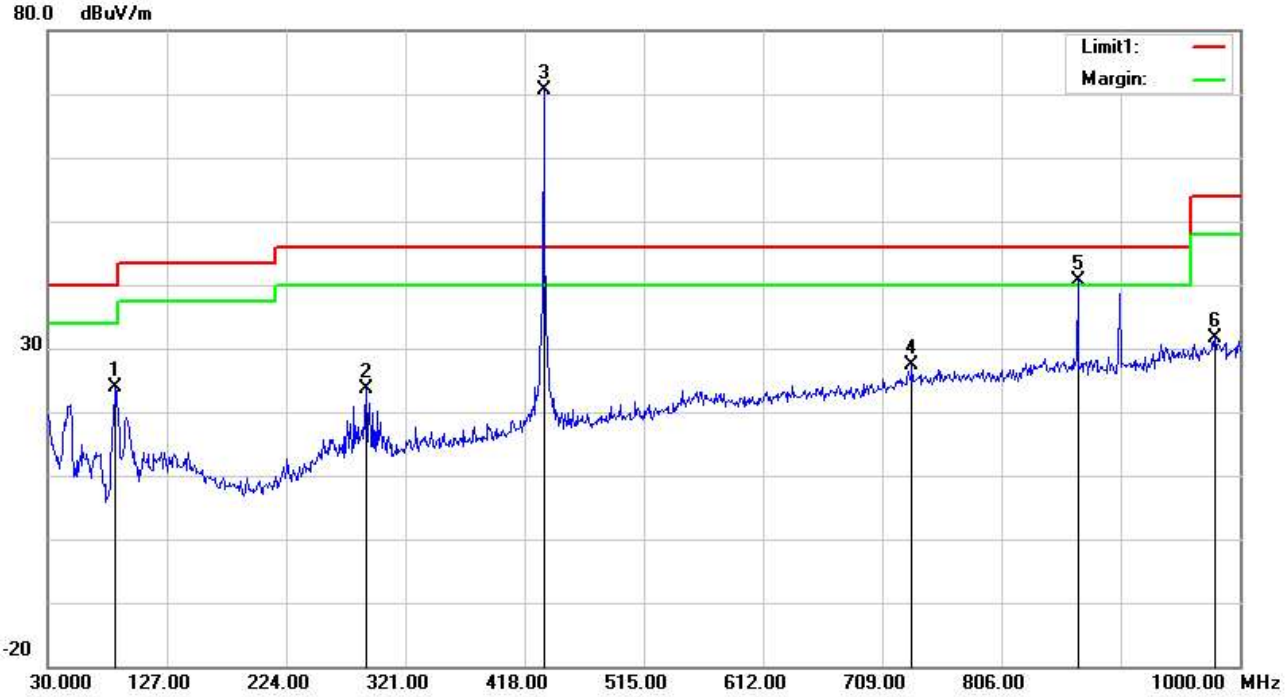
Temperature:	23.4℃	Relative Humidity:	60%
Phase:	Horizontal	Test Mode:	Mode 2

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	85.2900	45.97	-22.13	23.84	40.00	-16.16	peak
2	288.9900	38.80	-15.21	23.59	46.00	-22.41	peak
4	733.2500	29.71	-2.35	27.36	46.00	-18.64	peak
5	868.0800	41.11	-0.51	40.60	46.00	-5.40	peak
6	979.6300	29.10	2.65	31.75	54.00	-22.25	peak

Fundamental Frequency

No.	Frequency	Reading	Correct	Duty cycle	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3	433.9200	80.75	-10.13	-	70.62	92.87	-22.25	Peak
3	433.9200	80.75	-10.13	-15.37	55.25	72.87	-17.62	AVG

Remark:
1. Margin = Result (Result =Reading + Factor)–Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain



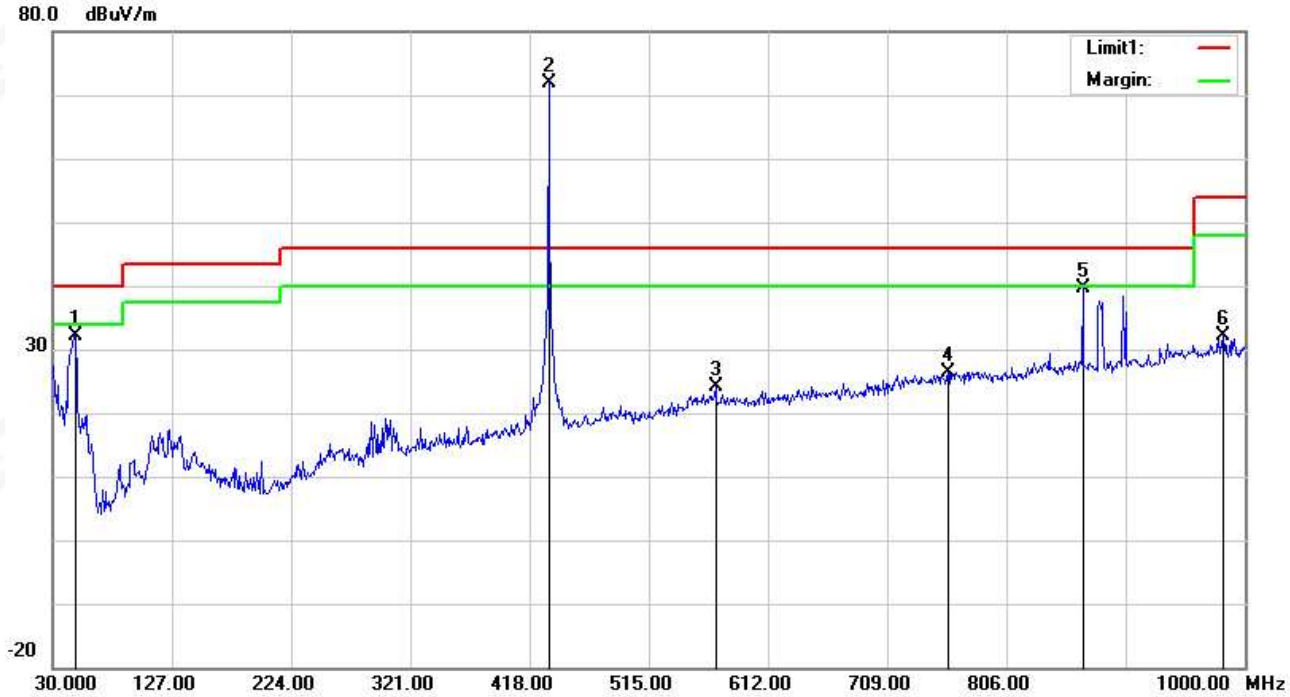
Temperature:	23.4℃	Relative Humidity:	60%
Phase:	Vertical	Test Mode:	Mode 2

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	48.4300	54.60	-22.44	32.16	40.00	-7.84	peak
3	569.3200	29.63	-5.59	24.04	46.00	-21.96	peak
4	758.4700	28.67	-2.17	26.50	46.00	-19.50	peak
5	868.0800	40.24	-0.51	39.73	46.00	-6.27	peak
6	982.5400	29.49	2.52	32.01	54.00	-21.99	peak

Fundamental Frequency

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Duty cycle Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	433.9200	82.13	-10.13	-	72.00	92.87	-20.87	Peak
2	433.9200	82.13	-10.13	-15.37	56.63	72.87	-16.24	AVG

Remark:
1. Margin = Result (Result =Reading + Factor)–Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain



Temperature:	23.4℃	Relative Humidity:	60%
Phase:	Horizontal	Test Mode:	Mode 3

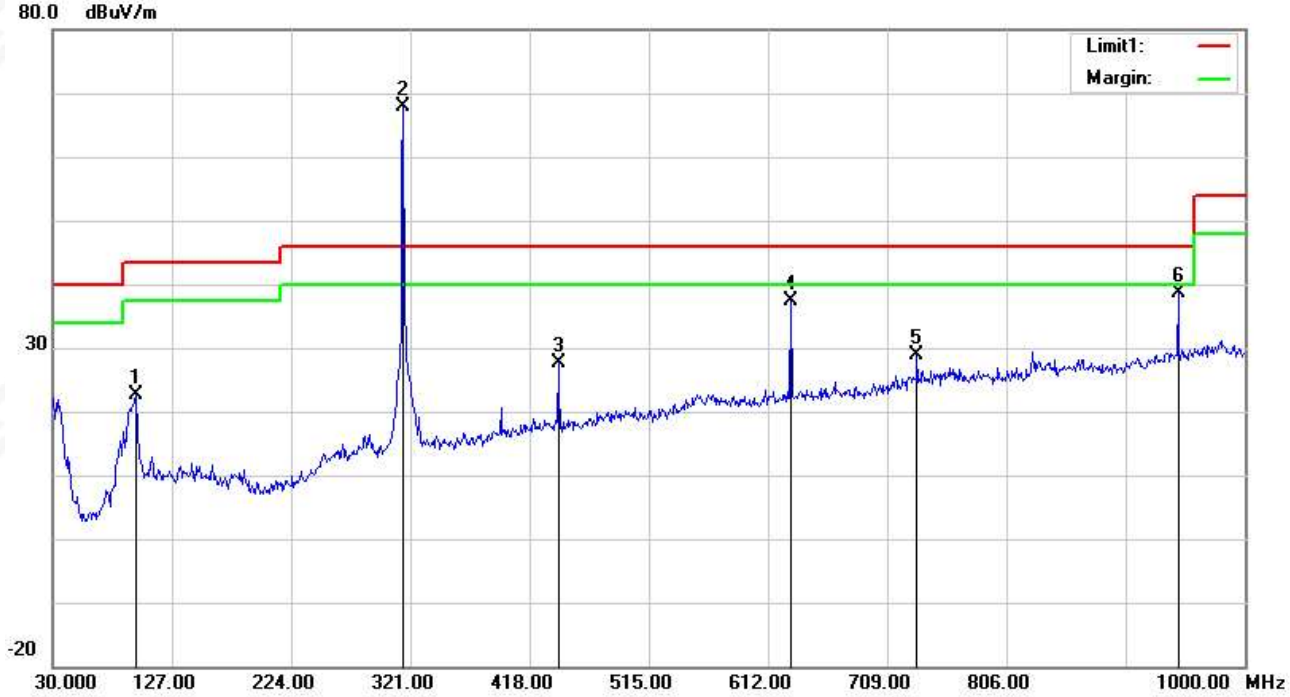
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	97.9000	43.07	-20.46	22.61	43.50	-20.89	peak
2	441.2800	37.67	-10.04	27.63	46.00	-18.37	peak
4	630.4300	42.39	-5.03	37.36	46.00	-8.64	peak
5	733.2500	31.35	-2.35	29.00	46.00	-17.00	peak
6	945.6800	37.08	1.50	38.58	46.00	-7.42	peak

Fundamental Frequency

No.	Frequency	Reading	Correct	Duty cycle	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
2	315.0000	82.10	-14.22	-	67.88	87.67	-19.79	Peak
2	315.0000	82.10	-14.22	-10.89	56.99	67.67	-10.68	AVG

Remark:

3. Margin = Result (Result =Reading + Factor)–Limit
4. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain



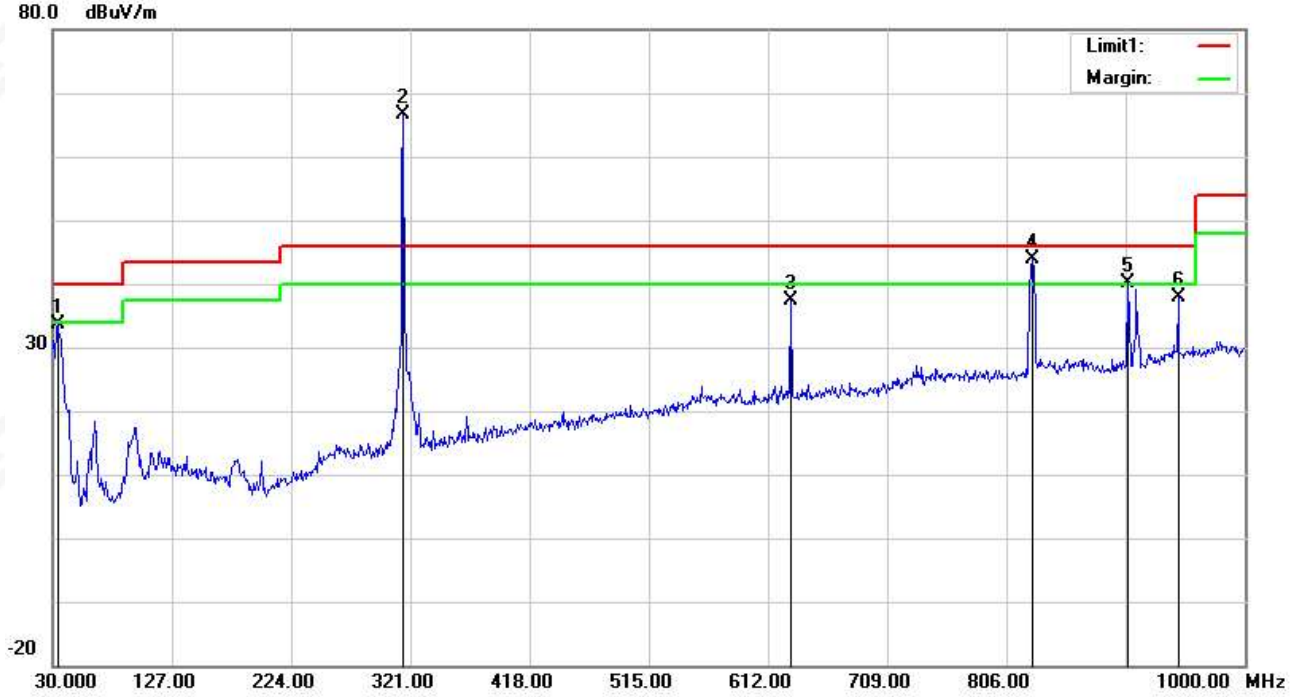
Temperature:	23.4℃	Relative Humidity:	60%
Phase:	Vertical	Test Mode:	Mode 3

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	33.8800	48.37	-14.80	33.57	40.00	-6.43	peak
3	630.4300	42.38	-5.03	37.35	46.00	-8.65	peak
4	827.3400	44.95	-1.08	43.87	46.00	-2.13	peak
5	904.9400	40.49	-0.32	40.17	46.00	-5.83	peak
6	945.6800	36.37	1.50	37.87	46.00	-8.13	peak

Fundamental Frequency

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Duty cycle Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	315.0000	80.73	-14.22	-	66.51	87.67	-21.16	Peak
2	315.0000	80.73	-14.22	-10.89	55.62	67.67	-12.05	AVG

Remark:
3. Margin = Result (Result =Reading + Factor)–Limit
4. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain



Temperature:	23.4℃	Relative Humidity:	60%
Phase:	Horizontal	Test Mode:	Mode 4

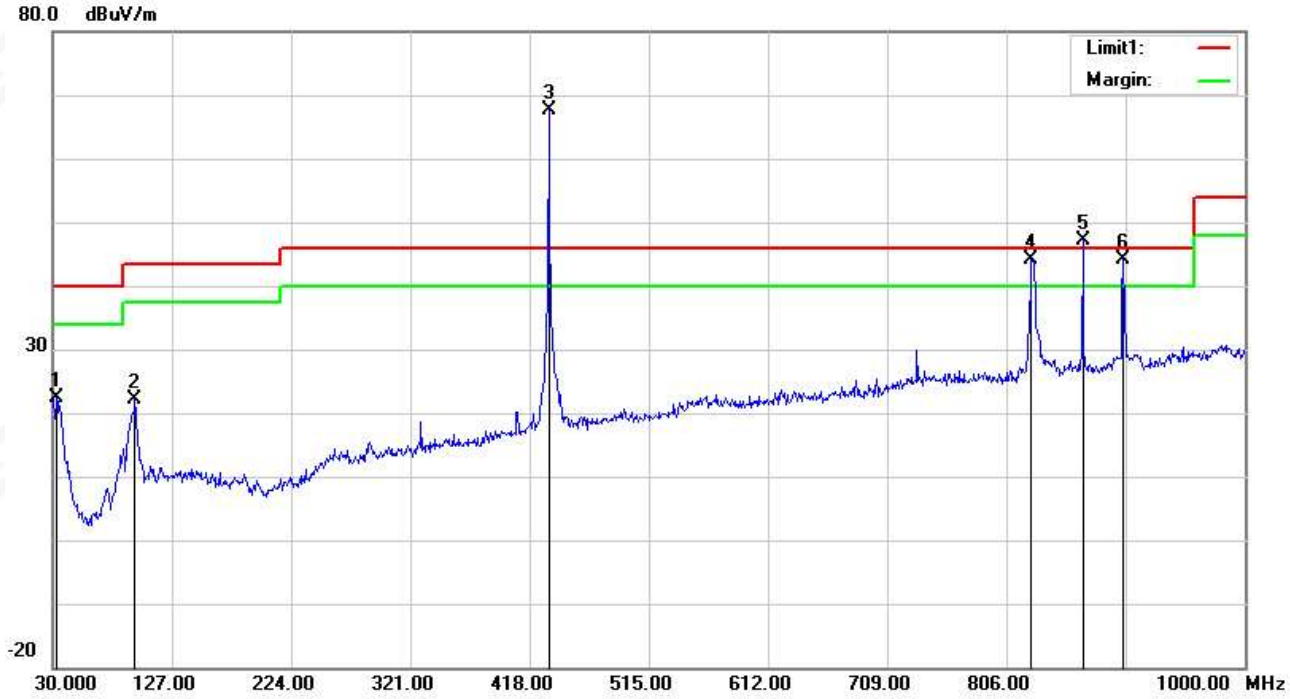
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	32.9100	36.76	-14.33	22.43	40.00	-17.57	peak
2	96.9300	42.75	-20.57	22.18	43.50	-21.32	peak
4	826.3700	45.25	-1.19	44.06	46.00	-1.94	peak
6	901.0600	44.50	-0.43	44.07	46.00	-1.93	peak

Fundamental Frequency

No.	Frequency	Reading	Correct	Duty cycle	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3	433.9200	77.70	-10.13	-	67.57	92.87	-25.30	peak
3	433.9200	77.70	-10.13	-10.60	56.97	72.87	-15.90	AV
5	867.8400	47.59	-0.51	-	47.08	72.87	-25.79	peak

Remark:

5. Margin = Result (Result =Reading + Factor)–Limit
6. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain



Temperature:	23.4℃	Relative Humidity:	60%
Phase:	Vertical	Test Mode:	Mode 4

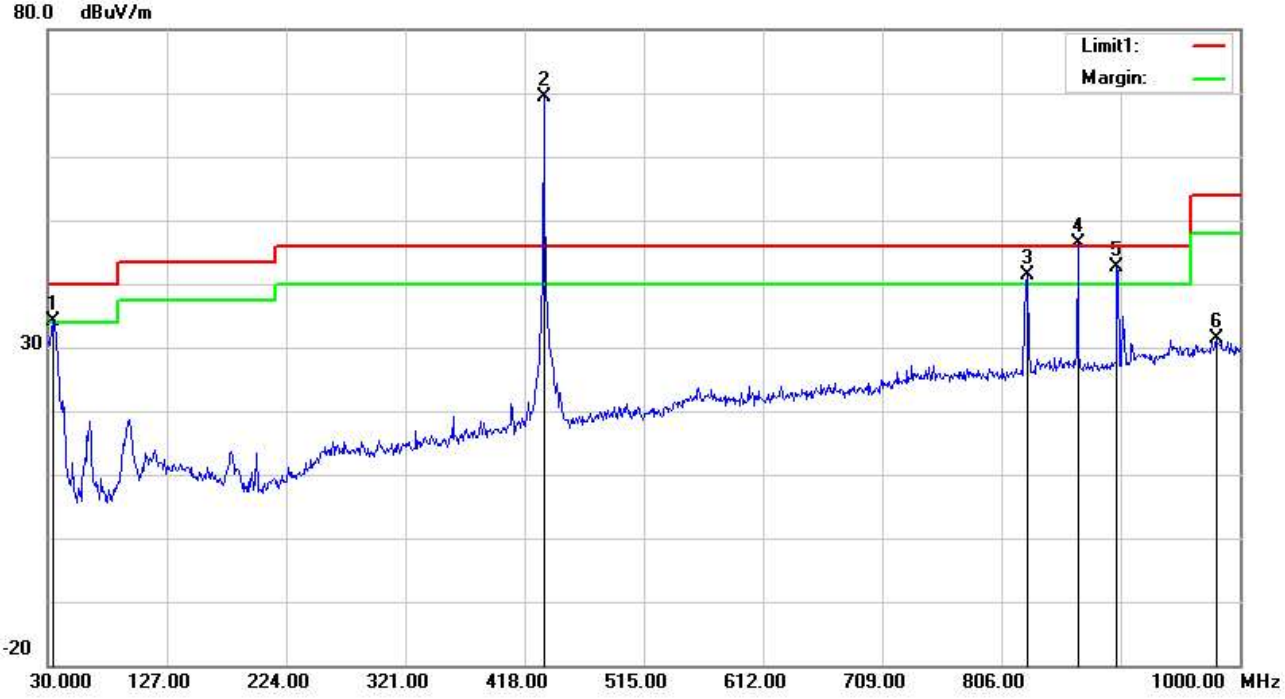
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	33.8800	49.00	-14.80	34.20	40.00	-5.80	peak
3	827.3400	42.44	-1.08	41.36	46.00	-4.64	peak
5	900.0900	43.07	-0.45	42.62	46.00	-3.38	peak
6	980.6000	28.64	2.63	31.27	54.00	-22.73	peak

Fundamental Frequency

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Duty cycle Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	433.9200	79.53	-10.13	-	69.40	92.87	-23.47	peak
2	433.9200	79.53	-10.13	-10.60	58.8	72.87	-14.07	AV
4	867.8400	47.59	-0.51	-	46.41	72.87	-26.46	peak

Remark:

5. Margin = Result (Result =Reading + Factor)–Limit
6. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain



PEAK TEST RESULTS:

Mode 1

Frequency	Meter Reading	Detector	Amplifier	Loss	Antenna Factor	Orrected Factor	Corrected Amplitude	FCC Part 15.231/15.209/205		RX Antenna
								Limit	Margin	Polar
(MHz)	(dBμV/m)	(PK/QP/AV)	(dB)	(dB)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(H/V)
944.96	64.07	PK	45.1	4.0	25.1	-16.00	48.07	67.67	-19.60	H
944.96	64.35	PK	45.1	4.0	25.1	-16.00	48.35	67.67	-19.32	V
1260.28	61.50	PK	44.1	5.3	25	-13.80	47.70	67.67	-19.97	H
1260.28	63.22	PK	44.1	5.3	25	-13.80	49.42	67.67	-18.25	V
1574.84	60.04	PK	43.8	5.4	25.9	-12.47	47.57	74	-26.43	H
1574.84	60.45	PK	43.8	5.4	25.9	-12.47	47.98	74	-26.02	V
1889.9	55.54	PK	44.4	6.0	27.6	-10.77	44.77	67.67	-22.90	H
1889.9	56.07	PK	44.4	6.0	27.6	-10.77	45.30	67.67	-22.37	V

Mode 2

Frequency	Meter Reading	Detector	Amplifier	Loss	Antenna Factor	Orrected Factor	Corrected Amplitude	FCC Part 15.231/15.209/205		RX Antenna
								Limit	Margin	Polar
(MHz)	(dBμV/m)	(PK/QP/AV)	(dB)	(dB)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(H/V)
1302.06	63.98	PK	45.1	4.0	25.1	-16.00	47.98	74	-26.02	H
1302.06	64.45	PK	45.1	4.0	25.1	-16.00	48.45	74	-25.55	V
1735.68	61.51	PK	44.1	5.3	25	-13.80	47.71	72.87	-25.16	H
1735.68	63.27	PK	44.1	5.3	25	-13.80	49.47	72.87	-23.40	V
2169.82	60.24	PK	43.8	5.4	25.9	-12.47	47.77	72.87	-25.10	H
2169.82	60.82	PK	43.8	5.4	25.9	-12.47	48.35	72.87	-24.52	V
2603.41	55.92	PK	44.4	6.0	27.6	-10.77	45.15	72.87	-27.72	H
2603.41	56.14	PK	44.4	6.0	27.6	-10.77	45.37	72.87	-27.50	V

Mode 3

Frequency	Meter Reading	Detector	Amplifier	Loss	Antenna Factor	Orrected Factor	Corrected Amplitude	FCC Part 15.231/15.209/205		RX Antenna
								Limit	Margin	Polar
(MHz)	(dBμV/m)	(PK/QP/AV)	(dB)	(dB)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(H/V)
944.99078	63.96	PK	45.1	4.0	25.1	-16.00	47.96	67.67	-19.71	H
944.99078	64.42	PK	45.1	4.0	25.1	-16.00	48.42	67.67	-19.25	V
1260.1206	61.39	PK	44.1	5.3	25	-13.80	47.59	67.67	-20.08	H
1260.1206	63.19	PK	44.1	5.3	25	-13.80	49.39	67.67	-18.28	V
1575.1918	60.12	PK	43.8	5.4	25.9	-12.47	47.65	74	-26.35	H
1575.1918	60.60	PK	43.8	5.4	25.9	-12.47	48.13	74	-25.87	V
1890.0755	55.56	PK	44.4	6.0	27.6	-10.77	44.79	67.67	-22.88	H
1890.0755	56.06	PK	44.4	6.0	27.6	-10.77	45.29	67.67	-22.38	V

Mode 4

Frequency	Meter Reading	Detector	Amplifier	Loss	Antenna Factor	Orrected Factor	Corrected Amplitude	FCC Part 15.231/15.209/205		RX Antenna
								Limit	Margin	Polar
(MHz)	(dBμV/m)	(PK/QP/AV)	(dB)	(dB)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(H/V)
1301.8357	63.65	PK	45.1	4.0	25.1	-16.00	47.65	74	-26.35	H
1301.8357	64.58	PK	45.1	4.0	25.1	-16.00	48.58	74	-25.42	V
1735.6883	61.60	PK	44.1	5.3	25	-13.80	47.80	72.87	-25.07	H
1735.6883	63.34	PK	44.1	5.3	25	-13.80	49.54	72.87	-23.33	V
2169.8077	60.43	PK	43.8	5.4	25.9	-12.47	47.97	72.87	-24.90	H
2169.8077	60.70	PK	43.8	5.4	25.9	-12.47	48.24	72.87	-24.63	V
2603.6696	55.67	PK	44.4	6.0	27.6	-10.77	44.90	72.87	-27.97	H
2603.6696	56.21	PK	44.4	6.0	27.6	-10.77	45.44	72.87	-27.43	V

Note:
1. Above 2.6 GHz The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
2. The peak value is less than the AV limit, so AV data does not need to be tested.

5. BANDWIDTH TEST

5.1 LIMIT

FCC Part15.231,Subpart C			
Section	Test Item	Limit	Result
15.231(C)	20 Bandwidth&	The20dB bandwidth of the emissions shall not exceed 0.25% of the center frequency	PASS

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth
RB	1% to 5% of the OBW
VB	≥3RB
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.2 TEST REQUIREMENTS

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

5.3 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. Spectrum Setting: 1% to 5% of the OBW, VBW≥3RBW, Sweep time = Auto.

5.4 TEST SETUP

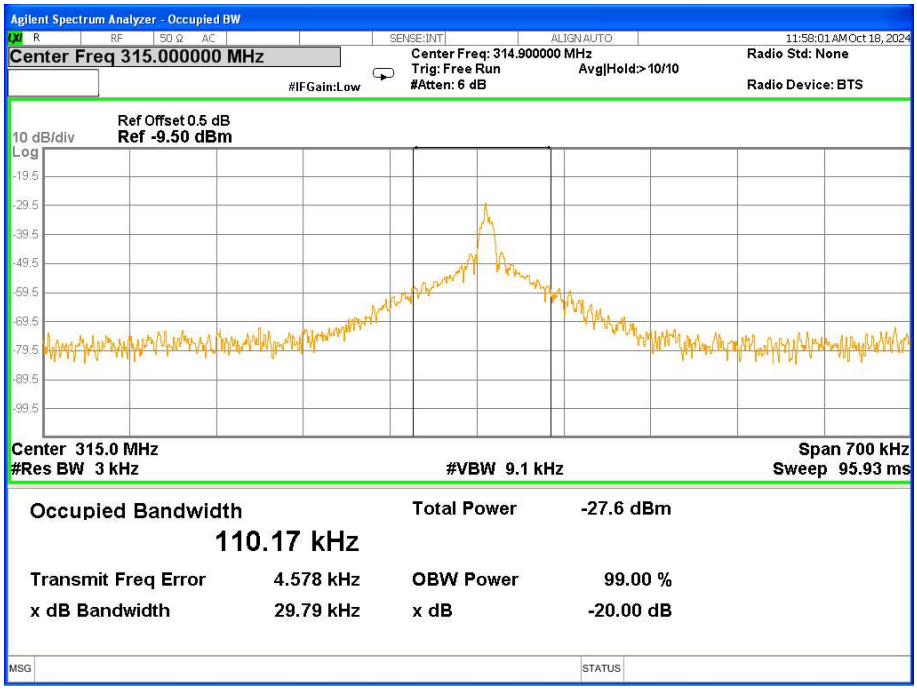
5.5 EUT OPERATION CONDITIONS

TX mode.

5.6 TEST RESULTS

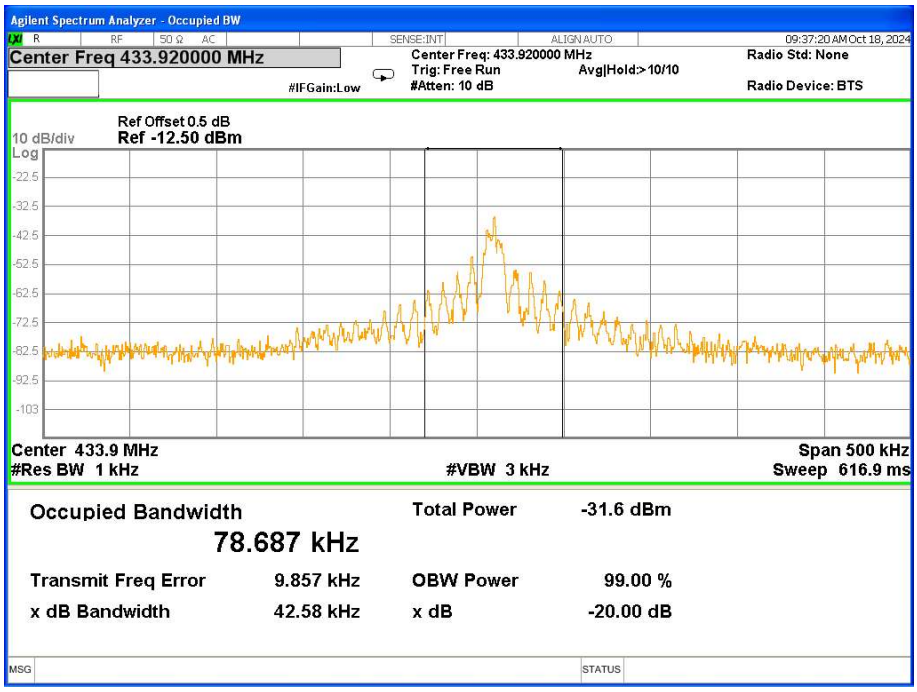
Temperature:	25 ℃	Relative Humidity:	60%
Test Mode:	Mode 1		

Centre Frequency	Measurement		
	20dB Bandwidth (KHz)	Limit(kHz)	Frequency Range (MHz)
315 MHz	29.79	787.5	PASS



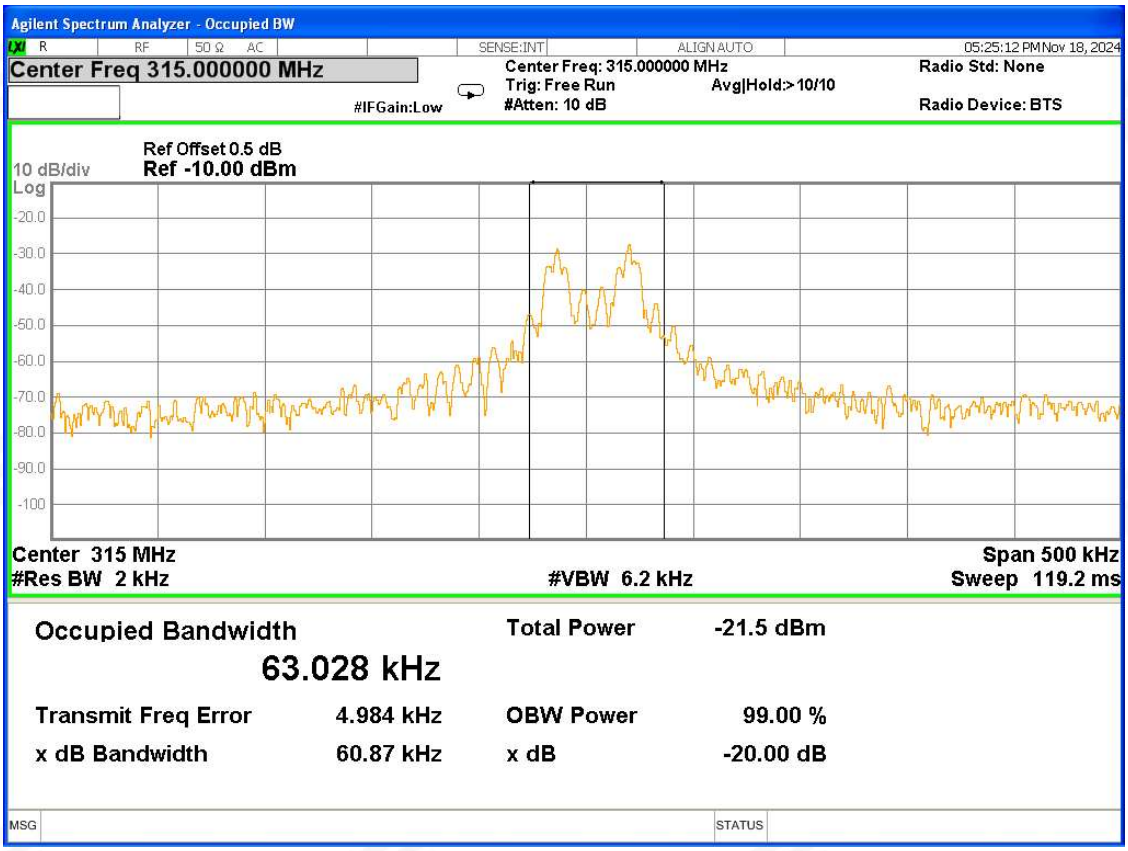
Temperature:	25 ℃	Relative Humidity:	60%
Test Mode:	Mode 2		

Centre Frequency	Measurement		
	20dB Bandwidth (KHz)	Limit(kHz)	Frequency Range (MHz)
433.92 MHz	42.58	1085	PASS



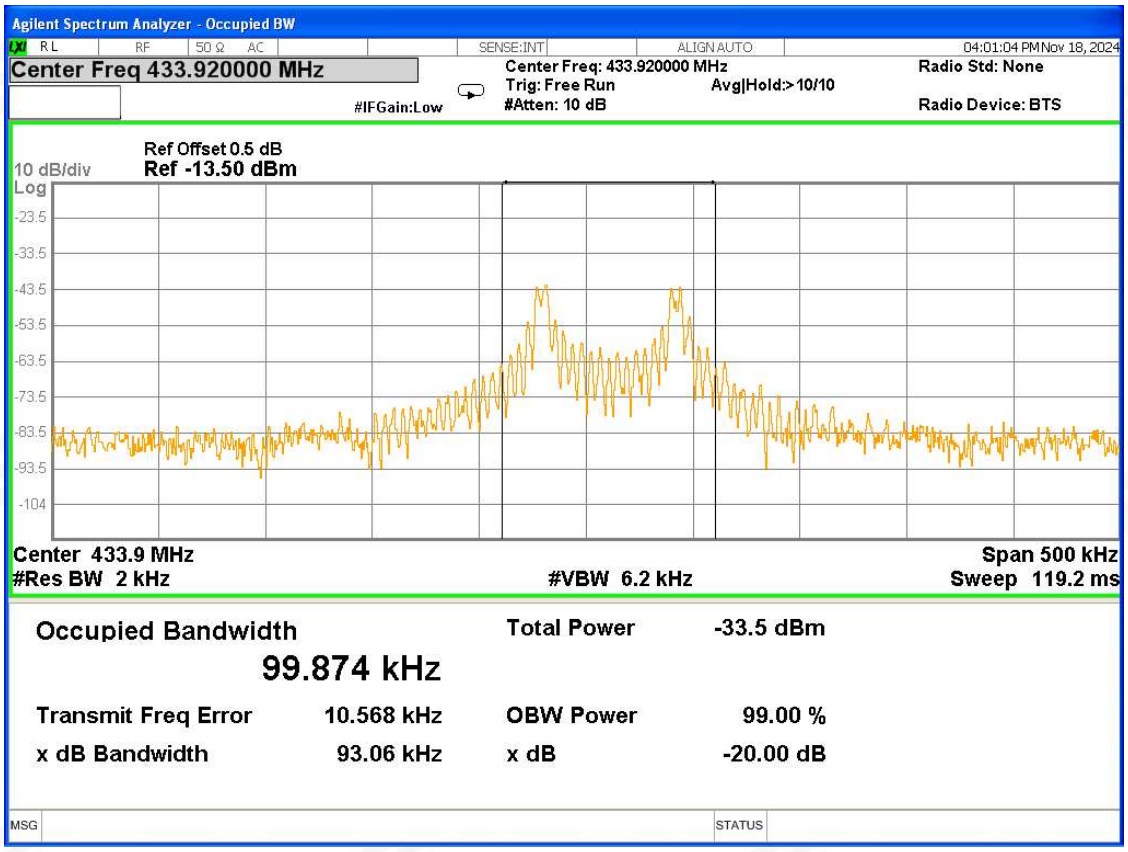
Temperature:	25 ℃	Relative Humidity:	60%
Test Mode:	Mode 3		

Centre Frequency	Measurement		
	20dB Bandwidth (KHz)	Limit(kHz)	Frequency Range (MHz)
315 MHz	60.87	1085	PASS



Temperature:	25 ℃	Relative Humidity:	60%
Test Mode:	Mode 4		

Centre Frequency (MHz)	Measurement		
	20dB Bandwidth (KHz)	Limit(kHz)	Frequency Range (MHz)
433.92 MHz	93.06	1085	PASS



6. TRANSMITTER TIMEOUT

6.1 LIMIT

In addition, devices operated under the provisions of this paragraph shall be provided with a meansFor automatically limiting operation so that the duration of each transmission shall not be greater thanone second and the silent period between transmissions shall be at least 30 times the duration of thebut in no case less than 10 seconds.

6.2 TEST PROCEDURE

(1) Put the EUT on the support in its standard position with associated equipment and switched on.
(2) Set center frequency of spectrum analyzer = operating frequency.
(3) Set the spectrum analyzer as RBW=1000kHz, VBW=1000kHz, Span=0Hz, Adjust Sweep=Auto.
(4) record the duration time

6.3 TEST SETUP

6.4 TEST RESULTS

Temperature:	26 ℃	Relative Humidity:	53%
Test Mode:	Mode 1		

Frequency(MHz)	Total cycle transmission time(s)	Each transmission time(s)	silent period between transmissions(s)
315	60	0.88	59.12
Limit	>10s	<1s	>10s and > 30*(duration of transmission)
Result	Pass		

Temperature:	26 ℃	Relative Humidity:	53%
Test Mode:	Mode 2		

Frequency(MHz)	Total cycle transmission time(s)	Each transmission time(s)	silent period between transmissions(s)
433.92	60	0.88	59.12
Limit	>10s	<1s	>10s and > 30*(duration of transmission)
Result	Pass		

Temperature:	26 ℃	Relative Humidity:	53%
Test Mode:	Mode 3		

Frequency(MHz)	Total cycle transmission time(s)	Each transmission time(s)	silent period between transmissions(s)
315	60.24	0.96	59.28
Limit	>10s	<1s	>10s and > 30*(duration of transmission)
Result	Pass		

Temperature:	26 ℃	Relative Humidity:	53%
Test Mode:	Mode 4		

Frequency(MHz)	Total cycle transmission time(s)	Each transmission time(s)	silent period between transmissions(s)
433.92	59.76	0.88	58.88
Limit	>10s	<1s	>10s and > 30*(duration of transmission)
Result	Pass		

7. PERIODIC OPERATION

7.1 TEST PROCEDURE

The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
The Duty Cycle Was Determined By The Following Equation: To Calculate The Actual Field Intensity,The Duty Cycle Correction Factor In Decibel Is Needed For Later Use And Can Be Obtained From Following Conversion
Duty Cycle(%)=Total On Interval In A Complete Pulse Train/ Length Of A Complete Pulse Train * %
Duty Cycle Correction Factor(dB)=20 * Log10(Duty Cycle(%)

7.2 TEST SETUP

7.3 EUT OPERATION CONDITIONS

TX mode.

7.4 TEST RESULTS

Mode 1

FCC Part15.231(e)	
Total On interval in a complete pulse train(ms)	16.3
Length of a complete pulse train(ms)	100
Duty Cycle(%)	16.30%
Duty Cycle Correction Factor(dB)	-15.76

Refer to the duty cycle plot (as below), This device meets the FCC requirement. Length of a complete pulse train
Remark:FCC part15.35(c) and required that a complete pulse train is more than 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
Note: Number of pulse train 1 = 96, Time of single pulse train 1 = 0.14ms;
Number of pulse train 2 = 11, Time of single pulse train 2 = 0.26ms;
Total on interval in a complete pulse train= Number of pulse train 1x Time of single pulse train 1+ Number of pluse train 2x Time of single pulse train 2+ Number of pluse train =96x0.14+11 x0.26=16.3ms


Agilent Spectrum Analyzer - Swept SA
Center Freq 315.000000 MHz
PNO: Fast
IFGain:Low
Trig: Line
Atten: 6 dB
Avg Type: Log-Pwr
02:35:36 PM Oct 18, 2024
Ref Offset 0.5 dB
10 dB/div
Ref -4.50 dBm
Log
ΔMkr3 260.0 µs
2.38 dB
1Δ2
3Δ4
Center 315.000000 MHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 40.00 ms (10001 pts)
1 Δ2 1 t (Δ) 140.0 µs (Δ) 2.44 dB
2 F 1 t 17.45 ms -80.77 dBm
3 Δ4 1 t (Δ) 260.0 µs (Δ) 2.38 dB
4 F 1 t 29.94 ms -83.40 dBm

Mode 2

FCC Part15.231(e)	
Total On interval in a complete pulse train(ms)	17.05
Length of a complete pulse train(ms)	100
Duty Cycle(%)	17.05%
Duty Cycle Correction Factor(dB)	-15.37

Refer to the duty cycle plot (as below), This device meets the FCC requirement. Length of a complete pulse train

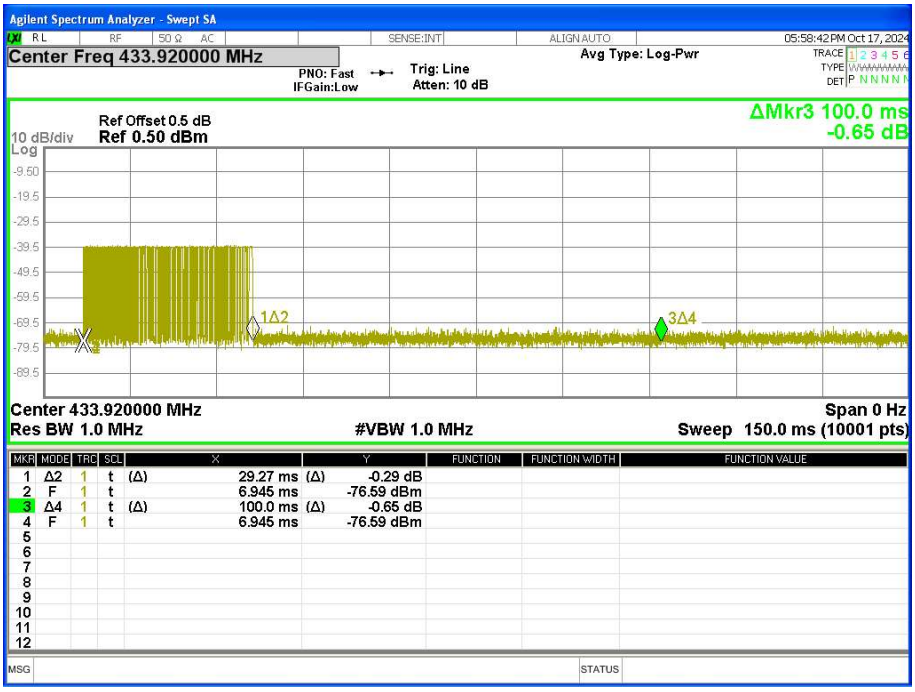
Remark:FCC part15.35(c) required that a complete pulse train is more than 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

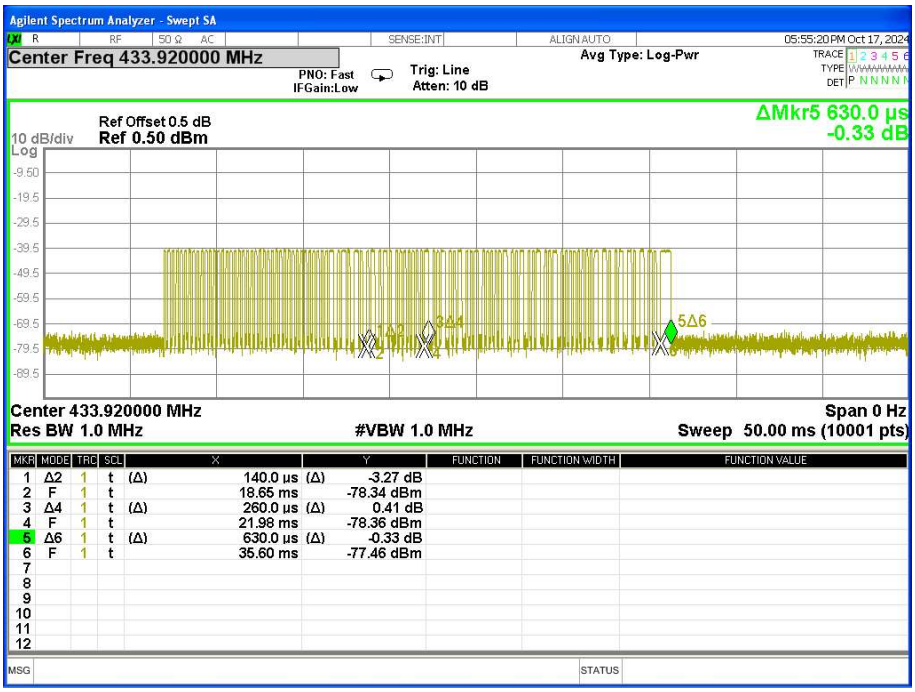
Note: Number of pulse train 1 = 82, Time of single pulse train 1 = 0.14ms;

Number of pulse train 2 = 19, Time of single pulse train 2 = 0.26ms;

Number of pulse train 3 = 1, Time of single pulse train 3 = 0.63ms;

Total on interval in a complete pulse train= Number of pulse train 1x Time of single pulse train 1+ Number of pluse train 2x Time of single pulse train 2+ Number of pluse train 3x Time of single pulse train 3=82x0.14+19x0.26+1 x0.63=17.05ms




Agilent Spectrum Analyzer - Swept SA
Center Freq 433.920000 MHz
PNO: Fast
IFGain:Low
Trig: Line
Atten: 10 dB
Avg Type: Log-Pwr
05:55:20 PM Oct 17, 2024
Ref Offset 0.5 dB
10 dB/div
Ref 0.50 dBm
ΔMkr5 630.0 µs
-0.33 dB
Center 433.920000 MHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 50.00 ms (10001 pts)
1 Δ2 1 t (Δ) 140.0 µs (Δ) -3.27 dB
2 F 1 t 18.65 ms -78.34 dBm
3 Δ4 1 t (Δ) 260.0 µs (Δ) 0.41 dB
4 F 1 t 21.98 ms -78.36 dBm
5 Δ6 1 t (Δ) 630.0 µs (Δ) -0.33 dB
6 F 1 t 35.60 ms -77.46 dBm

Mode 3

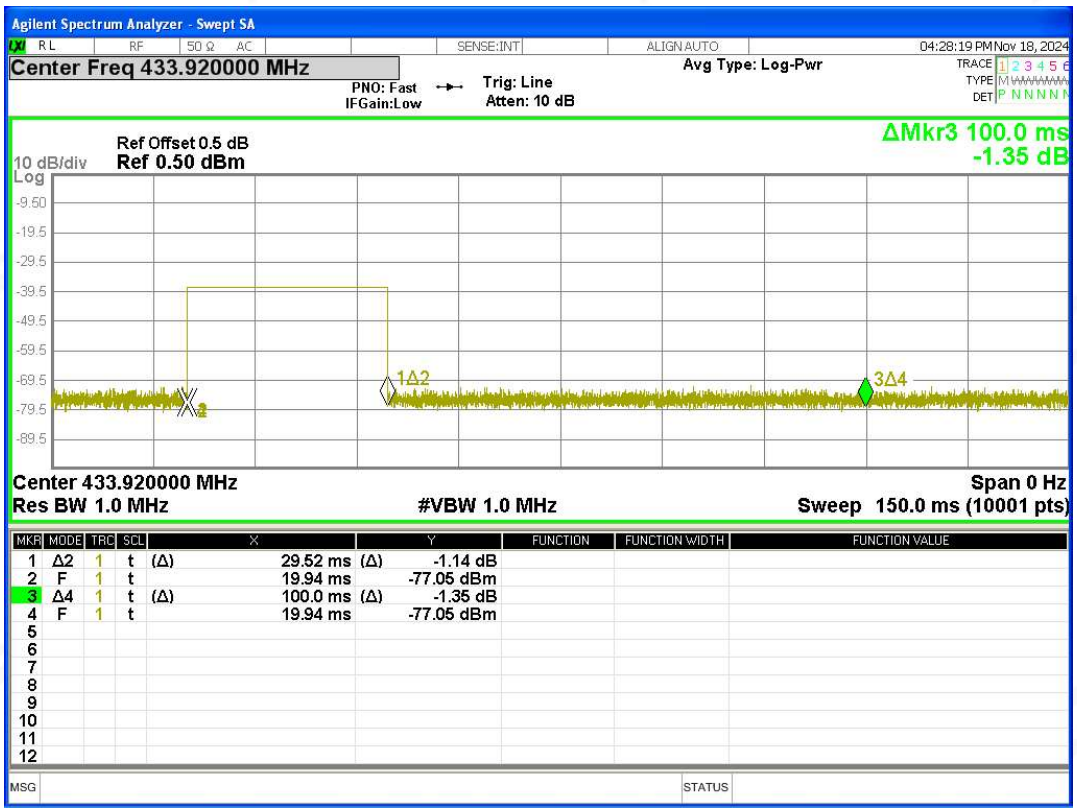
FCC Part15.231(e)	
Total On interval in a complete pulse train(ms)	28.53
Length of a complete pulse train(ms)	100
Duty Cycle(%)	28.53%
Duty Cycle Correction Factor(dB)	10.89

Refer to the duty cycle plot (as below), This device meets the FCC requirement. Length of a complete pulse train
Remark:FCC part15.35(c) required that a complete pulse train is more than 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
Note: Number of pulse train 1 = 1, Time of single pulse train 1 = 28.53ms;
Total on interval in a complete pulse train= Number of pulse train 1x Time of single pulse train 1=1x28.53=28.53ms

Mode 4

FCC Part15.231(e)	
Total On interval in a complete pulse train(ms)	29.52
Length of a complete pulse train(ms)	100
Duty Cycle(%)	29.52%
Duty Cycle Correction Factor(dB)	10.60

Refer to the duty cycle plot (as below), This device meets the FCC requirement. Length of a complete pulse train
Remark:FCC part15.35(c) required that a complete pulse train is more than 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
Note: Number of pulse train 1 = 1, Time of single pulse train 1 = 29.52ms;
Total on interval in a complete pulse train= Number of pulse train 1x Time of single pulse train 1=1x29.52=29.52ms



8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

According to the FCC Part 15 Paragraph 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. The use of a permanently attached antenna to the intentional radiator shall be considered sufficient to comply with the provisions of this section. This product use a permanent ceramic printed antenna, fulfill the requirement of this section

8.2 EUT ANTENNA

The EUT antenna is Spring antenna.It conforms to the standard requirements.

APPENDIX 1-PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

※※※※※END OF THE REPORT※※※※※