

# Test Report No.50128210 001

## Appendix D: Radiated and Mains Spurious Emission Data

(File: 50128210AppendixD)

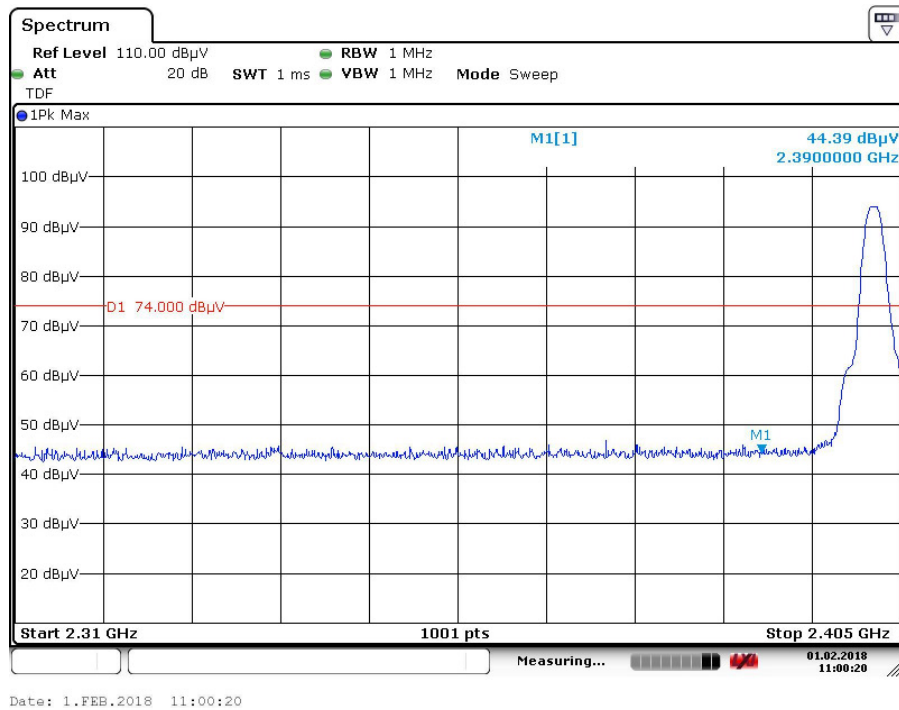
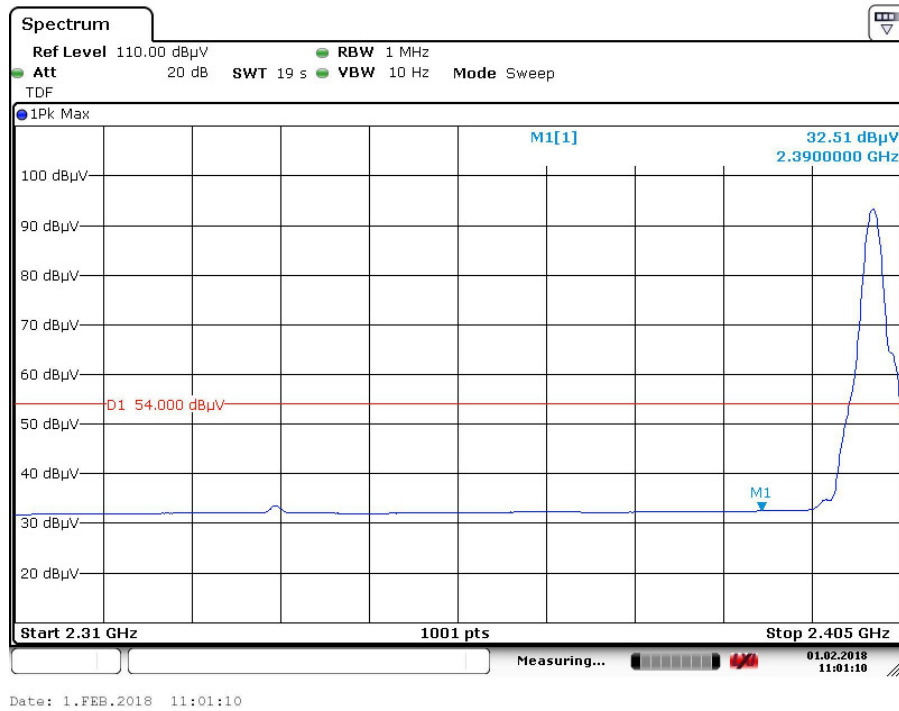
### Contents

Spurious Emissions, Band Edges, 2.35-2.5G .....	2
Spurious Emissions, TX Mode, 1-18G.....	6
Spurious Emissions, TX Mode, 18-26G.....	12
Spurious Emissions, TX Mode, 30M-1G .....	18
Spurious Emissions, TX Mode, 9k-30M .....	20

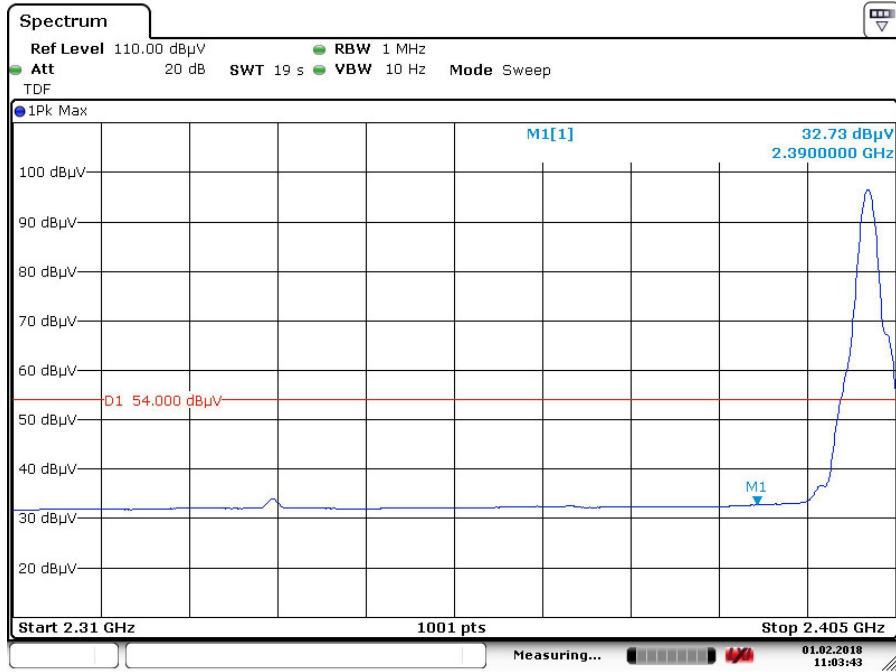
# Spurious Emissions, Band Edges, 2.35-2.5G

## Radiated Bandedge (GFSK)

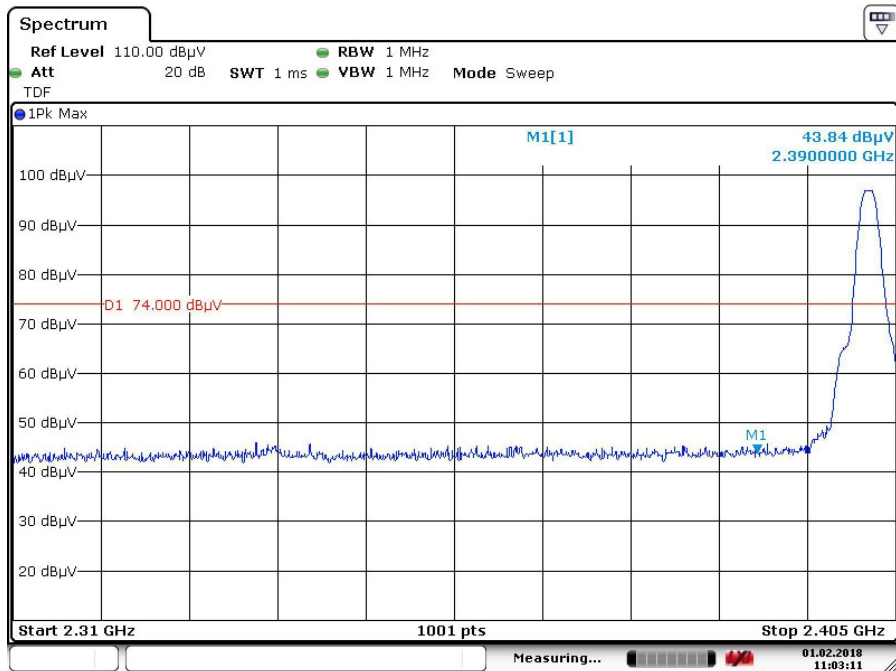
### Low Channel (Hor)



# Low Channel (Ver)



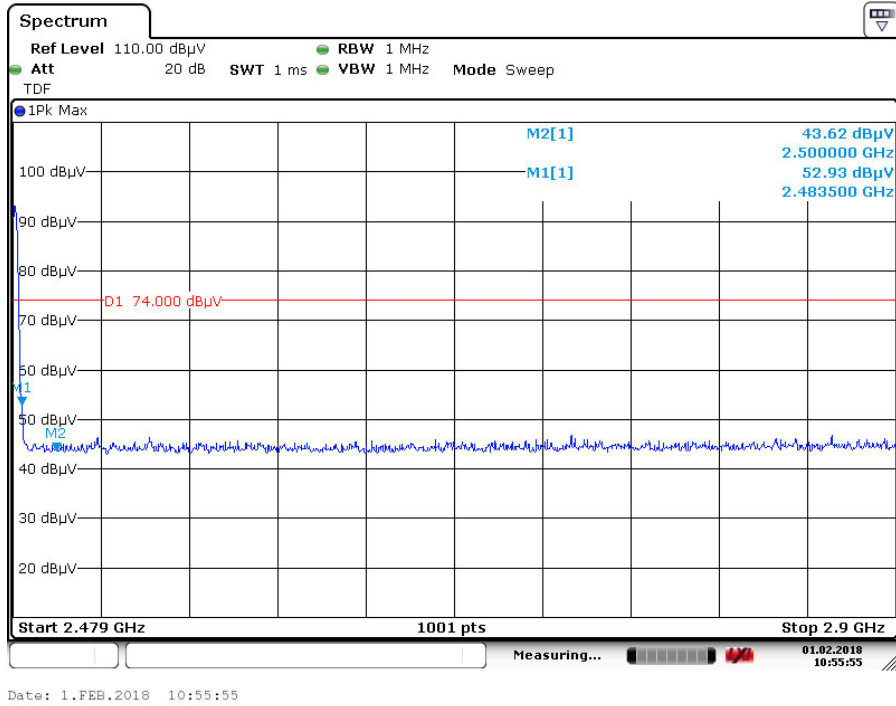
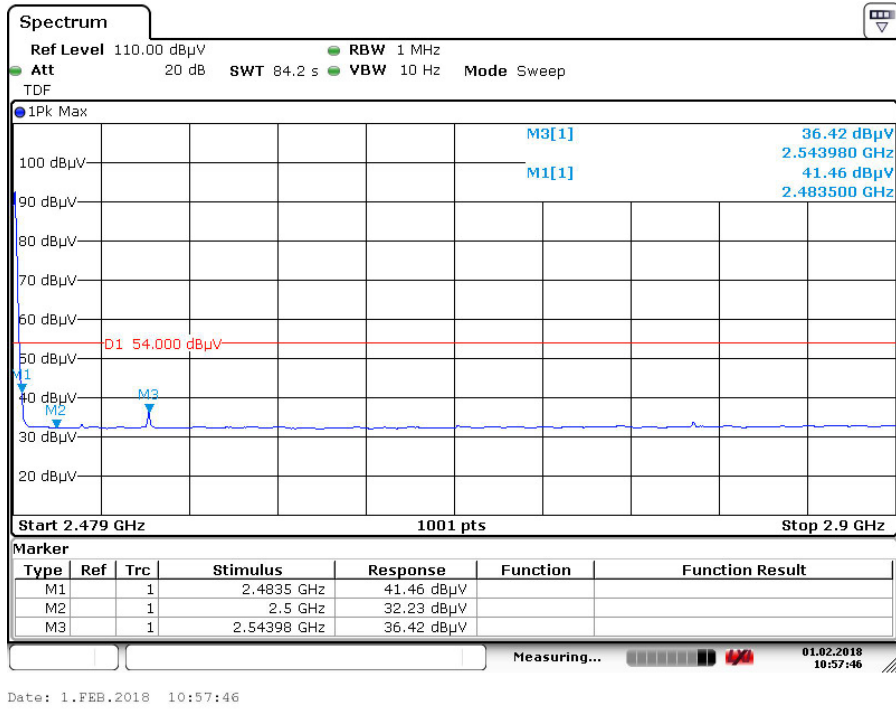
Date: 1.FEB.2018 11:03:43



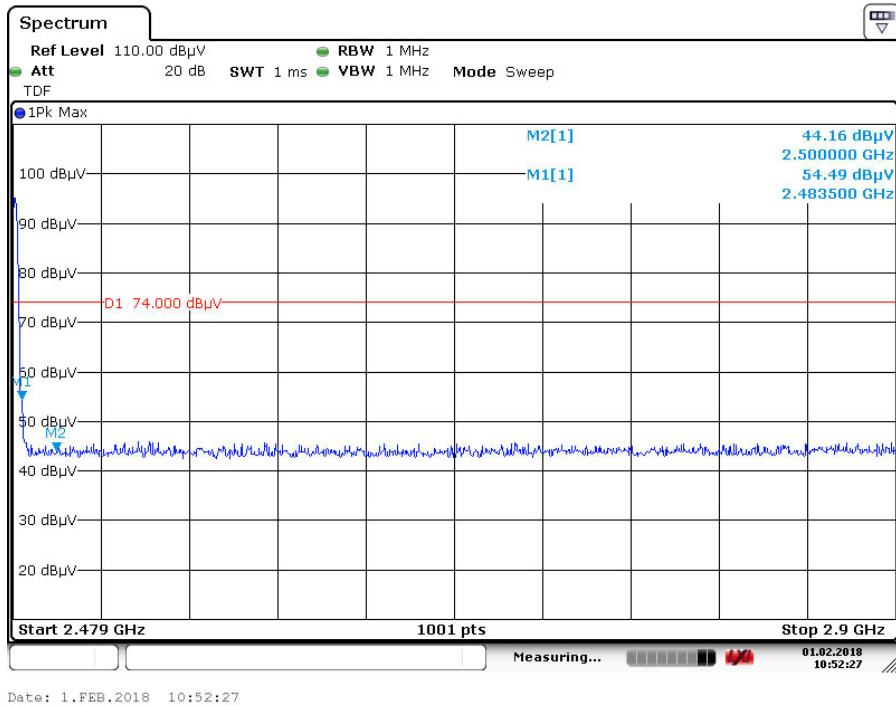
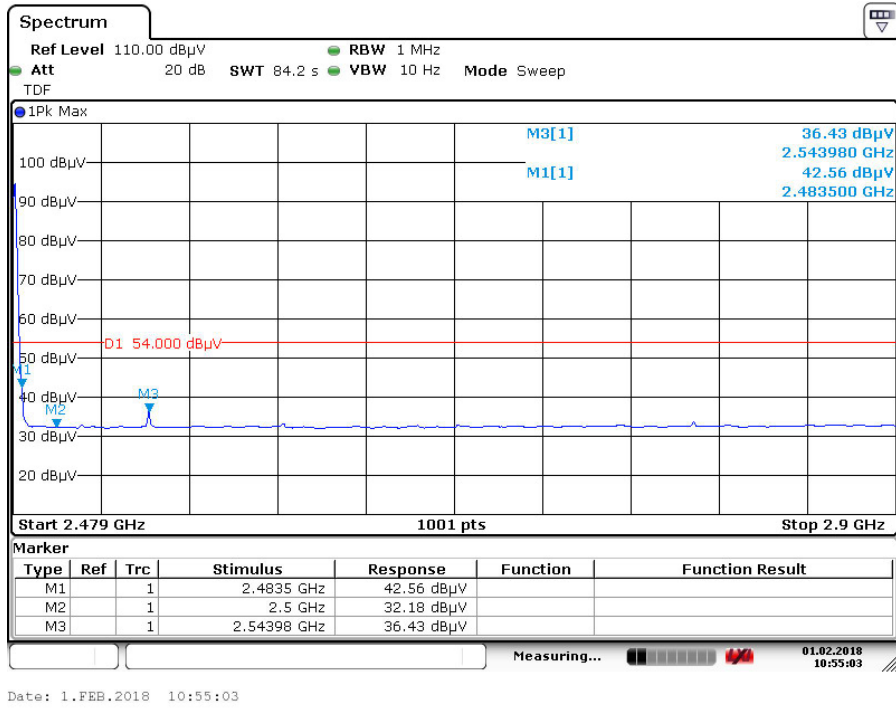
Date: 1.FEB.2018 11:03:11

# Radiated Bandedge (GFSK)

## High Channel (Hor)



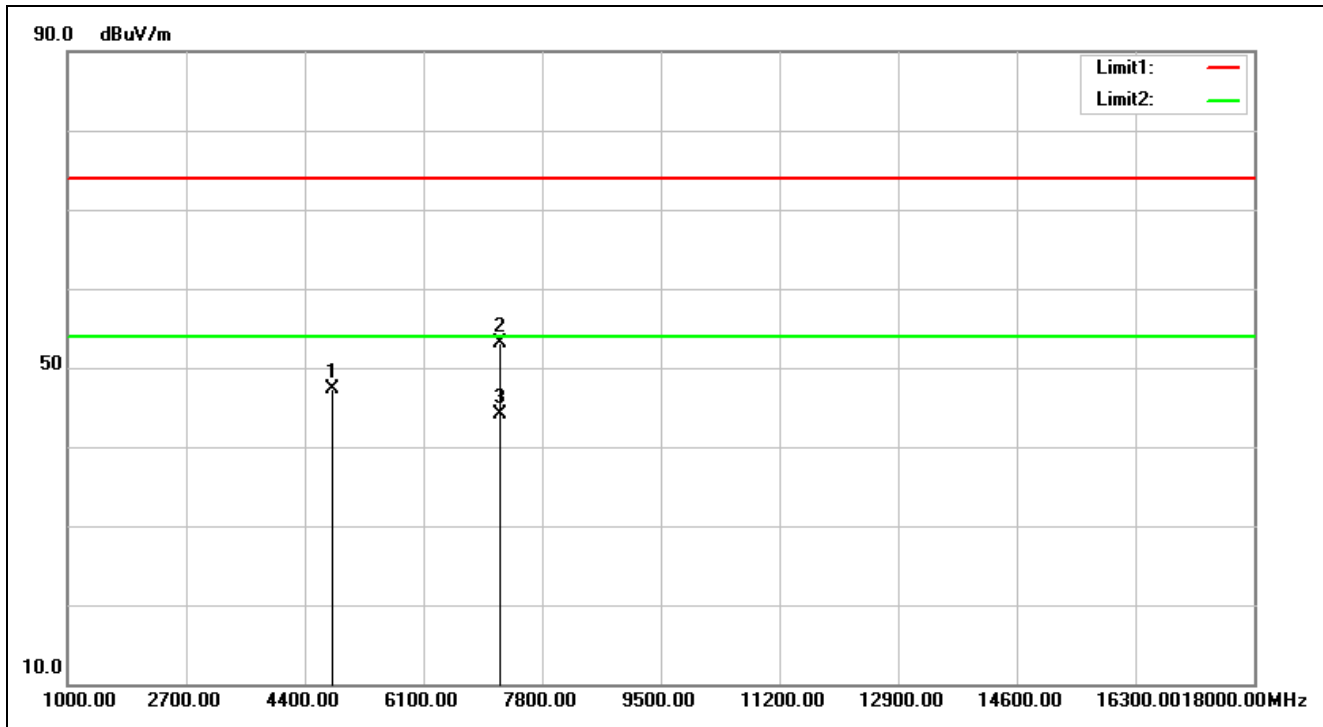
# High Channel (Ver)



# Spurious Emissions, TX Mode, 1-18G

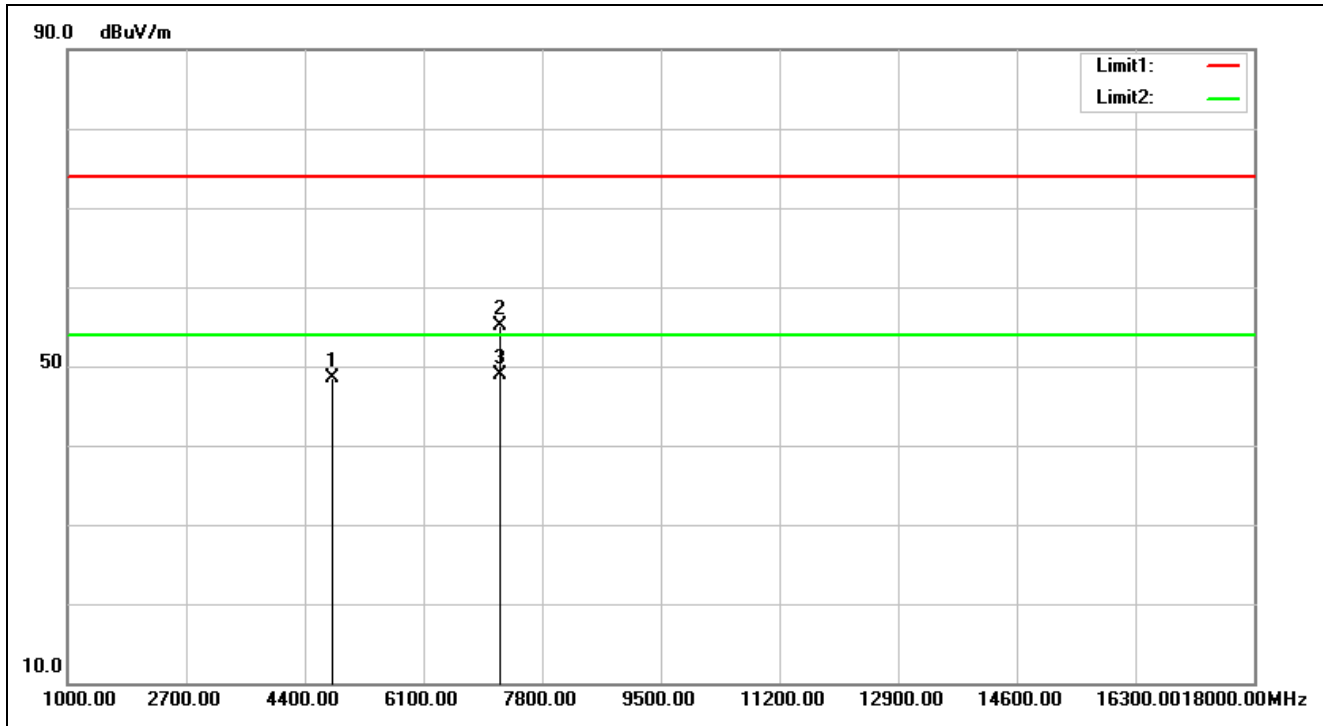


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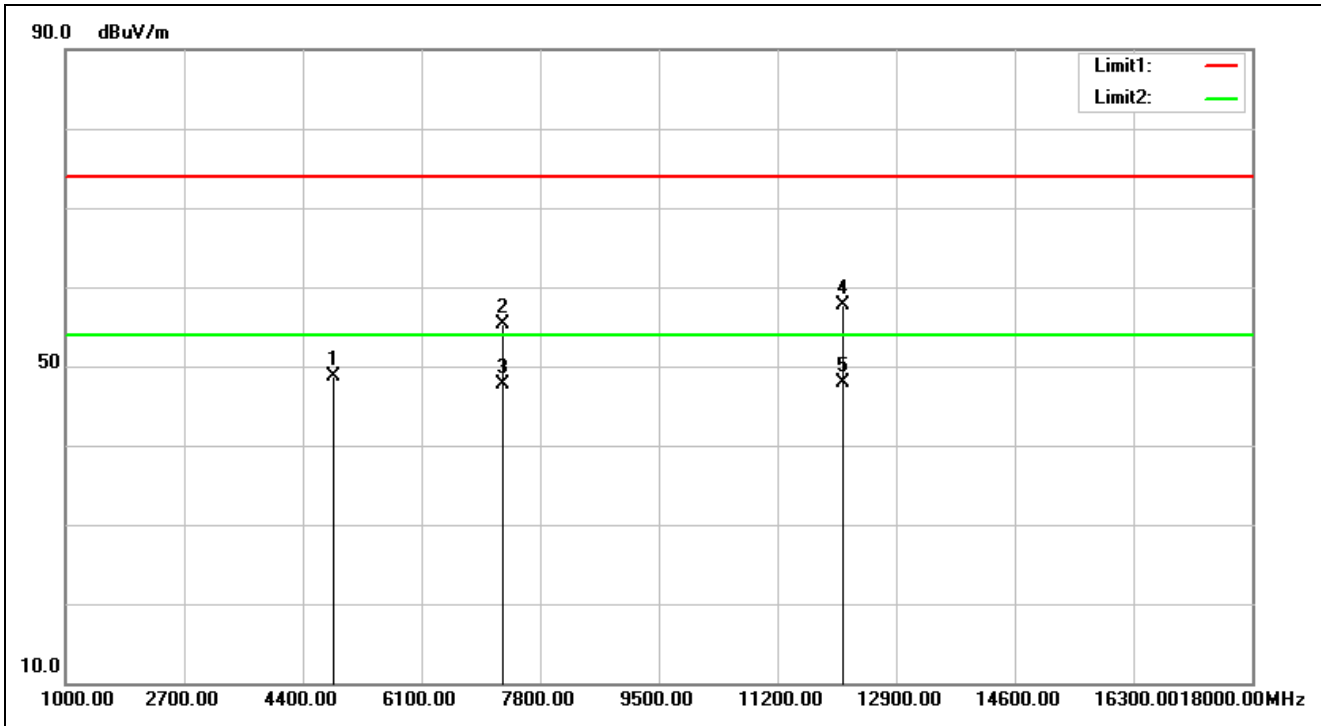
<b>Service No.:</b>	114073107	<b>Test Distance:</b>	3m
<b>Test Standard:</b>	FCC Above 1G PEAK	<b>Ant. Polarization:</b>	Horizontal
<b>Test item:</b>	Radiation Emission	<b>Test Time:</b>	2018/2/21 10:47:17
<b>Applicant:</b>	CUB	<b>Test Rating:</b>	DC 3V
<b>Product:</b>	BLE TPMS SENSOR	<b>Temp.(°C)/Hum.(%):</b>	22.6(°C)/59%
<b>Model No.:</b>	BLE SENSOR 1	<b>Test Engineer:</b>	George Yang
<b>Test Mode:</b>	2402-TX		
<b>Remark:</b>			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	4804.000	-2.72	50.04	47.32	74.00	-26.68	peak		0	
2	7206.000	5.25	47.84	53.09	74.00	-20.91	peak	100	117	
3	7206.000	5.25	38.80	44.05	54.00	-9.95	AVG	100	117	



<b>Service No.:</b>	<b>114073107</b>	<b>Test Distance:</b>	<b>3m</b>
<b>Test Standard:</b>	<b>FCC Above 1G PEAK</b>	<b>Ant. Polarization:</b>	<b>Vertical</b>
<b>Test item:</b>	<b>Radiation Emission</b>	<b>Test Time:</b>	<b>2018/2/21 10:48:20</b>
<b>Applicant:</b>	<b>CUB</b>	<b>Test Rating:</b>	<b>DC 3V</b>
<b>Product:</b>	<b>BLE TPMS SENSOR</b>	<b>Temp.(°C)/Hum.(%):</b>	<b>22.6(°C)/59%</b>
<b>Model No.:</b>	<b>BLE SENSOR 1</b>	<b>Test Engineer:</b>	<b>George Yang</b>
<b>Test Mode:</b>	<b>2402-TX</b>		
<b>Remark:</b>			

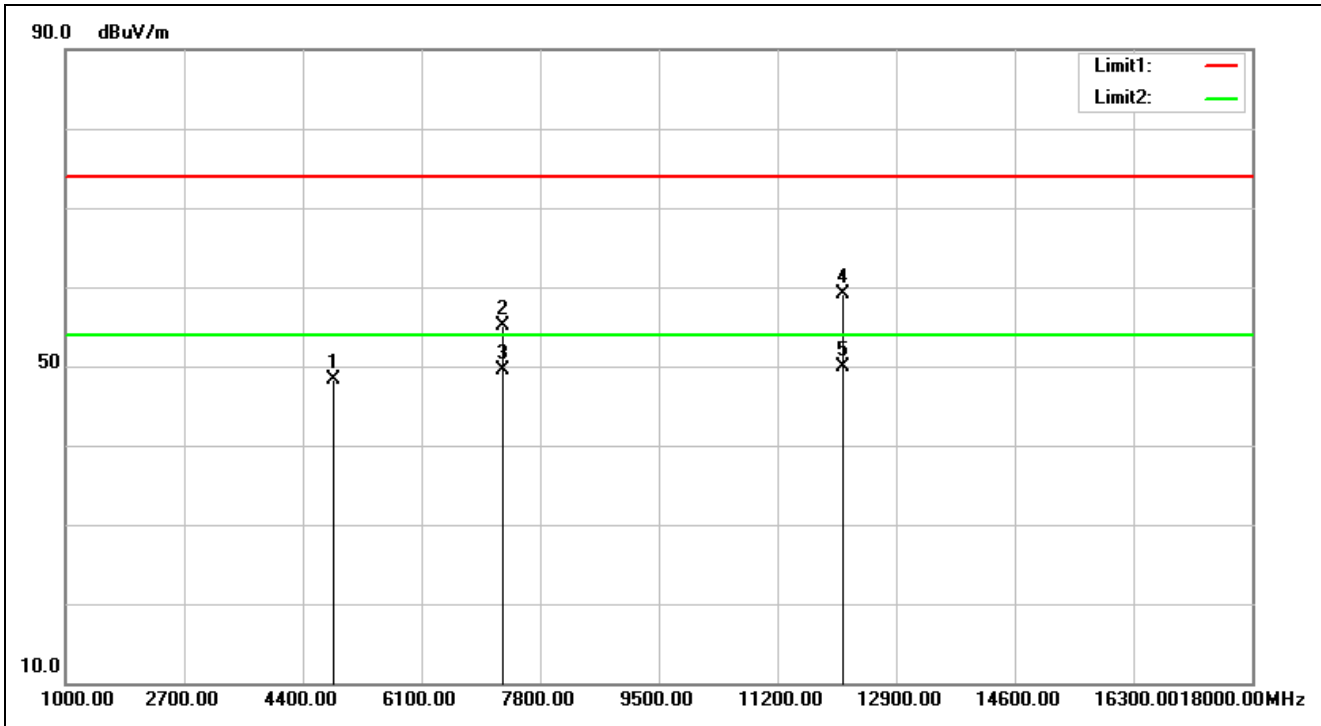
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	4804.000	-2.72	51.15	48.43	74.00	-25.57	peak	100	334	
2	7206.000	5.25	49.79	55.04	74.00	-18.96	peak	100	293	
3	7206.000	5.25	43.56	48.81	54.00	-5.19	AVG	100	293	



<b>Service No.:</b>	<b>114073107</b>	<b>Test Distance:</b>	<b>3m</b>
<b>Test Standard:</b>	<b>FCC Above 1G PEAK</b>	<b>Ant. Polarization:</b>	<b>Horizontal</b>
<b>Test item:</b>	<b>Radiation Emission</b>	<b>Test Time:</b>	<b>2018/2/1 10:18:57</b>
<b>Applicant:</b>	<b>CUB</b>	<b>Test Rating:</b>	<b>DC 3V</b>
<b>Product:</b>	<b>BLE TPMS SENSOR</b>	<b>Temp.(°C)/Hum.(%):</b>	<b>19(°C)/56%</b>
<b>Model No.:</b>	<b>BLE SENSOR 1</b>	<b>Test Engineer:</b>	<b>George Yang</b>
<b>Test Mode:</b>	<b>2426-TX</b>		
<b>Remark:</b>			

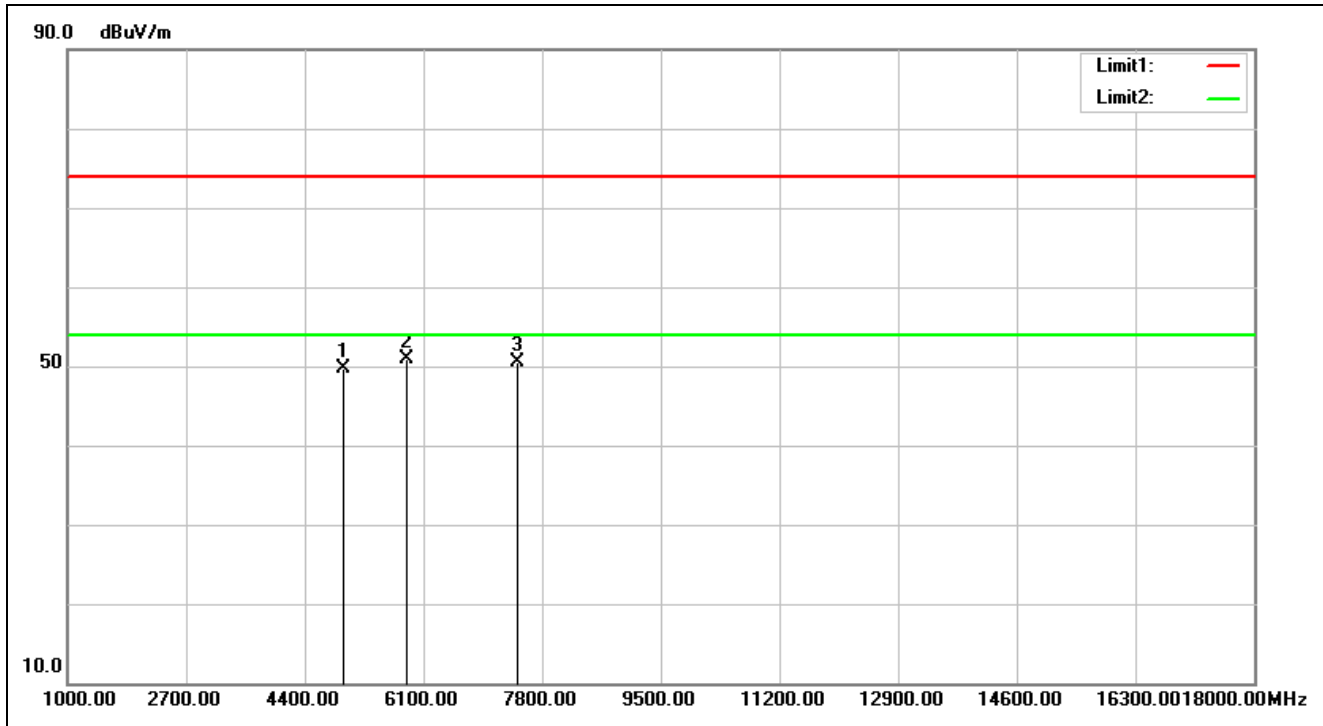
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	4852.000	-2.58	51.34	48.76	74.00	-25.24	peak	100	132	
2	7278.000	5.43	49.82	55.25	74.00	-18.75	peak	100	5	
3	7278.000	5.43	42.28	47.71	54.00	-6.29	AVG	100	5	
4	12130.000	7.04	50.61	57.65	74.00	-16.35	peak	100	313	
5	12130.000	7.04	40.78	47.82	54.00	-6.18	AVG	100	313	





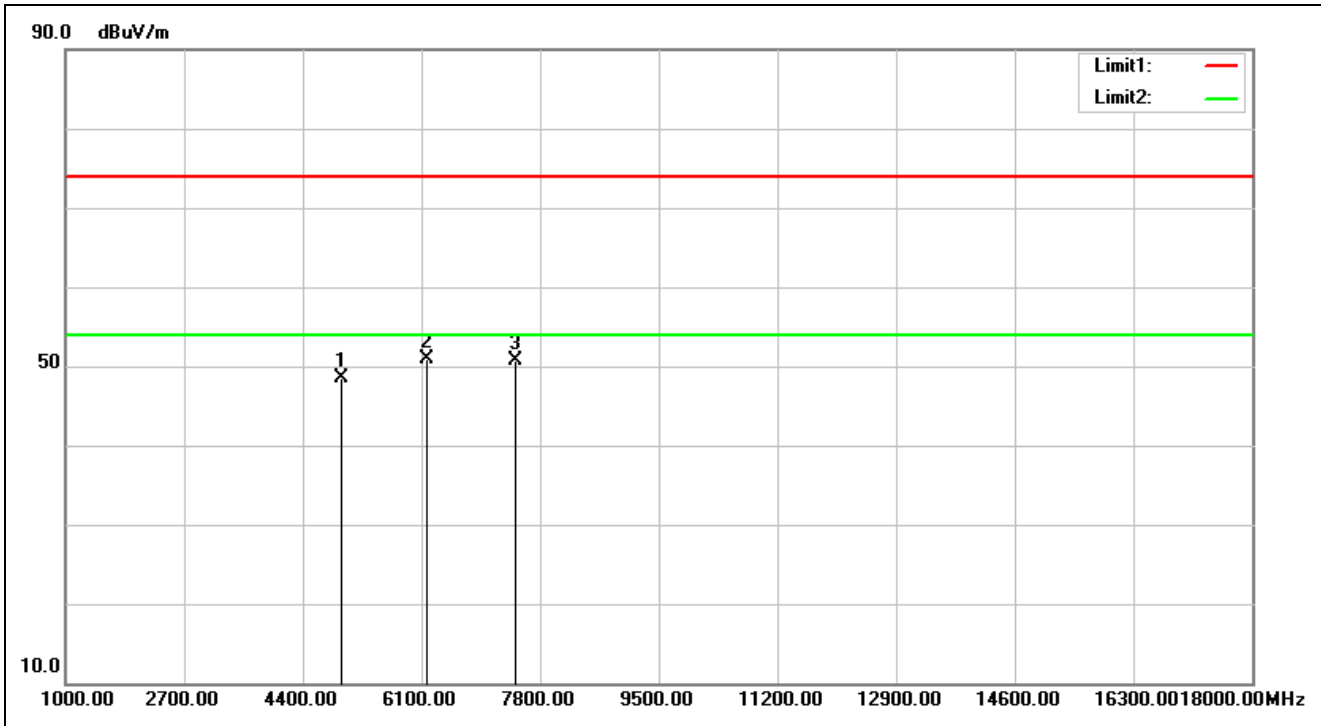
<b>Service No.:</b>	<b>114073107</b>	<b>Test Distance:</b>	<b>3m</b>
<b>Test Standard:</b>	<b>FCC Above 1G PEAK</b>	<b>Ant. Polarization:</b>	<b>Vertical</b>
<b>Test item:</b>	<b>Radiation Emission</b>	<b>Test Time:</b>	<b>2018/2/1 10:20:00</b>
<b>Applicant:</b>	<b>CUB</b>	<b>Test Rating:</b>	<b>DC 3V</b>
<b>Product:</b>	<b>BLE TPMS SENSOR</b>	<b>Temp.(°C)/Hum.(%):</b>	<b>19(°C)/56%</b>
<b>Model No.:</b>	<b>BLE SENSOR 1</b>	<b>Test Engineer:</b>	<b>George Yang</b>
<b>Test Mode:</b>	<b>2426-TX</b>		
<b>Remark:</b>			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	4852.000	-2.58	50.86	48.28	74.00	-25.72	peak	100	315	
2	7278.000	5.43	49.65	55.08	74.00	-18.92	peak	100	64	
3	7278.000	5.43	44.17	49.60	54.00	-4.40	AVG	100	64	
4	12130.000	7.04	52.03	59.07	74.00	-14.93	peak	100	328	
5	12130.000	7.04	42.92	49.96	54.00	-4.04	AVG	100	328	



<b>Service No.:</b>	<b>114073107</b>	<b>Test Distance:</b>	<b>3m</b>
<b>Test Standard:</b>	<b>FCC Above 1G PEAK</b>	<b>Ant. Polarization:</b>	<b>Horizontal</b>
<b>Test item:</b>	<b>Radiation Emission</b>	<b>Test Time:</b>	<b>2018/2/1 10:38:45</b>
<b>Applicant:</b>	<b>CUB</b>	<b>Test Rating:</b>	<b>DC 3V</b>
<b>Product:</b>	<b>BLE TPMS SENSOR</b>	<b>Temp.(°C)/Hum.(%):</b>	<b>19(°C)/56%</b>
<b>Model No.:</b>	<b>BLE SENSOR 1</b>	<b>Test Engineer:</b>	<b>George Yang</b>
<b>Test Mode:</b>	<b>2480-TX</b>		
<b>Remark:</b>			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	4960.000	-2.28	52.04	49.76	74.00	-24.24	peak			
2	5862.000	2.51	48.33	50.84	74.00	-23.16	peak	100	239	
3	7440.000	5.84	44.64	50.48	74.00	-23.52	peak			



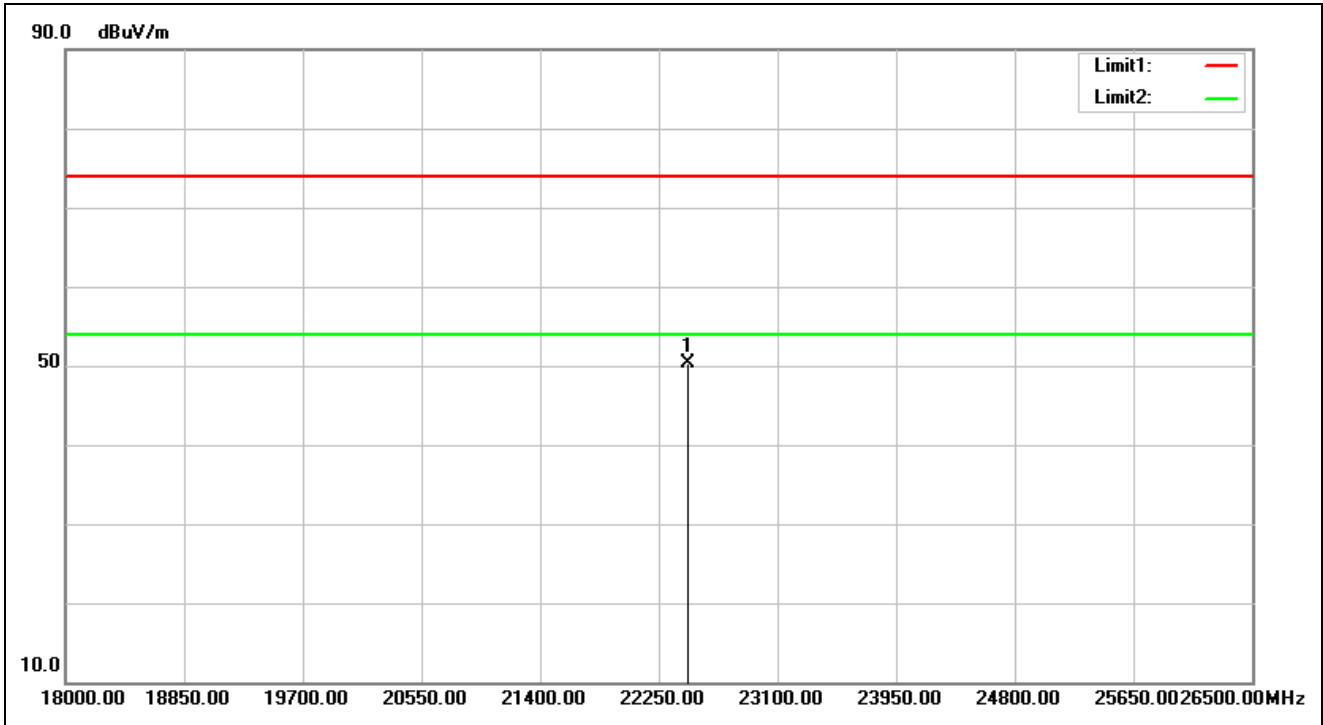
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<b>Test Standard:</b>	<b>FCC Above 1G PEAK</b>	<b>Ant. Polarization:</b>	<b>Vertical</b>
<b>Test item:</b>	<b>Radiation Emission</b>	<b>Test Time:</b>	<b>2018/2/1 10:39:47</b>
<b>Applicant:</b>	<b>CUB</b>	<b>Test Rating:</b>	<b>DC 3V</b>
<b>Product:</b>	<b>BLE TPMS SENSOR</b>	<b>Temp.(°C)/Hum.(%):</b>	<b>19(°C)/56%</b>
<b>Model No.:</b>	<b>BLE SENSOR 1</b>	<b>Test Engineer:</b>	<b>George Yang</b>
<b>Test Mode:</b>	<b>2480-TX</b>		
<b>Remark:</b>			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	4960.000	-2.28	50.82	48.54	74.00	-25.46	peak			
2	6185.000	4.12	46.79	50.91	74.00	-23.09	peak	100	57	
3	7440.000	5.84	44.89	50.73	74.00	-23.27	peak			

# Spurious Emissions, TX Mode, 18-26G

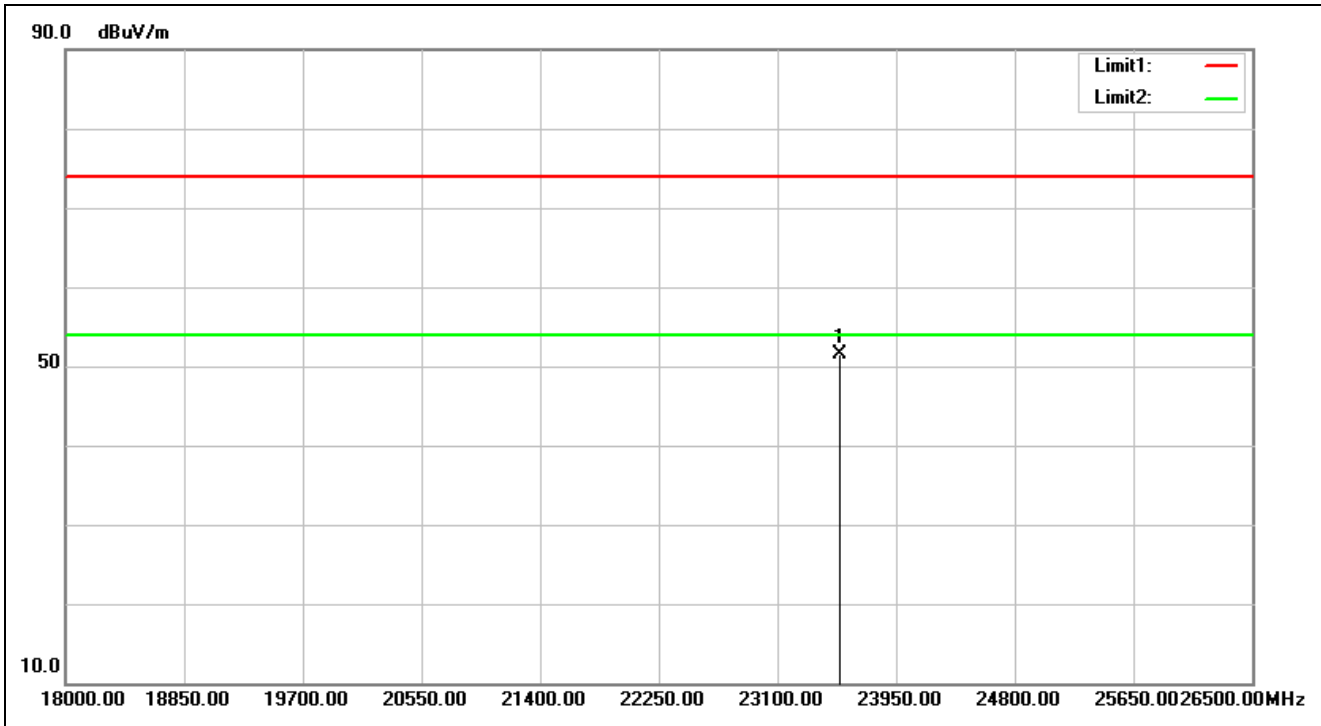


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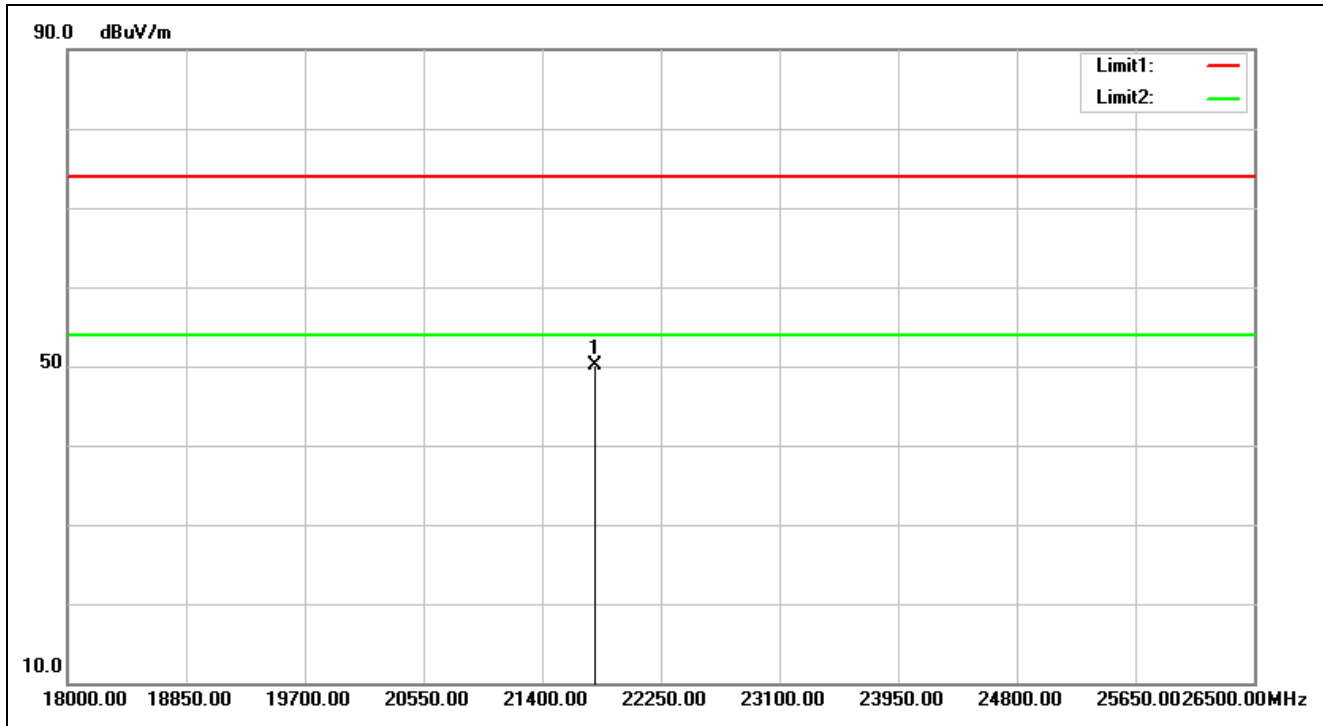
<b>Service No.:</b>	114073107	<b>Test Distance:</b>	3m
<b>Test Standard:</b>	FCC Above 1G PEAK	<b>Ant. Polarization:</b>	Horizontal
<b>Test item:</b>	Radiation Emission	<b>Test Time:</b>	2018/2/1 11:26:47
<b>Applicant:</b>	CUB	<b>Test Rating:</b>	DC 3V
<b>Product:</b>	BLE TPMS SENSOR	<b>Temp.(°C)/Hum.(%):</b>	19(°C)/56%
<b>Model No.:</b>	BLE SENSOR 1	<b>Test Engineer:</b>	George Yang
<b>Test Mode:</b>	2402-TX		
<b>Remark:</b>			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	22462.500	32.13	18.23	50.36	74.00	-23.64	peak		0	



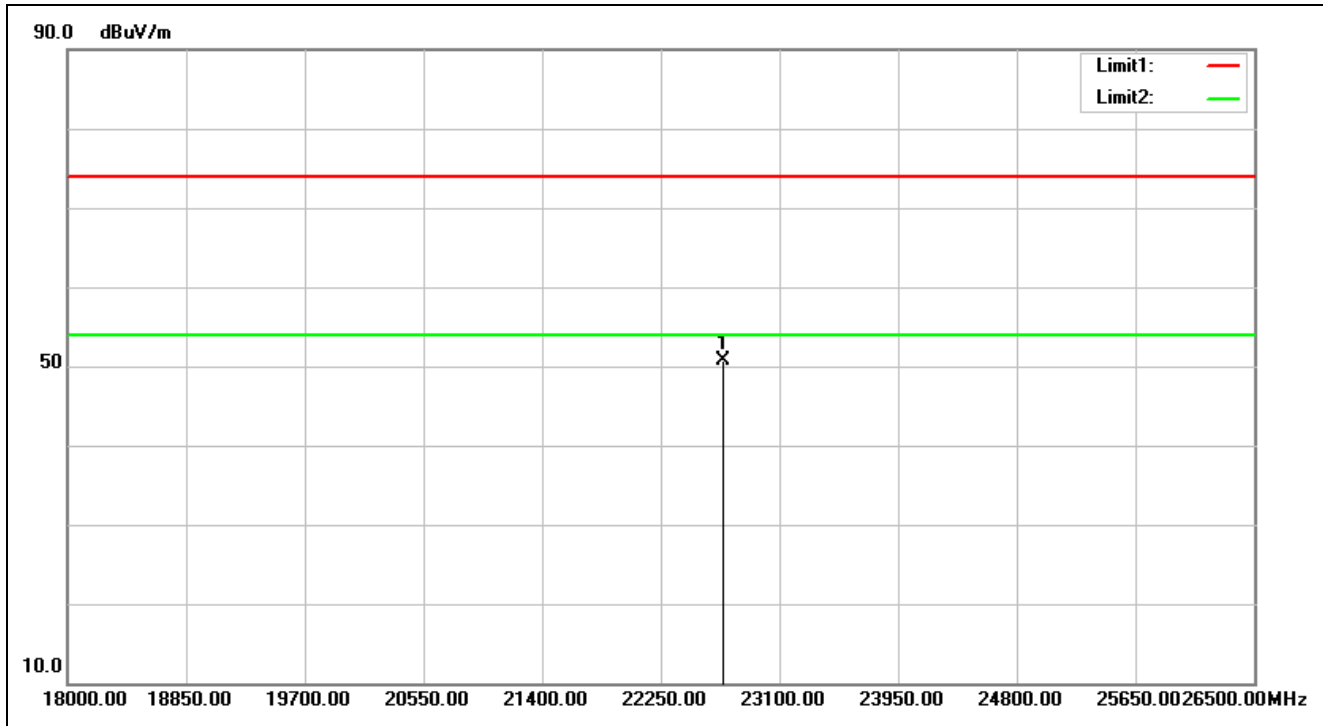
<b>Service No.:</b>	<b>114073107</b>	<b>Test Distance:</b>	<b>3m</b>
<b>Test Standard:</b>	<b>FCC Above 1G PEAK</b>	<b>Ant. Polarization:</b>	<b>Vertical</b>
<b>Test item:</b>	<b>Radiation Emission</b>	<b>Test Time:</b>	<b>2018/2/1 11:27:10</b>
<b>Applicant:</b>	<b>CUB</b>	<b>Test Rating:</b>	<b>DC 3V</b>
<b>Product:</b>	<b>BLE TPMS SENSOR</b>	<b>Temp.(°C)/Hum.(%):</b>	<b>19(°C)/56%</b>
<b>Model No.:</b>	<b>BLE SENSOR 1</b>	<b>Test Engineer:</b>	<b>George Yang</b>
<b>Test Mode:</b>	<b>2402-TX</b>		
<b>Remark:</b>			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	23550.500	32.79	18.75	51.54	74.00	-22.46	peak			



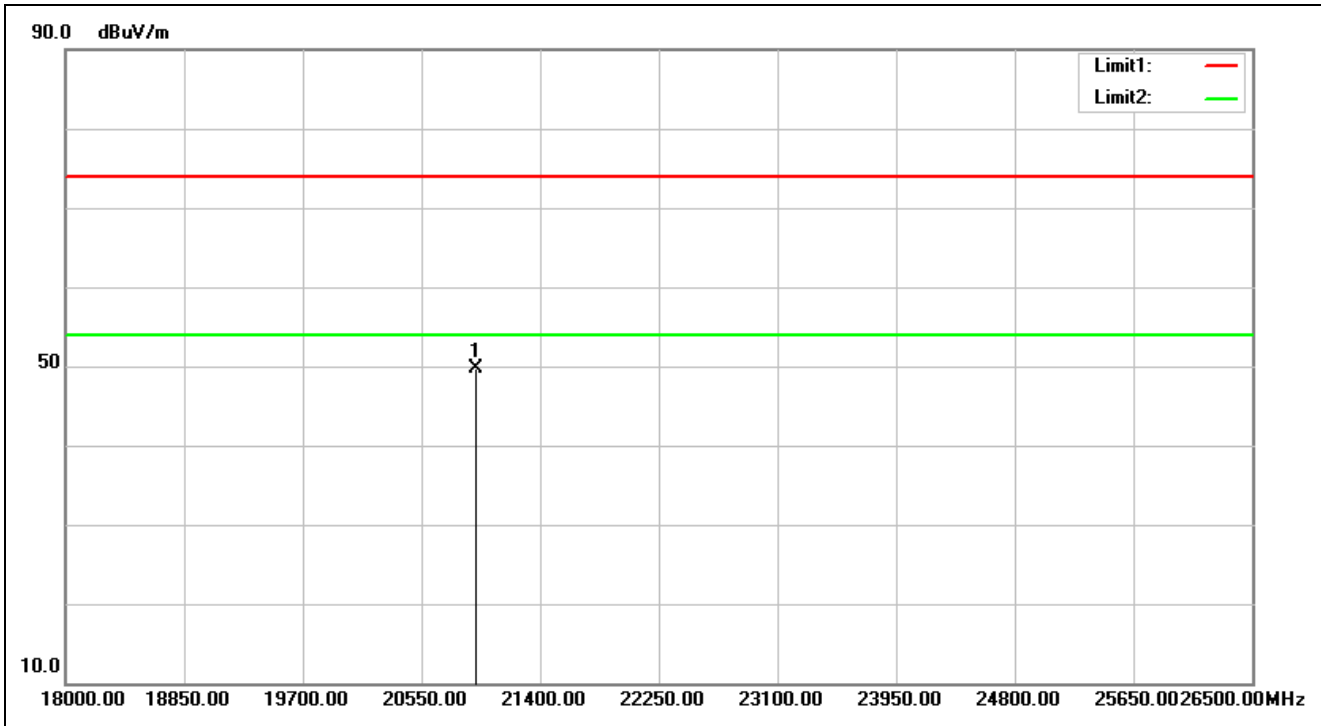
<b>Service No.:</b>	<b>114073107</b>	<b>Test Distance:</b>	<b>3m</b>
<b>Test Standard:</b>	<b>FCC Above 1G PEAK</b>	<b>Ant. Polarization:</b>	<b>Horizontal</b>
<b>Test item:</b>	<b>Radiation Emission</b>	<b>Test Time:</b>	<b>2018/2/1 11:27:24</b>
<b>Applicant:</b>	<b>CUB</b>	<b>Test Rating:</b>	<b>DC 3V</b>
<b>Product:</b>	<b>BLE TPMS SENSOR</b>	<b>Temp.(°C)/Hum.(%):</b>	<b>19(°C)/56%</b>
<b>Model No.:</b>	<b>BLE SENSOR 1</b>	<b>Test Engineer:</b>	<b>George Yang</b>
<b>Test Mode:</b>	<b>2426-TX</b>		
<b>Remark:</b>			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	21774.000	32.09	17.98	50.07	74.00	-23.93	peak			



<b>Service No.:</b>	<b>114073107</b>	<b>Test Distance:</b>	<b>3m</b>
<b>Test Standard:</b>	<b>FCC Above 1G PEAK</b>	<b>Ant. Polarization:</b>	<b>Vertical</b>
<b>Test item:</b>	<b>Radiation Emission</b>	<b>Test Time:</b>	<b>2018/2/1 11:27:34</b>
<b>Applicant:</b>	<b>CUB</b>	<b>Test Rating:</b>	<b>DC 3V</b>
<b>Product:</b>	<b>BLE TPMS SENSOR</b>	<b>Temp.(°C)/Hum.(%):</b>	<b>19(°C)/56%</b>
<b>Model No.:</b>	<b>BLE SENSOR 1</b>	<b>Test Engineer:</b>	<b>George Yang</b>
<b>Test Mode:</b>	<b>2426-TX</b>		
<b>Remark:</b>			

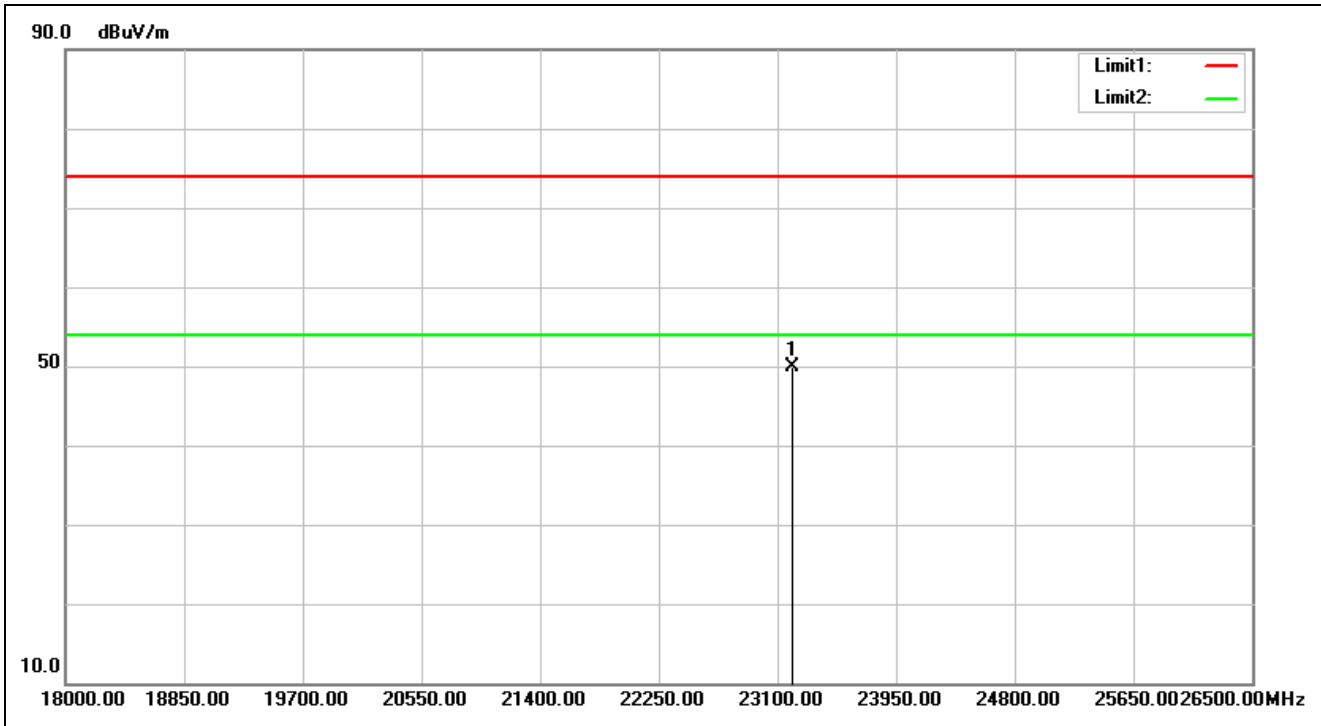
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	22692.000	32.22	18.47	50.69	74.00	-23.31	peak			



<b>Service No.:</b>	<b>114073107</b>	<b>Test Distance:</b>	<b>3m</b>
<b>Test Standard:</b>	<b>FCC Above 1G PEAK</b>	<b>Ant. Polarization:</b>	<b>Horizontal</b>
<b>Test item:</b>	<b>Radiation Emission</b>	<b>Test Time:</b>	<b>2018/2/1 11:27:46</b>
<b>Applicant:</b>	<b>CUB</b>	<b>Test Rating:</b>	<b>DC 3V</b>
<b>Product:</b>	<b>BLE TPMS SENSOR</b>	<b>Temp.(°C)/Hum.(%):</b>	<b>19(°C)/56%</b>
<b>Model No.:</b>	<b>BLE SENSOR 1</b>	<b>Test Engineer:</b>	<b>George Yang</b>
<b>Test Mode:</b>	<b>2480-TX</b>		
<b>Remark:</b>			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	20941.000	31.86	17.79	49.65	74.00	-24.35	peak			





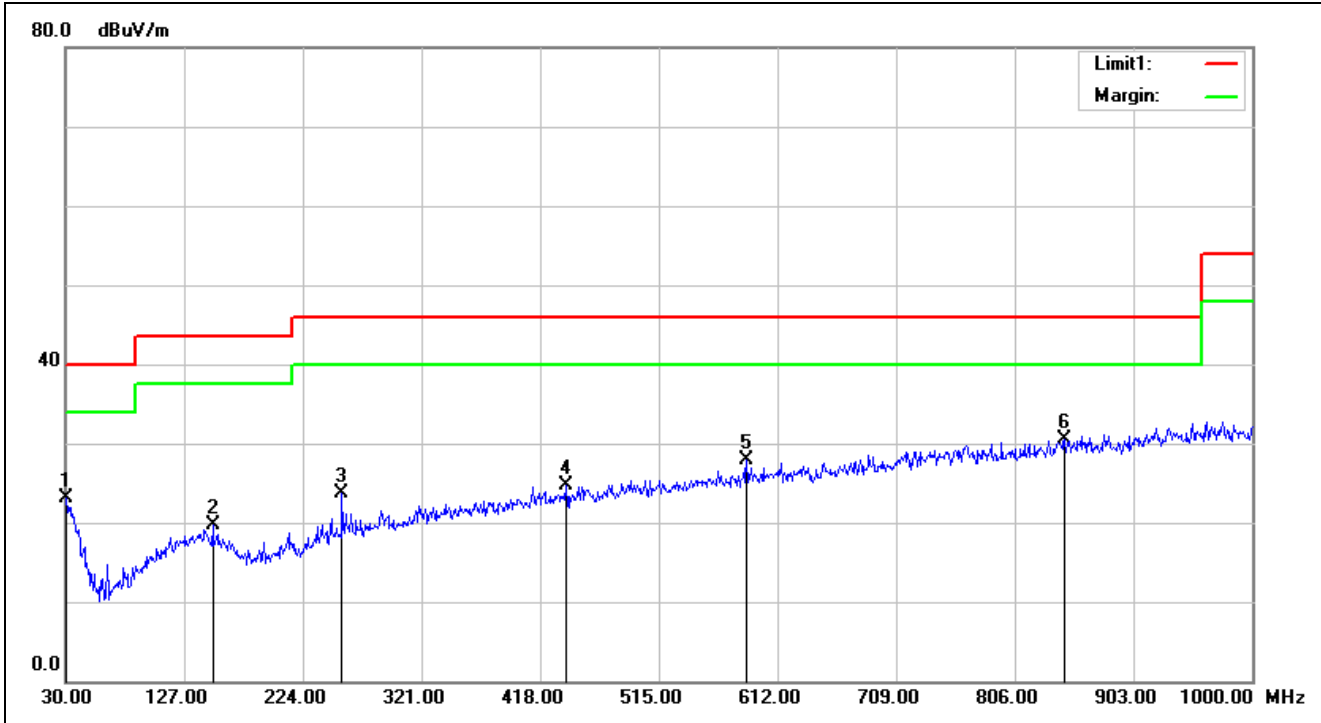
<b>Service No.:</b>	<b>114073107</b>	<b>Test Distance:</b>	<b>3m</b>
<b>Test Standard:</b>	<b>FCC Above 1G PEAK</b>	<b>Ant. Polarization:</b>	<b>Vertical</b>
<b>Test item:</b>	<b>Radiation Emission</b>	<b>Test Time:</b>	<b>2018/2/1 11:27:54</b>
<b>Applicant:</b>	<b>CUB</b>	<b>Test Rating:</b>	<b>DC 3V</b>
<b>Product:</b>	<b>BLE TPMS SENSOR</b>	<b>Temp.(°C)/Hum.(%):</b>	<b>19(°C)/56%</b>
<b>Model No.:</b>	<b>BLE SENSOR 1</b>	<b>Test Engineer:</b>	<b>George Yang</b>
<b>Test Mode:</b>	<b>2480-TX</b>		
<b>Remark:</b>			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	23210.500	32.54	17.42	49.96	74.00	-24.04	peak			

# Spurious Emissions, TX Mode, 30M-1G

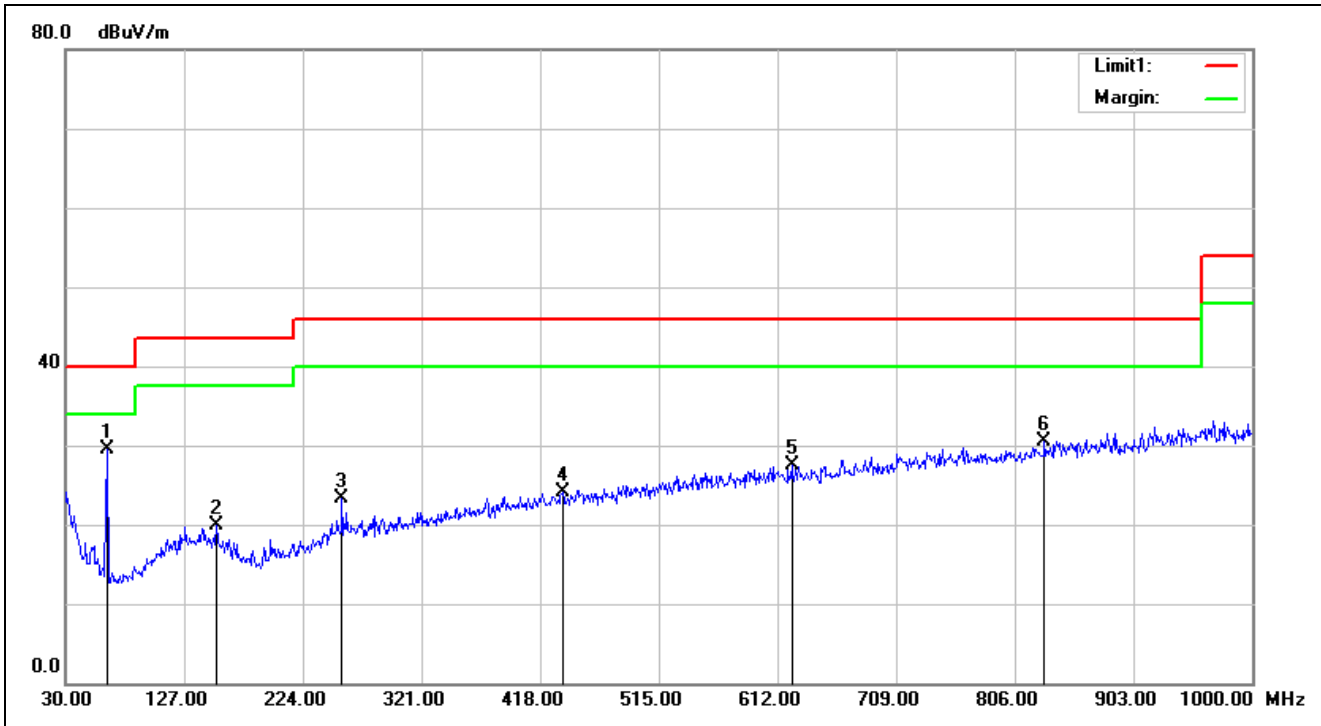


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<b>Service No.:</b>	<b>114073107</b>	<b>Test Distance:</b>	<b>3m</b>
<b>Test Standard:</b>	<b>FCC Class B 3M Radiation</b>	<b>Ant. Polarization:</b>	<b>Horizontal</b>
<b>Test item:</b>	<b>Radiation Emission</b>	<b>Test Time:</b>	<b>2018/2/21 11:05:14</b>
<b>Applicant:</b>	<b>CUB</b>	<b>Test Rating:</b>	<b>DC 3V</b>
<b>Product:</b>	<b>BLE TPMS SENSOR</b>	<b>Temp.(°C)/Hum.(%):</b>	<b>22.6(°C)/59%</b>
<b>Model No.:</b>	<b>BLE SENSOR 1</b>	<b>Test Engineer:</b>	<b>George Yang</b>
<b>Test Mode:</b>	<b>2426-TX</b>		
<b>Remark:</b>			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	30.0000	-0.25	23.43	23.18	40.00	-16.82	QP	100	0	
2	150.2800	-7.35	26.96	19.61	43.50	-23.89	QP	100	266	
3	256.0100	-5.27	29.02	23.75	46.00	-22.25	QP	100	122	
4	439.3400	-2.02	26.71	24.69	46.00	-21.31	QP	100	256	
5	586.7800	-0.06	28.01	27.95	46.00	-18.05	QP	100	192	
6	846.7400	3.65	26.94	30.59	46.00	-15.41	QP	100	33	



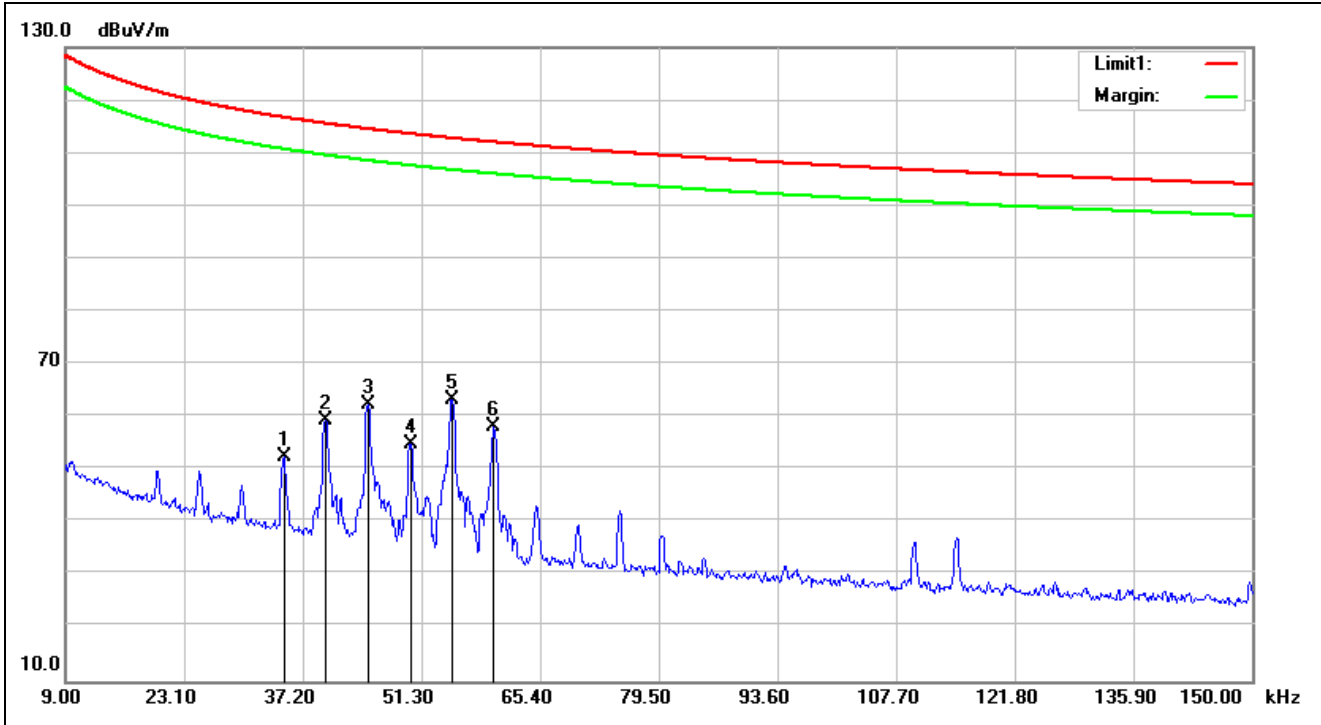
<b>Service No.:</b>	<b>114073107</b>	<b>Test Distance:</b>	<b>3m</b>
<b>Test Standard:</b>	<b>FCC Class B 3M Radiation</b>	<b>Ant. Polarization:</b>	<b>Vertical</b>
<b>Test item:</b>	<b>Radiation Emission</b>	<b>Test Time:</b>	<b>2018/2/21 11:06:17</b>
<b>Applicant:</b>	<b>CUB</b>	<b>Test Rating:</b>	<b>DC 3V</b>
<b>Product:</b>	<b>BLE TPMS SENSOR</b>	<b>Temp.(°C)/Hum.(%):</b>	<b>22.6(°C)/59%</b>
<b>Model No.:</b>	<b>BLE SENSOR 1</b>	<b>Test Engineer:</b>	<b>George Yang</b>
<b>Test Mode:</b>	<b>2426-TX</b>		
<b>Remark:</b>			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	63.9500	-13.51	42.93	29.42	40.00	-10.58	QP	100	153	
2	153.1900	-7.58	27.56	19.98	43.50	-23.52	QP	100	0	
3	256.0100	-5.27	28.65	23.38	46.00	-22.62	QP	100	196	
4	436.4300	-2.05	26.12	24.07	46.00	-21.93	QP	100	239	
5	623.6400	0.29	27.23	27.52	46.00	-18.48	QP	100	137	
6	830.2500	3.34	27.15	30.49	46.00	-15.51	QP	100	78	

# Spurious Emissions, TX Mode, 9k-30M

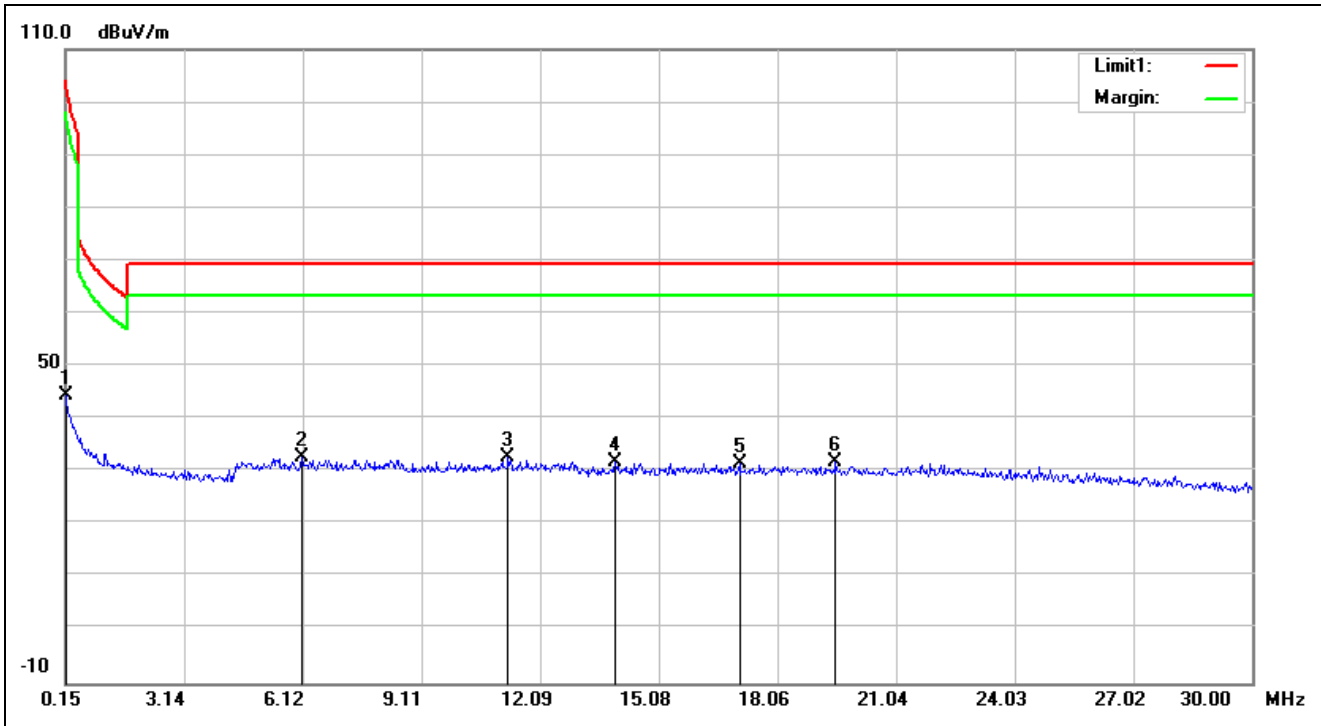


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<b>Service No.:</b>	<b>114073107</b>	<b>Test Distance:</b>	<b>3m</b>
<b>Test Standard:</b>	<b>FCC2.8_9k-1G_3m</b>	<b>Ant. Polarization:</b>	
<b>Test item:</b>	<b>Radiation Emission</b>	<b>Test Time:</b>	<b>2018/2/22 16:13:46</b>
<b>Applicant:</b>	<b>CUB</b>	<b>Test Rating:</b>	<b>DC 3V</b>
<b>Product:</b>	<b>BLE TPMS SENSOR</b>	<b>Temp.(°C)/Hum.(%):</b>	<b>20.3(°C)/64%</b>
<b>Model No.:</b>	<b>BLE SENSOR 1</b>	<b>Test Engineer:</b>	<b>George Yang</b>
<b>Test Mode:</b>	<b>2426-TX</b>		
<b>Remark:</b>			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	0.0349	19.96	32.53	52.49	116.73	-64.24	QP	100	171	
2	0.0398	19.79	39.59	59.38	115.59	-56.21	QP	100	171	
3	0.0449	19.61	42.64	62.25	114.55	-52.30	QP	100	171	
4	0.0500	19.43	35.56	54.99	113.61	-58.62	QP	100	171	
5	0.0549	19.40	43.91	63.31	112.80	-49.49	QP	100	171	
6	0.0599	19.37	38.64	58.01	112.05	-54.04	QP	100	171	



<b>Service No.:</b>	<b>114073107</b>	<b>Test Distance:</b>	<b>3m</b>
<b>Test Standard:</b>	<b>FCC2.8_9k-1G_3m</b>	<b>Ant. Polarization:</b>	
<b>Test item:</b>	<b>Radiation Emission</b>	<b>Test Time:</b>	<b>2018/2/22 16:17:17</b>
<b>Applicant:</b>	<b>CUB</b>	<b>Test Rating:</b>	<b>DC 3V</b>
<b>Product:</b>	<b>BLE TPMS SENSOR</b>	<b>Temp.(°C)/Hum.(%):</b>	<b>20.3(°C)/64%</b>
<b>Model No.:</b>	<b>BLE SENSOR 1</b>	<b>Test Engineer:</b>	<b>George Yang</b>
<b>Test Mode:</b>	<b>2426-TX</b>		
<b>Remark:</b>			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	0.1500	19.08	25.30	44.38	104.08	-59.70	QP	100	171	
2	6.0901	19.86	12.75	32.61	69.50	-36.89	QP	100	129	
3	11.2840	20.45	12.34	32.79	69.50	-36.71	QP	100	180	
4	13.9705	20.92	10.92	31.84	69.50	-37.66	QP	100	93	
5	17.1048	21.48	10.00	31.48	69.50	-38.02	QP	100	210	
6	19.5226	21.90	9.91	31.81	69.50	-37.69	QP	100	359	