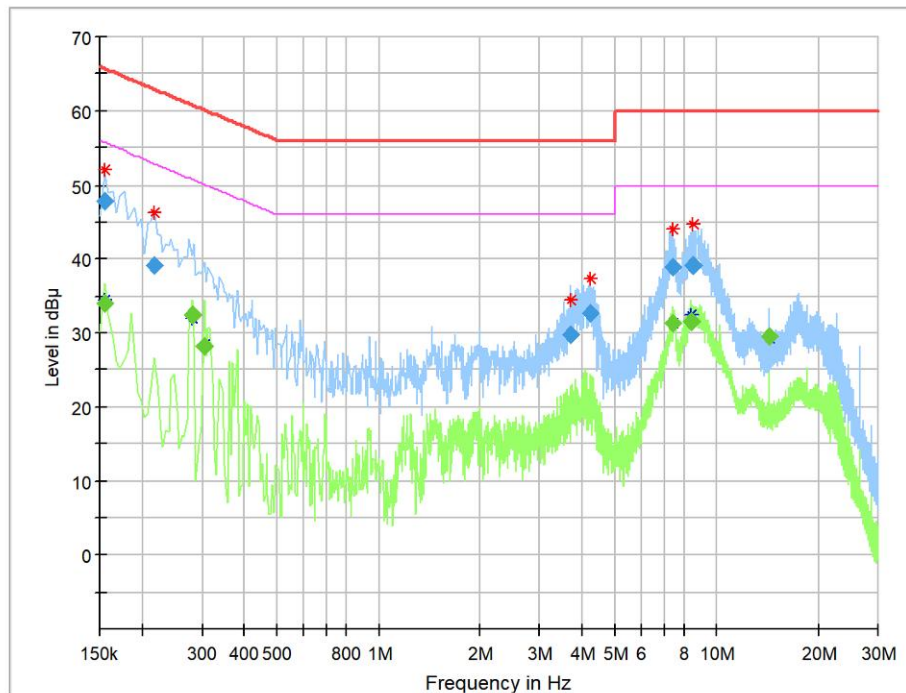
Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.154500	---	34.51	55.75	21.25	100.0	9.000	L1	ON	9.6
0.154500	48.07	---	65.75	17.68	100.0	9.000	L1	ON	9.6
0.276000	---	30.16	50.94	20.77	100.0	9.000	L1	ON	9.6
0.303000	---	27.98	50.16	22.18	100.0	9.000	L1	ON	9.6
0.312000	---	33.95	49.92	15.97	100.0	9.000	L1	ON	9.6
3.736500	30.19	---	56.00	25.81	100.0	9.000	L1	ON	9.6
4.272000	32.38	---	56.00	23.62	100.0	9.000	L1	ON	9.7
4.402500	29.19	---	56.00	26.81	100.0	9.000	L1	ON	9.7
7.426500	38.72	---	60.00	21.28	100.0	9.000	L1	ON	9.7
7.476000	---	32.30	50.00	17.70	100.0	9.000	L1	ON	9.7
8.659500	38.82	---	60.00	21.18	100.0	9.000	L1	ON	9.7
8.731500	---	32.86	50.00	17.14	100.0	9.000	L1	ON	9.7

EUT:	LED Playback Control Processor	Polarity:	NEUTRAL
Model:	TU20 Pro	Power Supply:	ADS-36MG-12
Mode:	Mode 1	Voltage:	120V/60Hz
Environment:	Temp: 24°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 3DH5 at Channel 2441MHz		



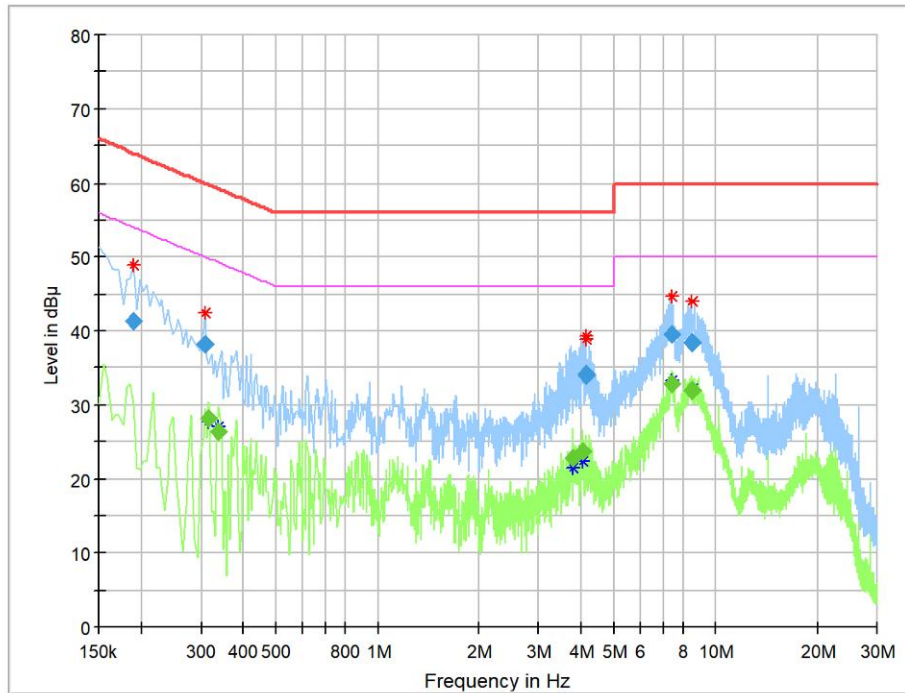
Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.159000	45.60	---	65.52	19.91	100.0	9.000	N	ON	9.6
0.186000	---	33.42	54.21	20.79	100.0	9.000	N	ON	9.6
0.307500	---	33.59	50.04	16.45	100.0	9.000	N	ON	9.6
3.705000	31.67	---	56.00	24.33	100.0	9.000	N	ON	9.6
4.069500	---	22.99	46.00	23.01	100.0	9.000	N	ON	9.7
4.128000	33.98	---	56.00	22.02	100.0	9.000	N	ON	9.7
4.168500	33.64	---	56.00	22.36	100.0	9.000	N	ON	9.7
4.168500	---	22.62	46.00	23.38	100.0	9.000	N	ON	9.7
7.467000	39.69	---	60.00	20.31	100.0	9.000	N	ON	9.7
7.516500	---	33.04	50.00	16.96	100.0	9.000	N	ON	9.7
8.425500	---	31.80	50.00	18.20	100.0	9.000	N	ON	9.7
8.484000	38.78	---	60.00	21.22	100.0	9.000	N	ON	9.7

EUT:	LED Playback Control Processor	Polarity:	LINE
Model:	TU20 Pro	Power Supply:	ADS-36MG-12
Mode:	Mode 1	Voltage:	120V/60Hz
Environment:	Temp: 24°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 3DH5 at Channel 2480MHz		



Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.154500	---	34.08	55.75	21.67	100.0	9.000	L1	ON	9.6
0.154500	47.93	---	65.75	17.82	100.0	9.000	L1	ON	9.6
0.217500	39.25	---	62.91	23.66	100.0	9.000	L1	ON	9.6
0.280500	---	32.40	50.80	18.40	100.0	9.000	L1	ON	9.6
0.303000	---	28.18	50.16	21.98	100.0	9.000	L1	ON	9.6
3.700500	29.80	---	56.00	26.20	100.0	9.000	L1	ON	9.6
4.254000	32.68	---	56.00	23.32	100.0	9.000	L1	ON	9.7
7.417500	---	31.35	50.00	18.65	100.0	9.000	L1	ON	9.7
7.458000	38.97	---	60.00	21.03	100.0	9.000	L1	ON	9.7
8.457000	---	31.67	50.00	18.33	100.0	9.000	L1	ON	9.7
8.493000	39.10	---	60.00	20.90	100.0	9.000	L1	ON	9.7
14.334000	---	29.45	50.00	20.55	100.0	9.000	L1	ON	9.7

EUT:	LED Playback Control Processor	Polarity:	NEUTRAL
Model:	TU20 Pro	Power Supply:	ADS-36MG-12
Mode:	Mode 1	Voltage:	120V/60Hz
Environment:	Temp: 24°C; Humi:52%	Engineer:	Amos Xia
Remark:	Transmit by 3DH5 at Channel 2480MHz		



Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.190500	41.27	---	64.02	22.75	100.0	9.000	N	ON	9.6
0.307500	38.31	---	60.04	21.73	100.0	9.000	N	ON	9.6
0.316500	---	28.11	49.80	21.69	100.0	9.000	N	ON	9.6
0.339000	---	26.35	49.23	22.88	100.0	9.000	N	ON	9.6
3.772500	---	22.73	46.00	23.27	100.0	9.000	N	ON	9.6
4.038000	---	23.64	46.00	22.36	100.0	9.000	N	ON	9.7
4.123500	34.13	---	56.00	21.87	100.0	9.000	N	ON	9.7
4.137000	34.04	---	56.00	21.96	100.0	9.000	N	ON	9.7
7.395000	---	32.91	50.00	17.09	100.0	9.000	N	ON	9.7
7.462500	39.64	---	60.00	20.36	100.0	9.000	N	ON	9.7
8.493000	38.53	---	60.00	21.47	100.0	9.000	N	ON	9.7
8.511000	---	31.86	50.00	18.14	100.0	9.000	N	ON	9.7

8. CONCLUSION

The data collected relate only the item(s) tested and show that the **LED Playback Control Processor** is in compliance with Part 15C of the FCC Rules.

_____ The End _____