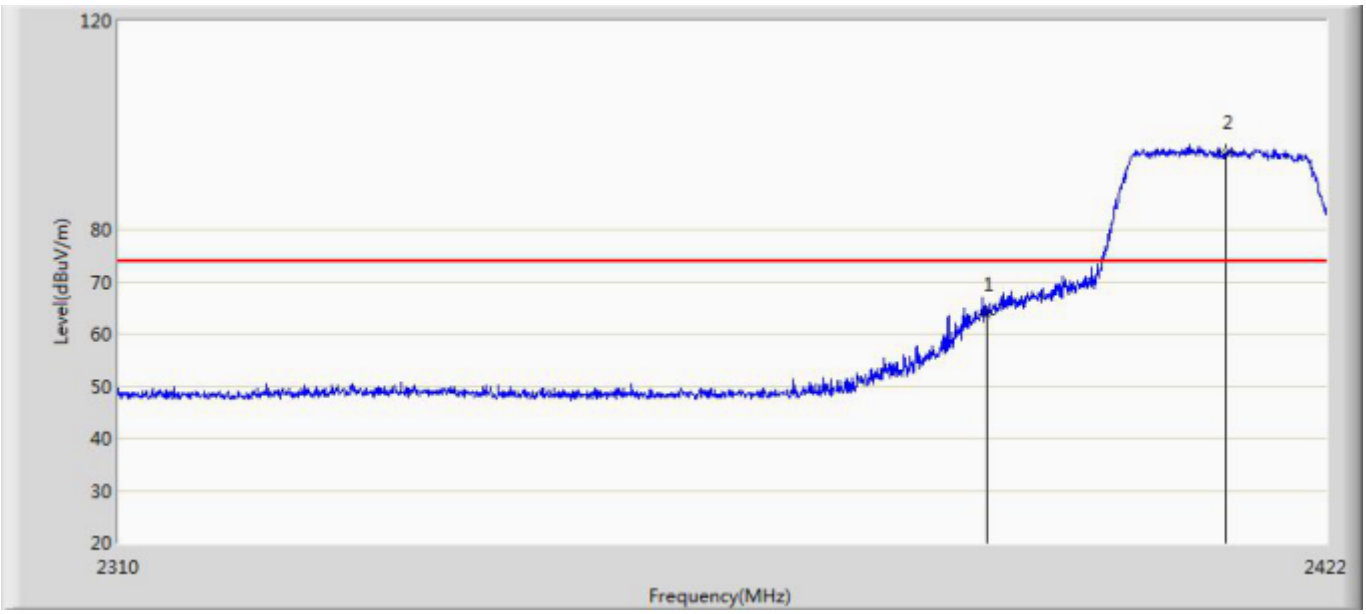
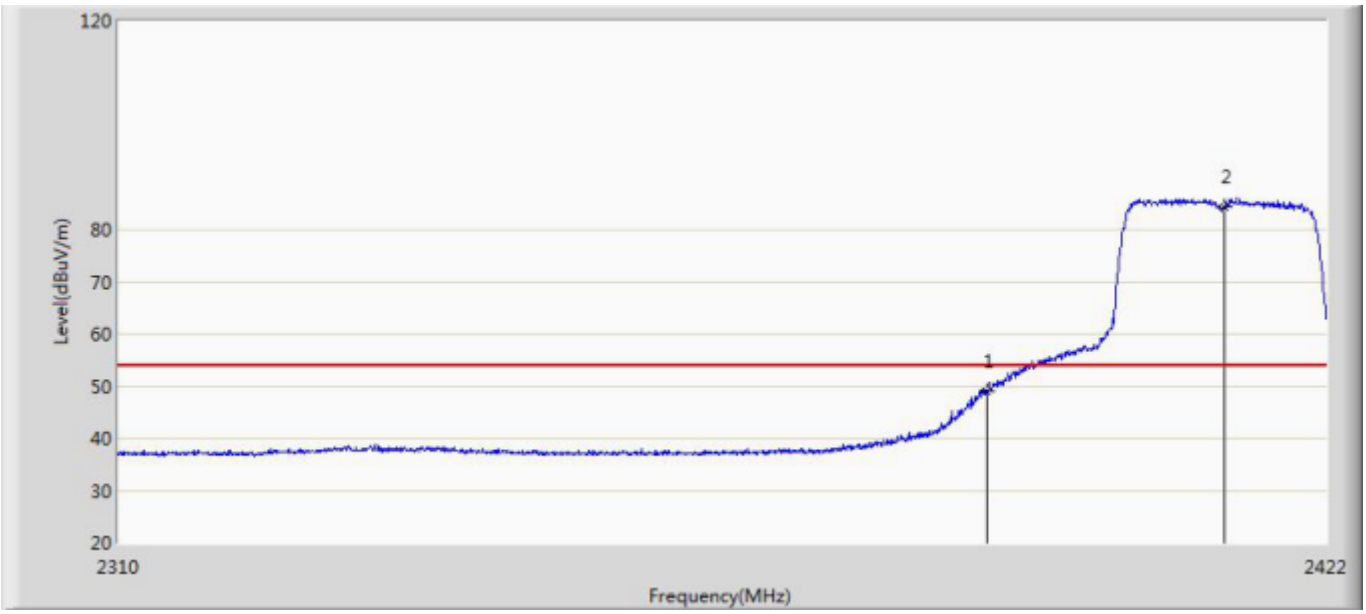
Engineer: Tommie	
Site: AC5	Time: 2018/02/28 - 09:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2412MHz by 802.11n20 with Ant 1	



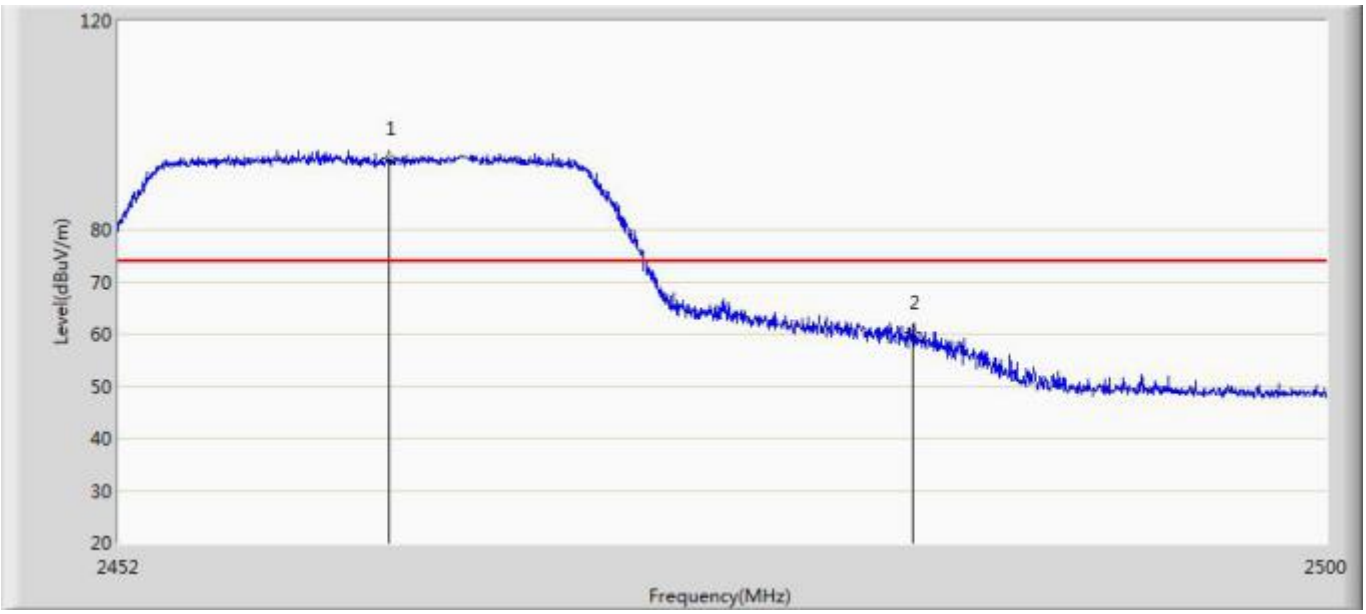
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	63.784	27.454	-10.216	74.000	36.329	PK
2	*	2412.536	94.834	58.483	N/A	N/A	36.351	PK

Engineer: Tommie	
Site: AC5	Time: 2018/02/28 - 09:12
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2412MHz by 802.11n20 with Ant 1	



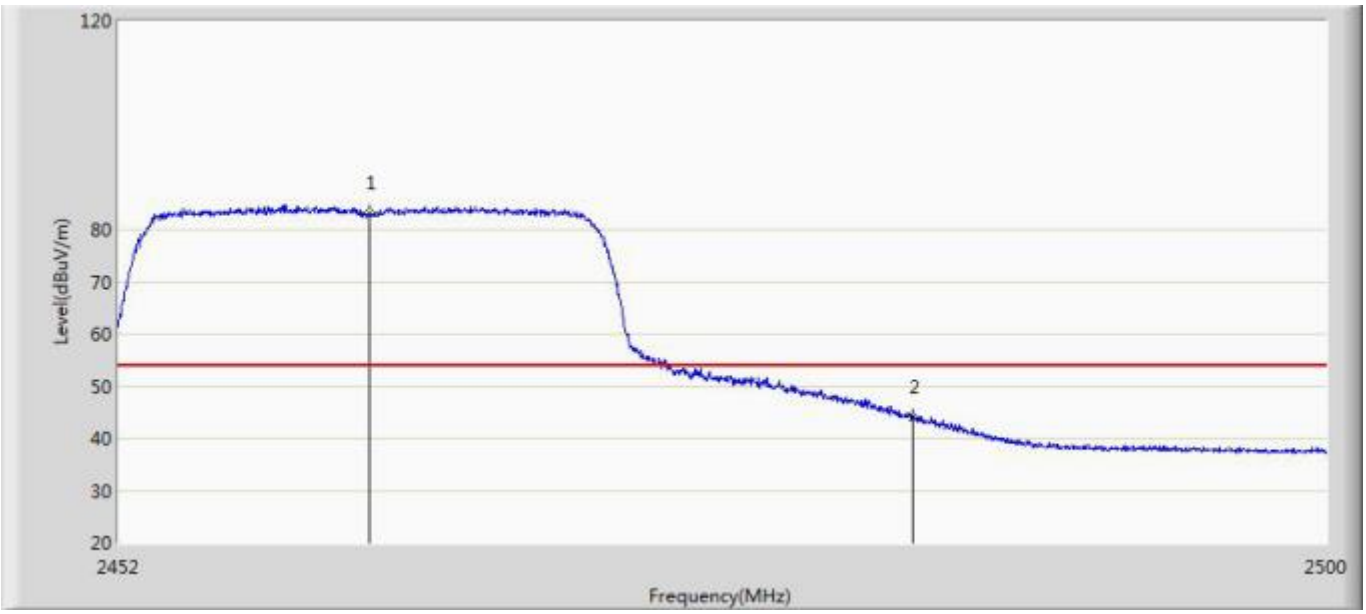
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	49.115	12.785	-4.885	54.000	36.329	AV
2	*	2412.424	84.324	47.974	N/A	N/A	36.350	AV

Engineer: Tommie	
Site: AC5	Time: 2018/02/28 - 09:14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2462MHz by 802.11n20 with Ant 1	



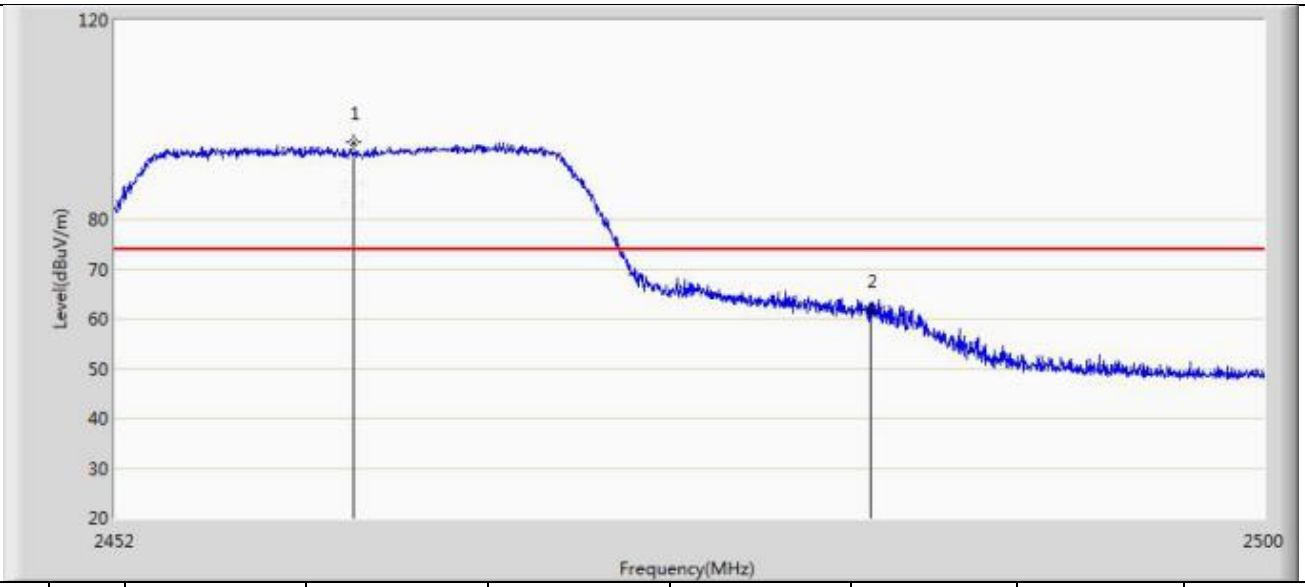
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.704	93.760	57.140	N/A	N/A	36.620	PK
2		2483.500	60.181	23.714	-13.819	74.000	36.467	PK

Engineer: Tommie	
Site: AC5	Time: 2018/02/28 - 09:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2462MHz by 802.11n20 with Ant 1	



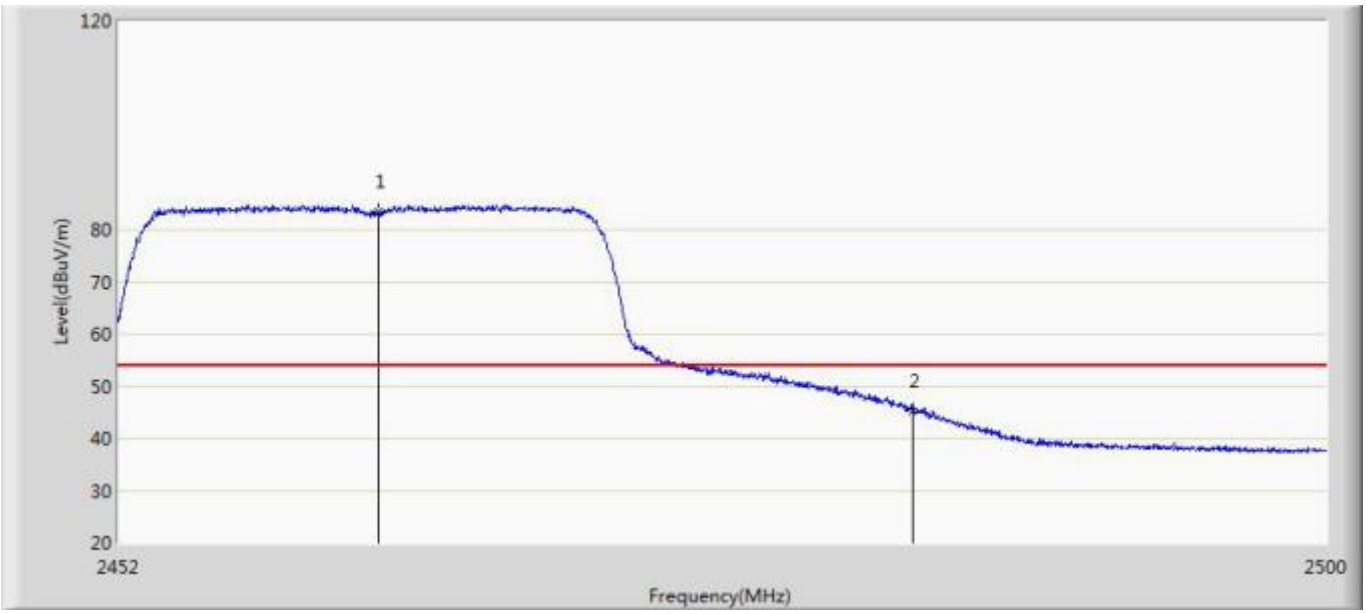
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2461.888	83.101	46.474	N/A	N/A	36.627	AV
2		2483.500	44.124	7.657	-9.876	54.000	36.467	AV

Engineer: Tommie	
Site: AC5	Time: 2018/02/28 - 09:18
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2462MHz by 802.11n20 with Ant 1	



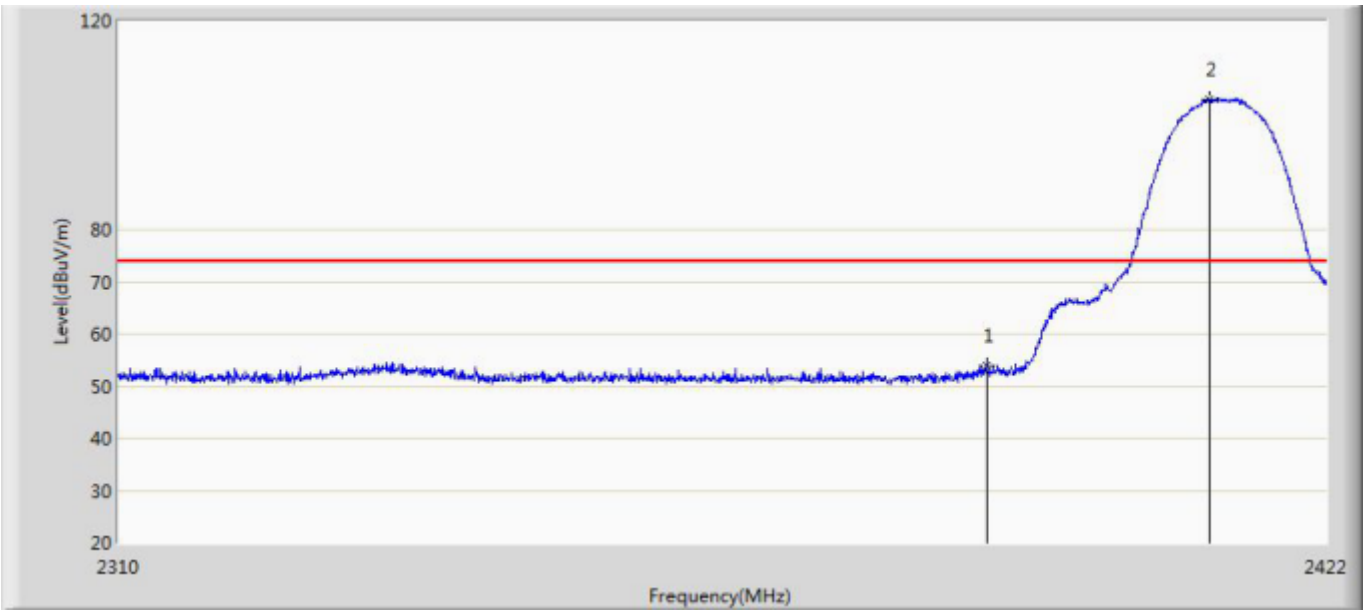
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2461.888	93.101	56.474	N/A	N/A	36.627	PK
2		2483.500	61.679	25.212	-12.321	74.000	36.467	PK

Engineer: Tommie	
Site: AC5	Time: 2018/02/28 - 09:19
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2462MHz by 802.11n20 with Ant 1	



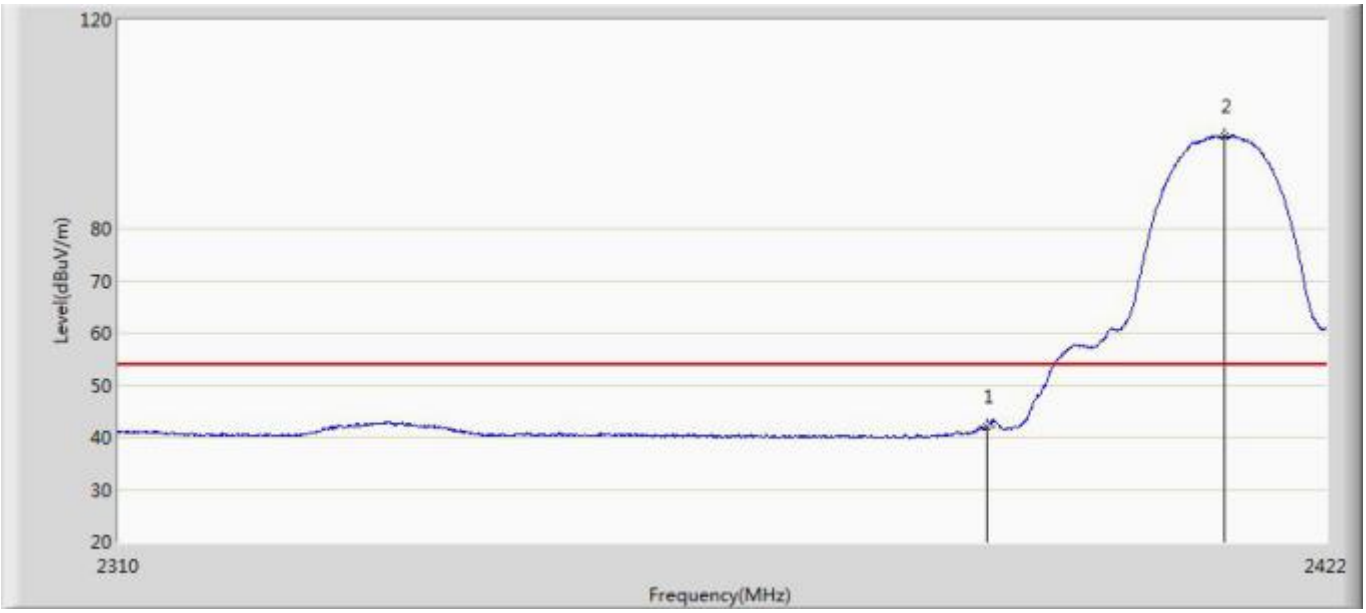
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.248	83.564	46.938	N/A	N/A	36.625	AV
2		2483.500	45.358	8.891	-8.642	54.000	36.467	AV

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:07
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2412MHz by 802.11b with Ant 2	



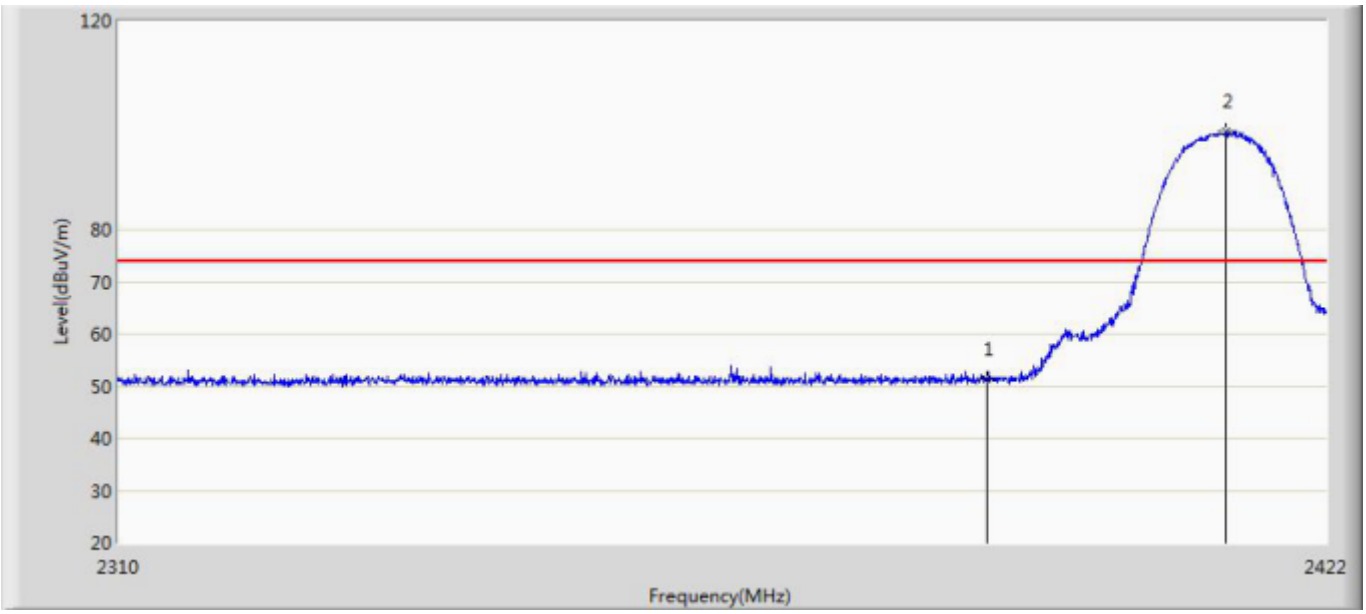
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	53.998	17.668	-20.002	74.000	36.329	PK
2	*	2410.912	105.024	68.697	N/A	N/A	36.327	PK

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:09
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2412MHz by 802.11b with Ant 2	



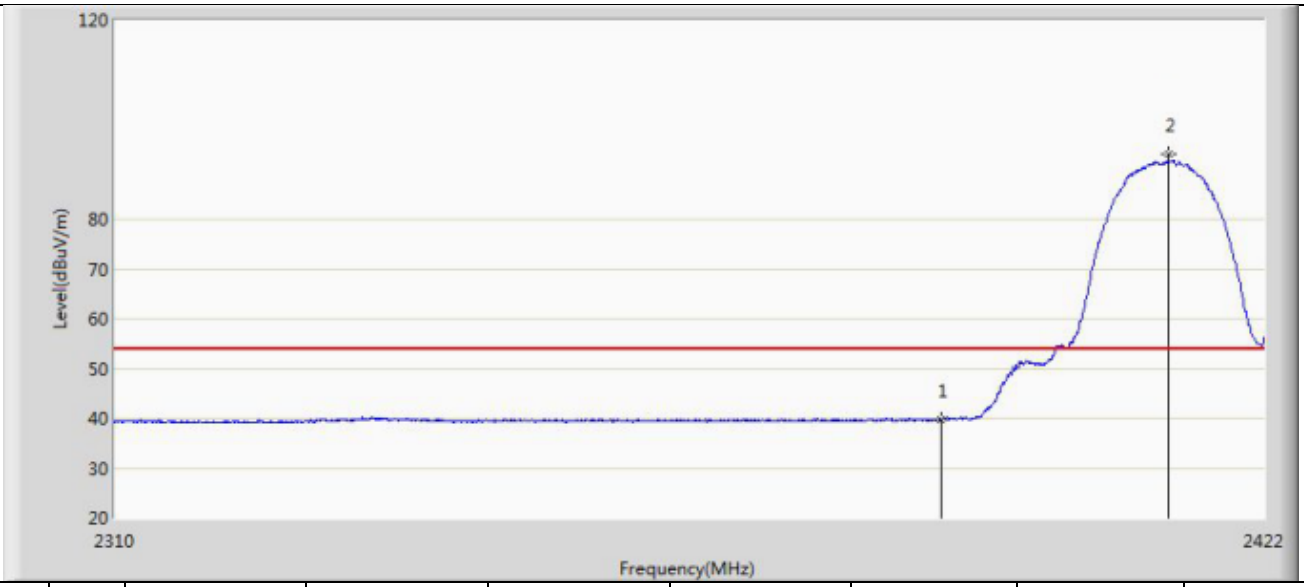
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	41.978	5.648	-12.022	54.000	36.329	AV
2	*	2412.424	97.597	61.247	N/A	N/A	36.350	AV

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:12
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2412MHz by 802.11b with Ant 2	



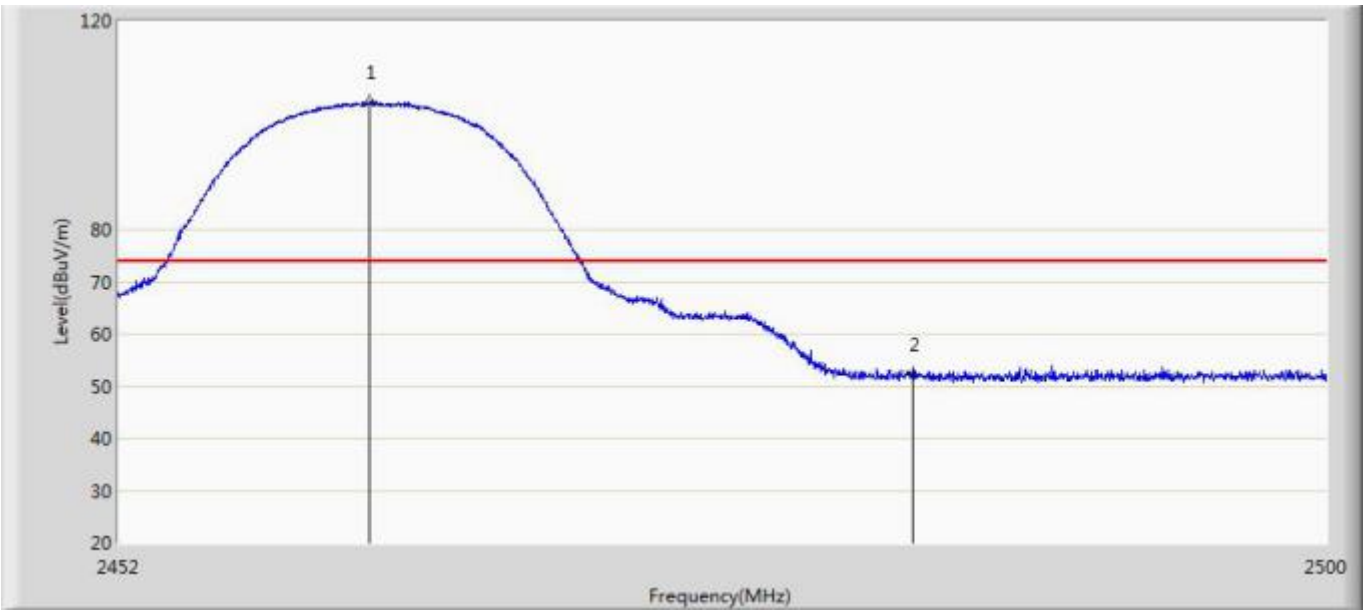
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.355	15.025	-22.645	74.000	36.329	PK
2	*	2412.592	98.759	62.407	N/A	N/A	36.352	PK

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:13
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2412MHz by 802.11b with Ant 2	



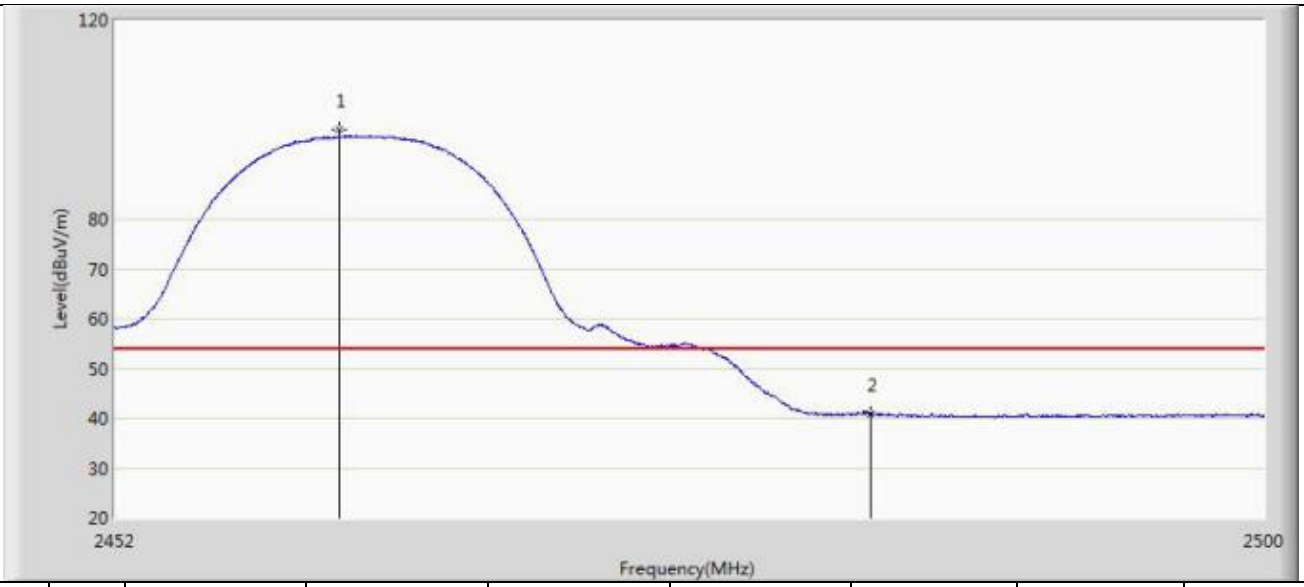
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	39.820	3.490	-14.180	54.000	36.329	AV
2	*	2412.592	98.759	62.407	N/A	N/A	36.352	AV

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:15
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2462MHz by 802.11b with Ant 2	



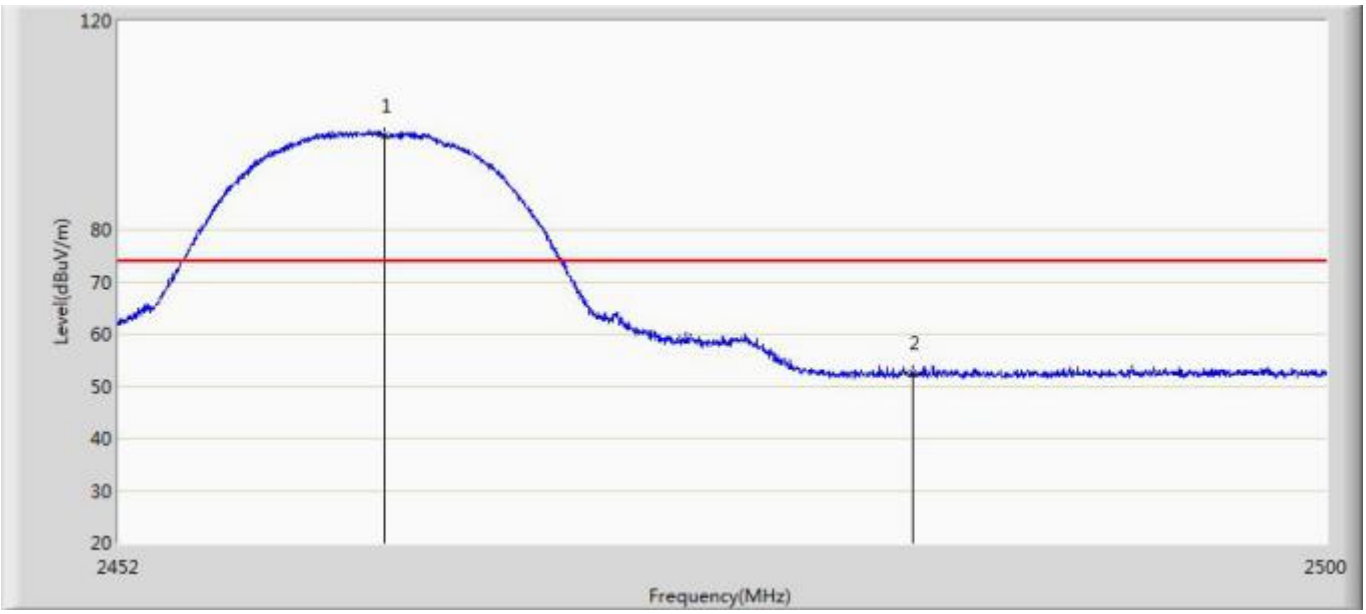
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2461.888	104.393	67.766	N/A	N/A	36.627	PK
2		2483.500	52.071	15.604	-21.929	74.000	36.467	PK

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2462MHz by 802.11b with Ant 2	



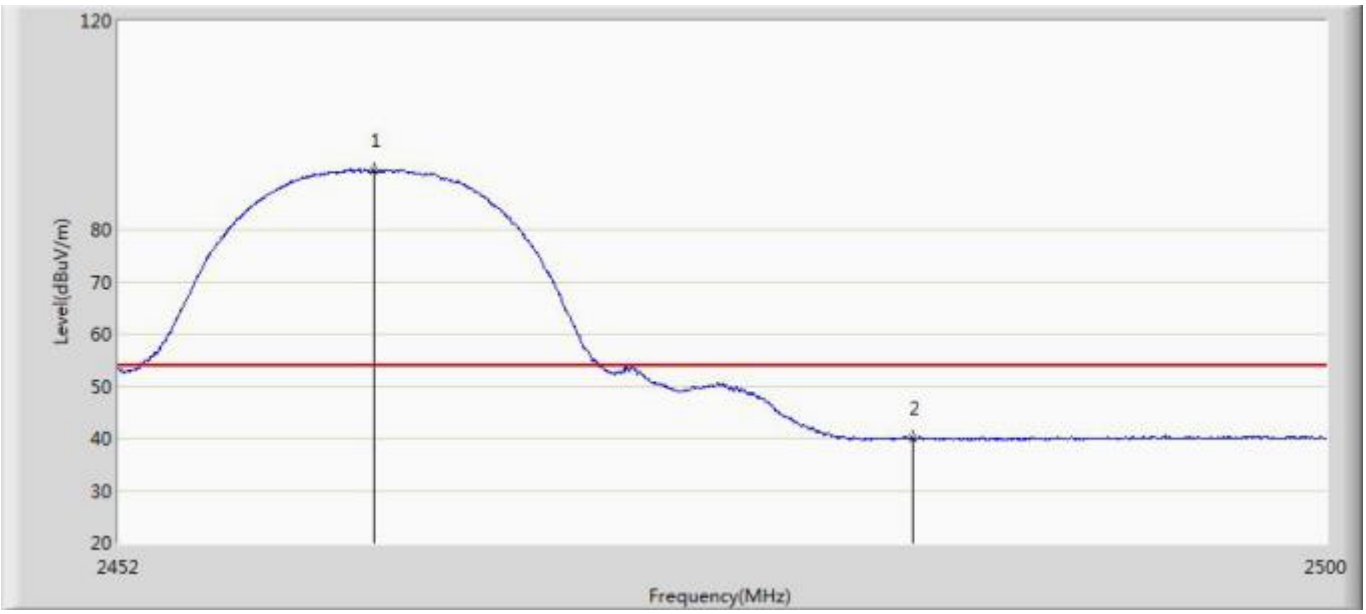
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2461.288	103.646	67.031	N/A	N/A	36.615	AV
2		2483.500	41.009	4.542	-12.991	54.000	36.467	AV

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:19
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2462MHz by 802.11b with Ant 2	



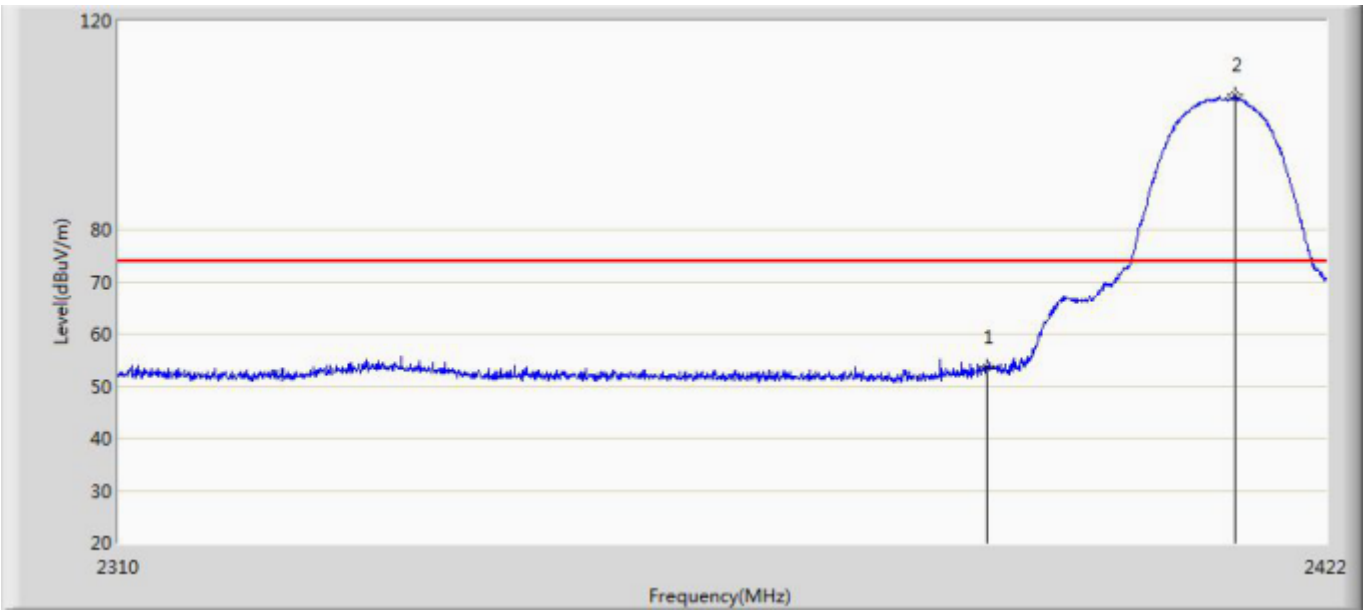
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.512	97.842	61.220	N/A	N/A	36.622	PK
2		2483.500	52.497	16.030	-21.503	74.000	36.467	PK

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:29
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2462MHz by 802.11b with Ant 2	



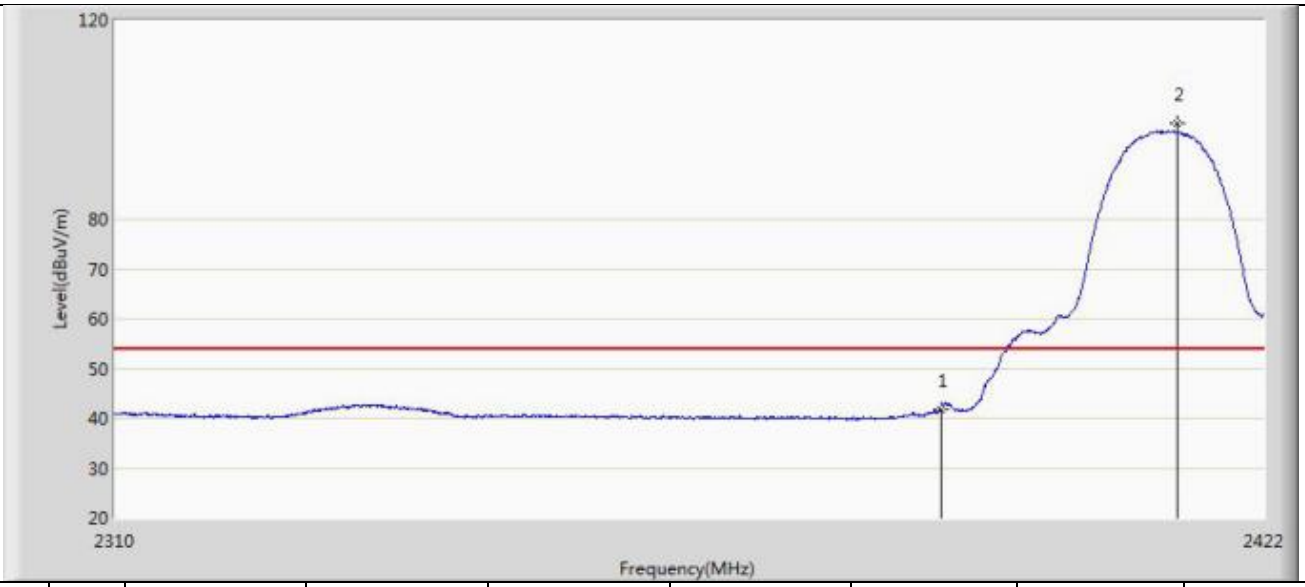
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.104	91.357	54.729	N/A	N/A	36.627	AV
2		2483.500	39.954	3.487	-14.046	54.000	36.467	AV

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2412MHz by 802.11g with Ant 2	



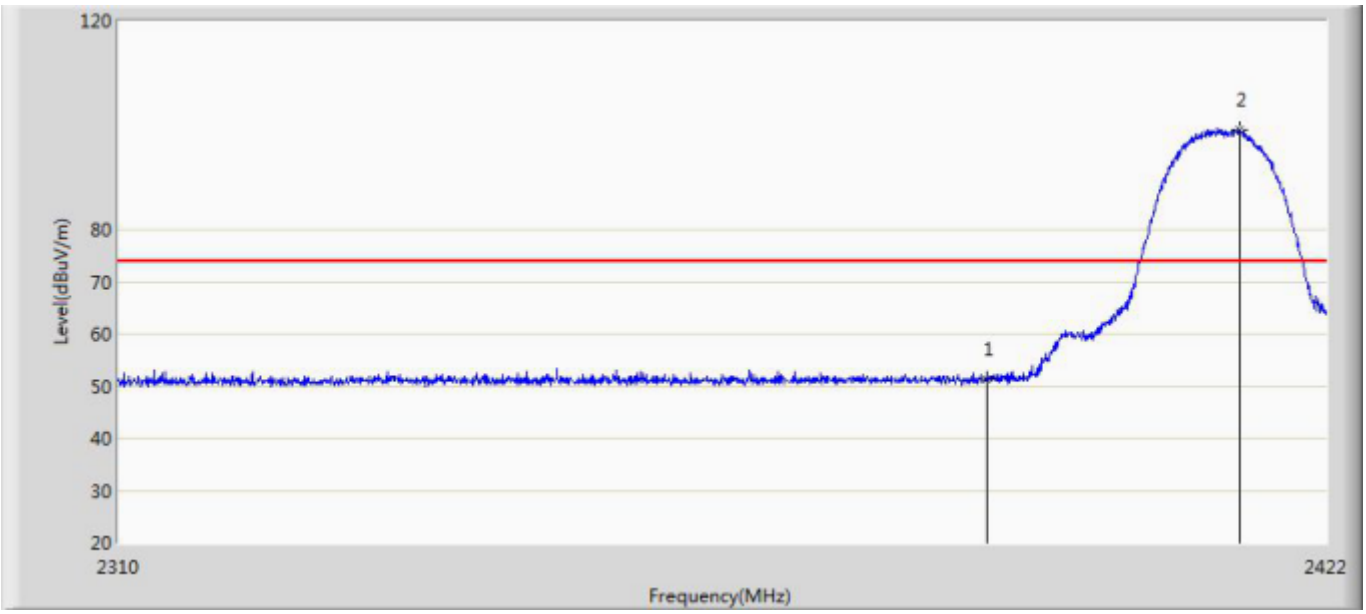
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	53.624	17.294	-20.376	74.000	36.329	PK
2	*	2413.376	105.699	69.334	N/A	N/A	36.365	PK

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2412MHz by 802.11g with Ant 2	



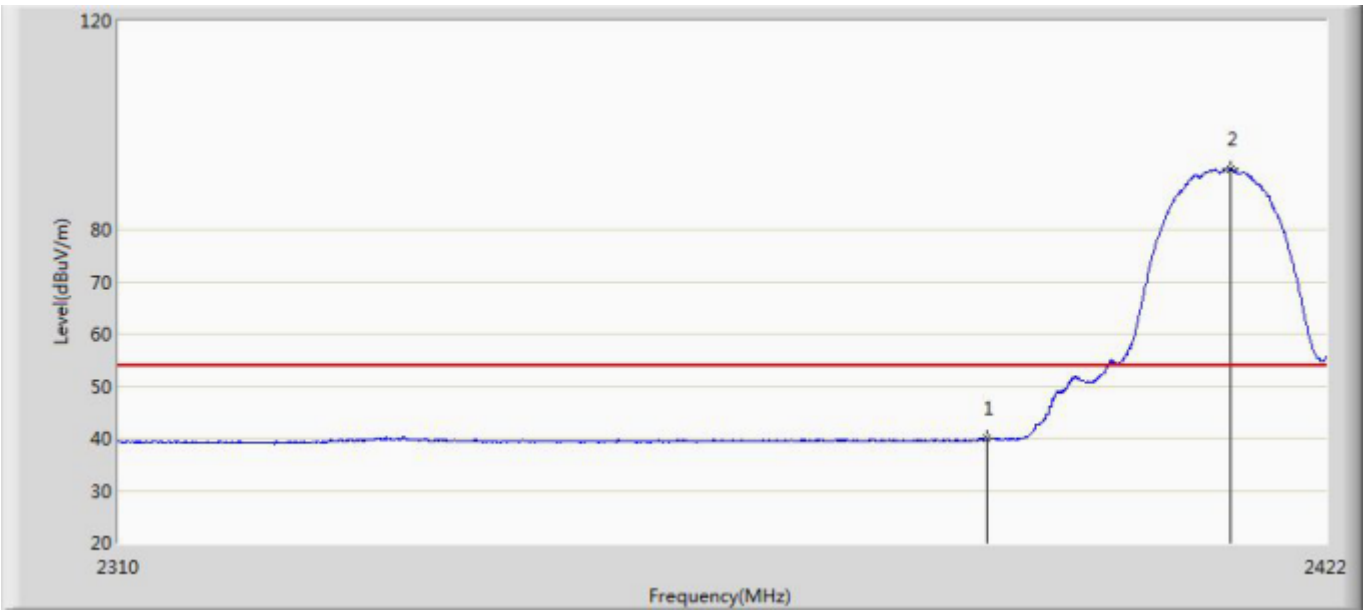
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	41.680	5.350	-12.320	54.000	36.329	AV
2	*	2413.376	105.699	69.334	N/A	N/A	36.365	AV

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2412MHz by 802.11g with Ant 2	



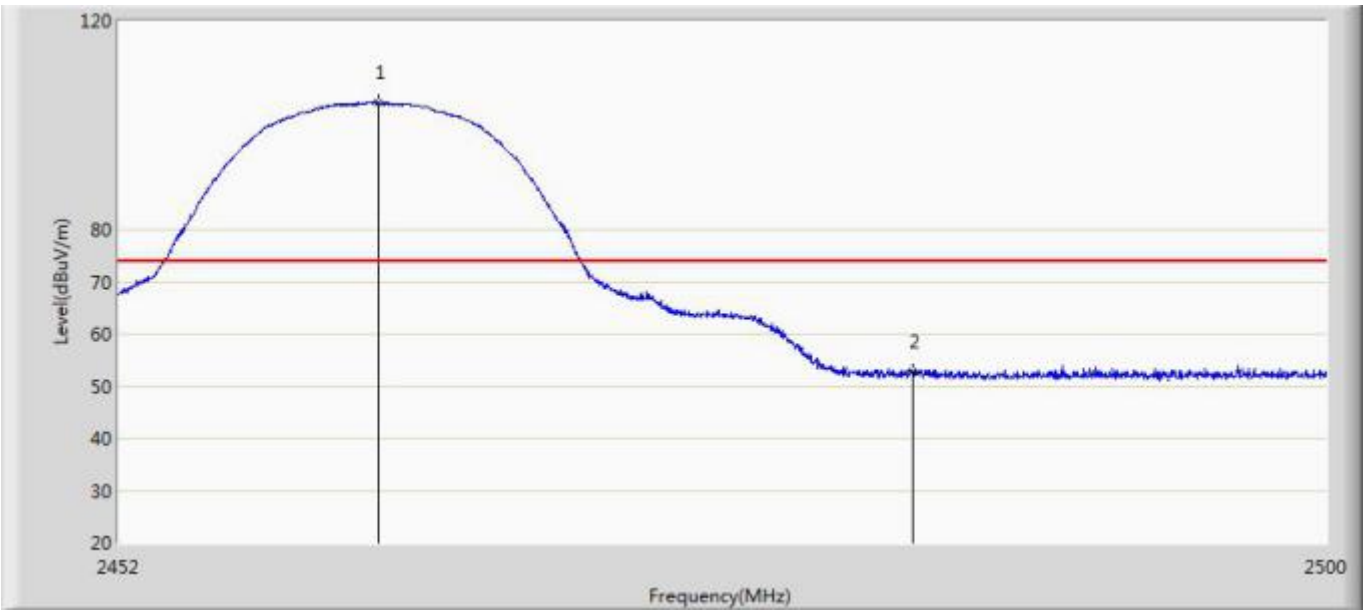
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.368	15.038	-22.632	74.000	36.329	PK
2	*	2413.824	99.146	62.774	N/A	N/A	36.371	PK

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:41
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2412MHz by 802.11g with Ant 2	



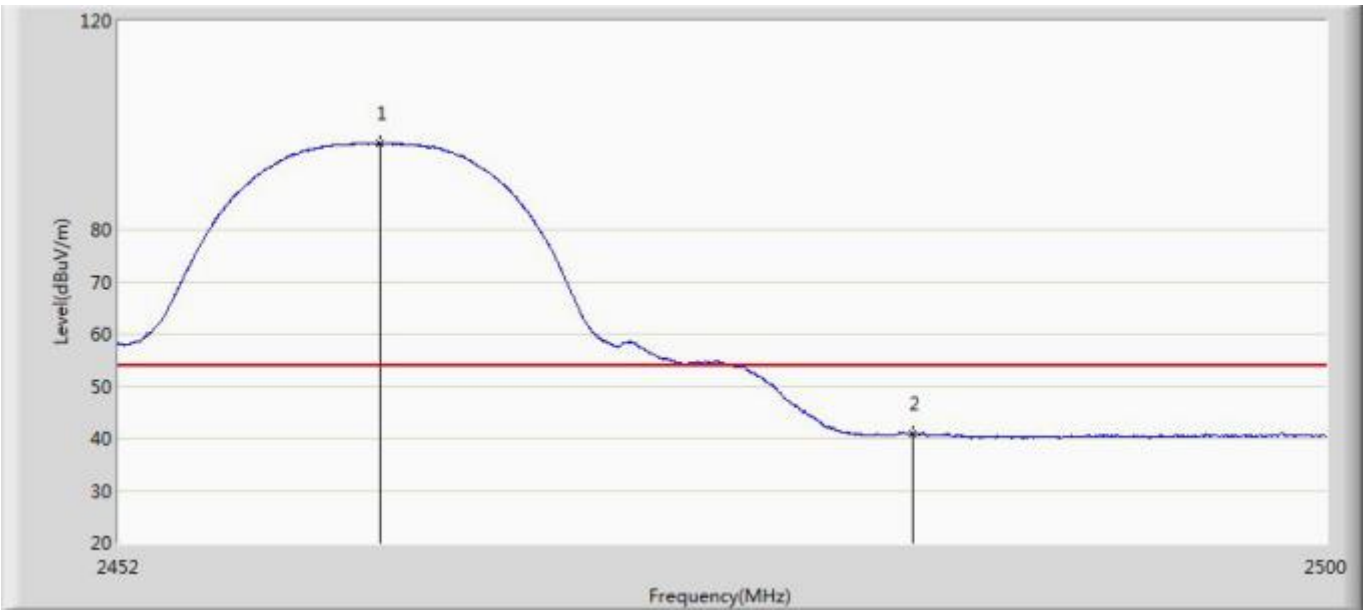
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	39.992	3.662	-14.008	54.000	36.329	AV
2	*	2412.984	91.712	55.353	N/A	N/A	36.358	AV

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:43
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2462MHz by 802.11g with Ant 2	



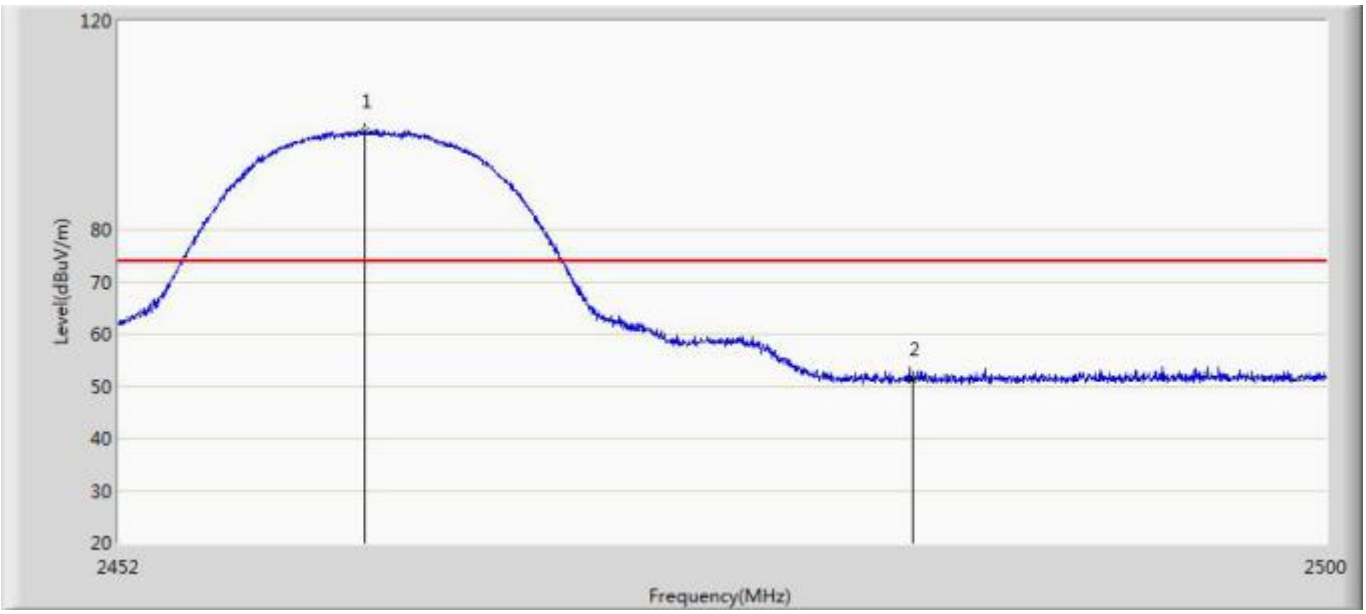
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.272	104.368	67.743	N/A	N/A	36.625	PK
2		2483.500	52.780	16.313	-21.220	74.000	36.467	PK

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2462MHz by 802.11g with Ant 2	



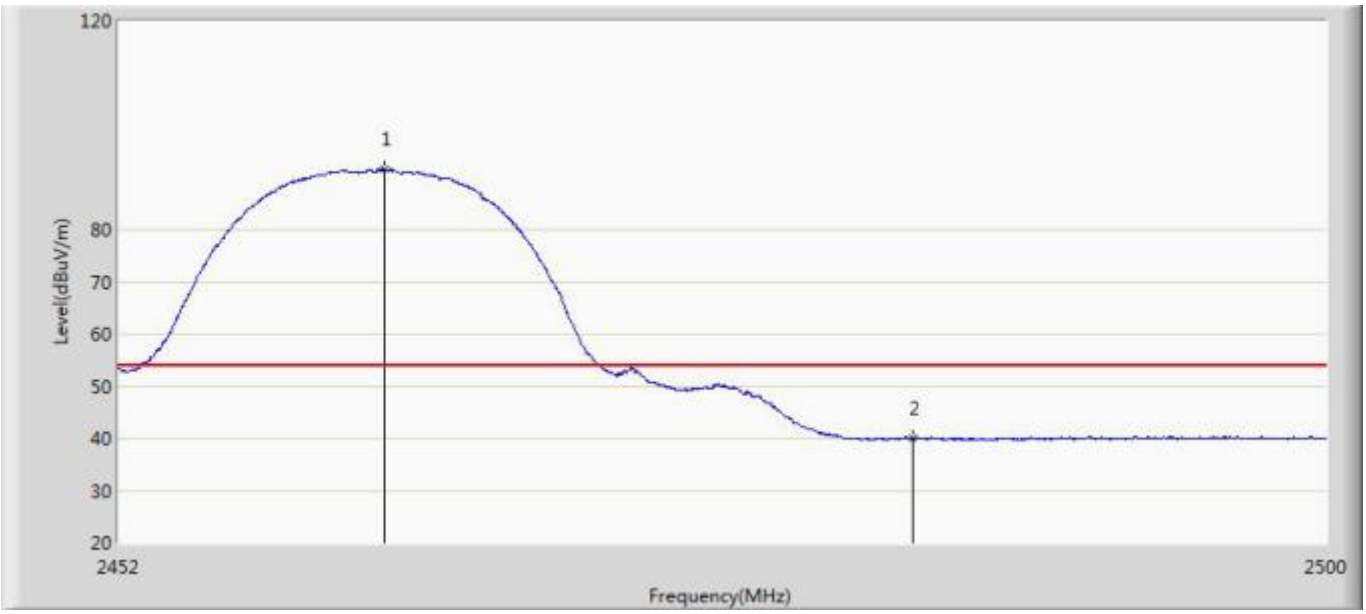
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.320	96.558	59.933	N/A	N/A	36.624	AV
2		2483.500	40.863	4.396	-13.137	54.000	36.467	AV

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2462MHz by 802.11g with Ant 2	



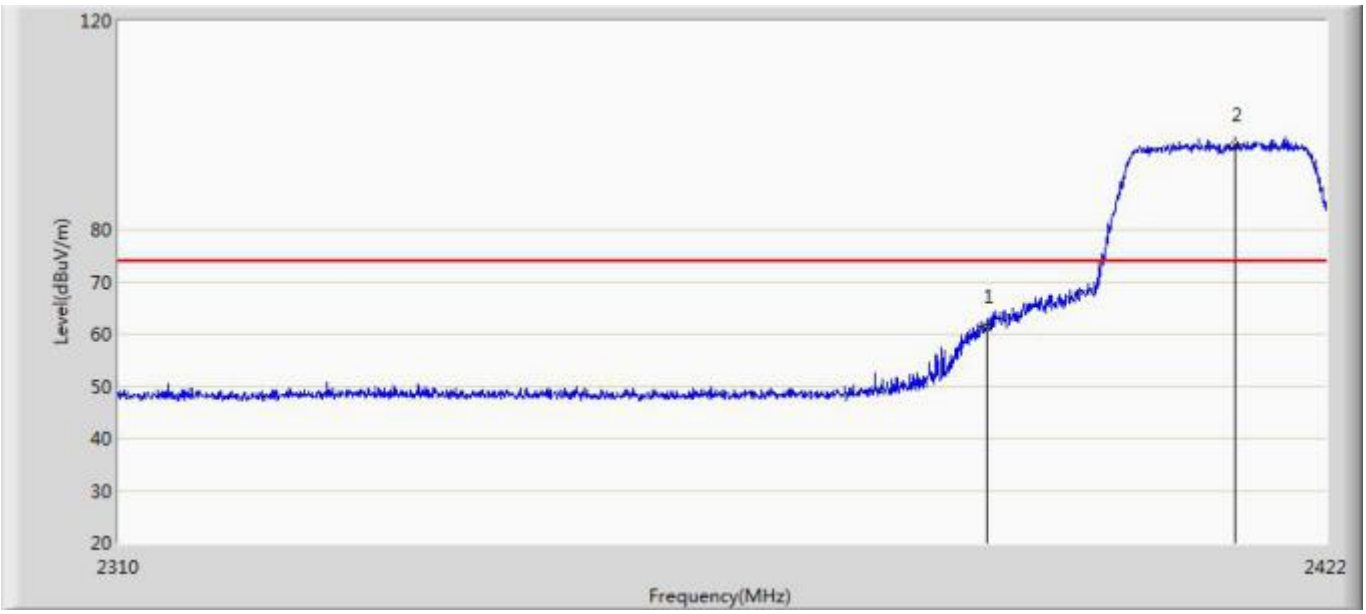
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2461.720	98.770	62.147	N/A	N/A	36.624	PK
2		2483.500	51.408	14.941	-22.592	74.000	36.467	PK

Engineer: Tommie	
Site: AC5	Time: 2018/02/12 - 19:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2462MHz by 802.11g with Ant 2	



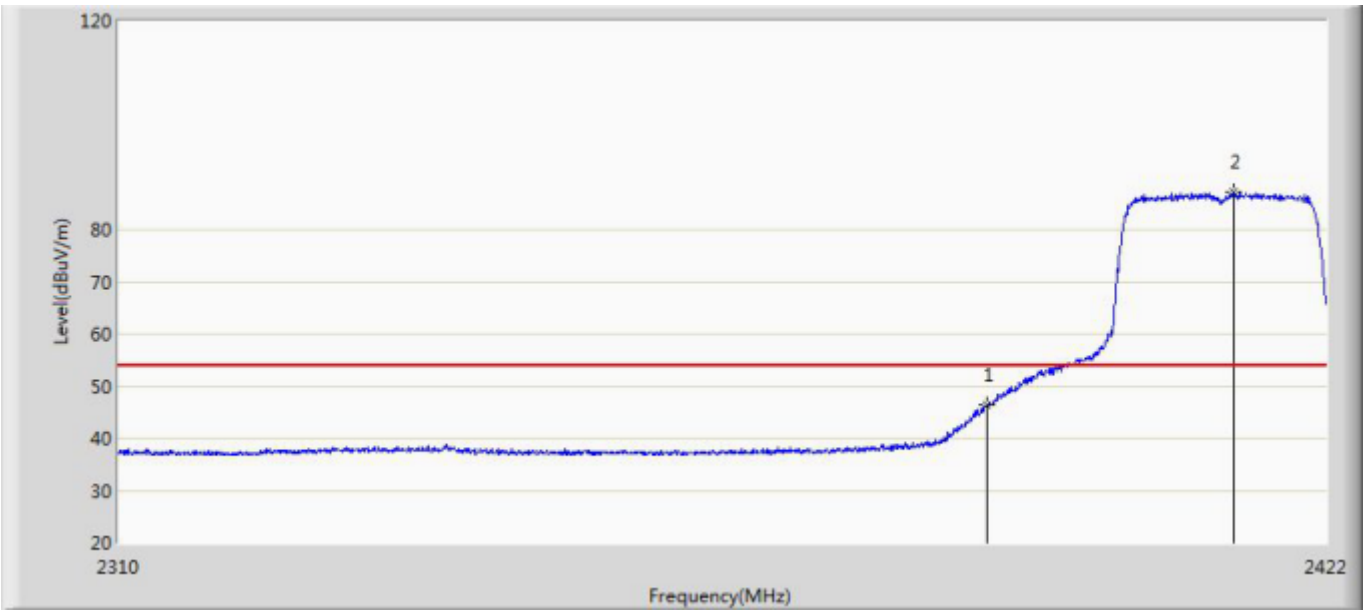
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.488	91.616	54.994	N/A	N/A	36.623	AV
2		2483.500	39.912	3.445	-14.088	54.000	36.467	AV

Engineer: Tommie	
Site: AC5	Time: 2018/02/28 - 09:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2412MHz by 802.11n20 with Ant 2	



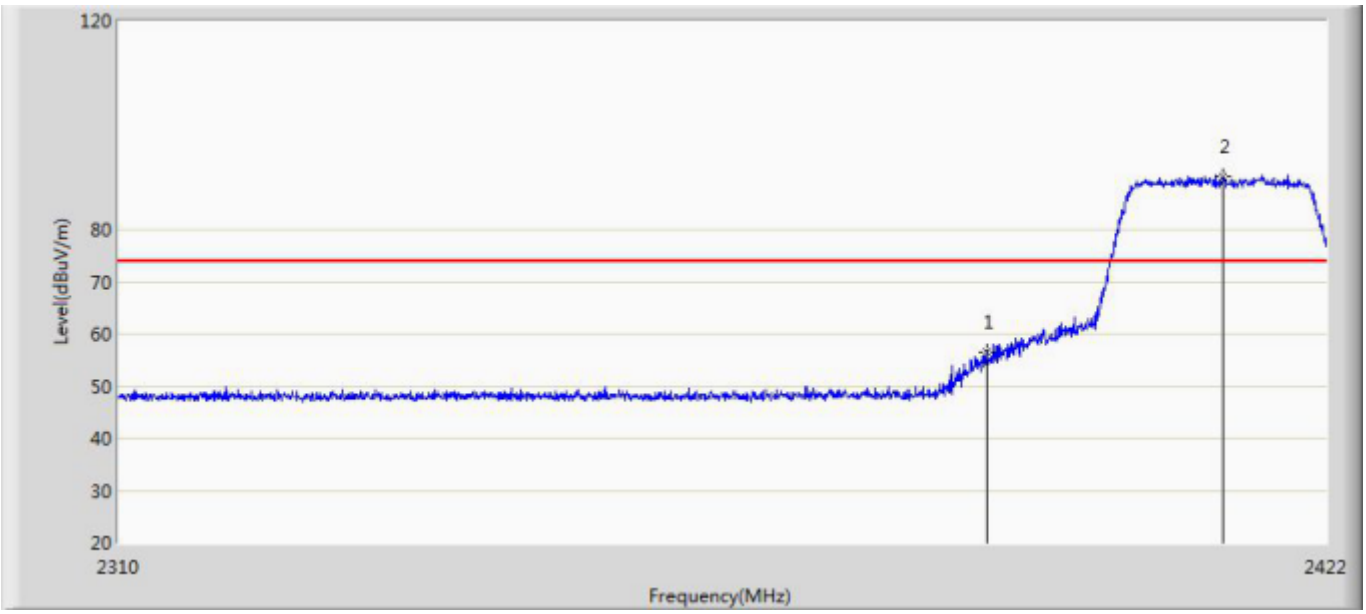
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	61.544	25.214	-12.456	74.000	36.329	PK
2	*	2413.376	96.329	59.964	N/A	N/A	36.365	PK

Engineer: Tommie	
Site: AC5	Time: 2018/02/28 - 09:23
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2412MHz by 802.11n20 with Ant 2	



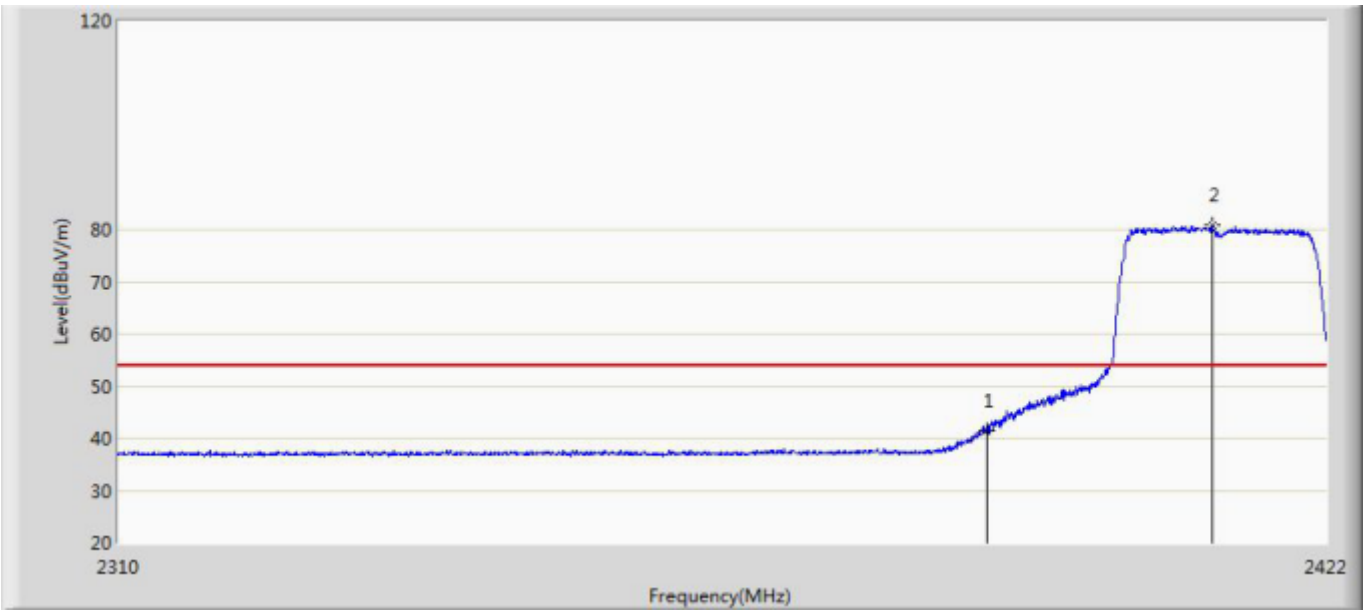
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	46.380	10.050	-7.620	54.000	36.329	AV
2	*	2413.208	87.256	50.894	N/A	N/A	36.362	AV

Engineer: Tommie	
Site: AC5	Time: 2018/02/28 - 09:24
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2412MHz by 802.11n20 with Ant 2	



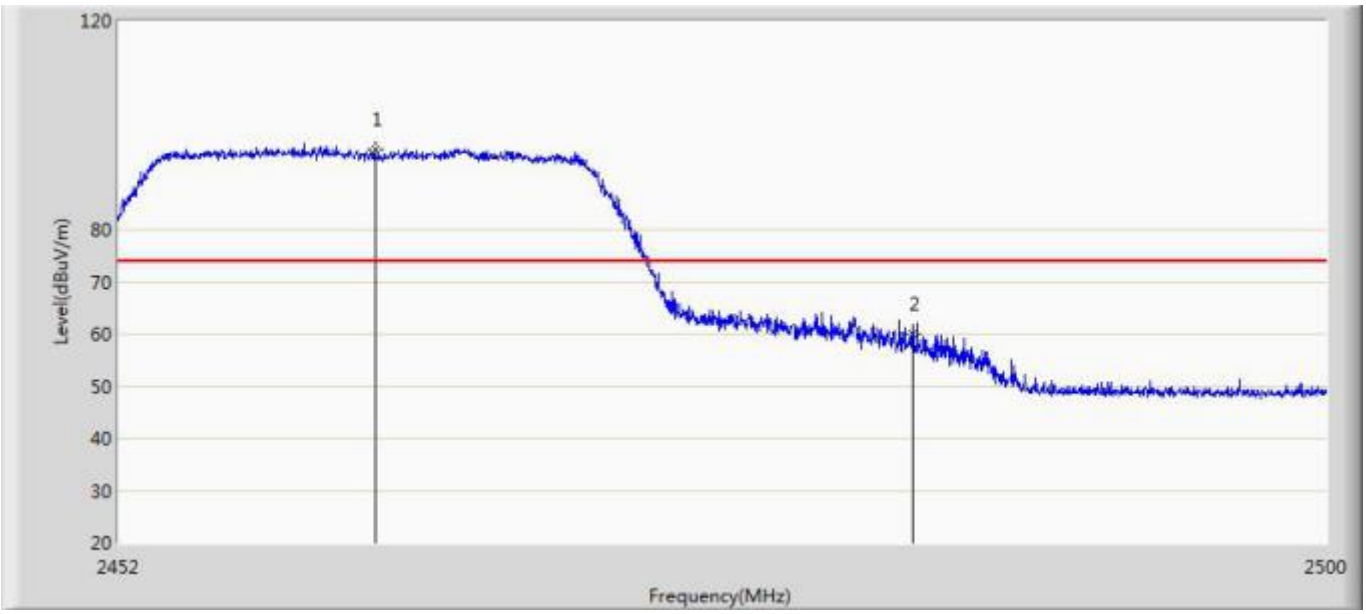
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	56.595	20.265	-17.405	74.000	36.329	PK
2	*	2412.256	90.130	53.783	N/A	N/A	36.347	PK

Engineer: Tommie	
Site: AC5	Time: 2018/02/28 - 09:28
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2412MHz by 802.11n20 with Ant 2	



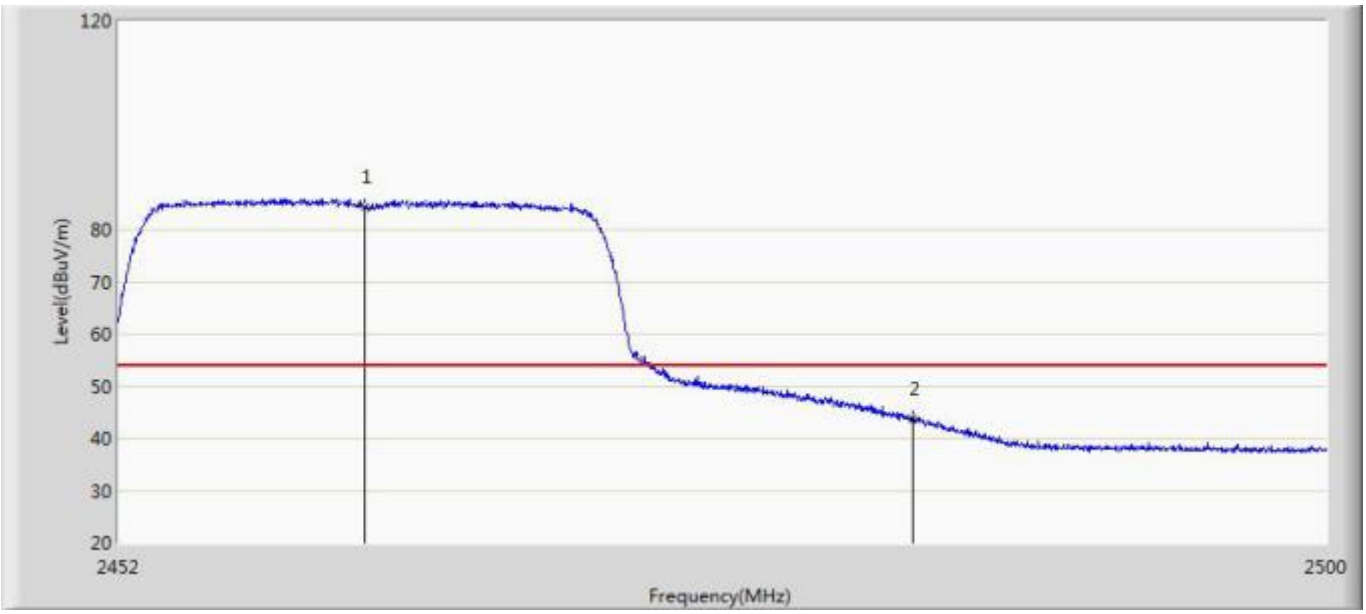
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	41.557	5.227	-12.443	54.000	36.329	AV
2	*	2411.192	80.781	44.451	N/A	N/A	36.330	AV

Engineer: Tommie	
Site: AC5	Time: 2018/02/28 - 09:29
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2462MHz by 802.11n20 with Ant 2	



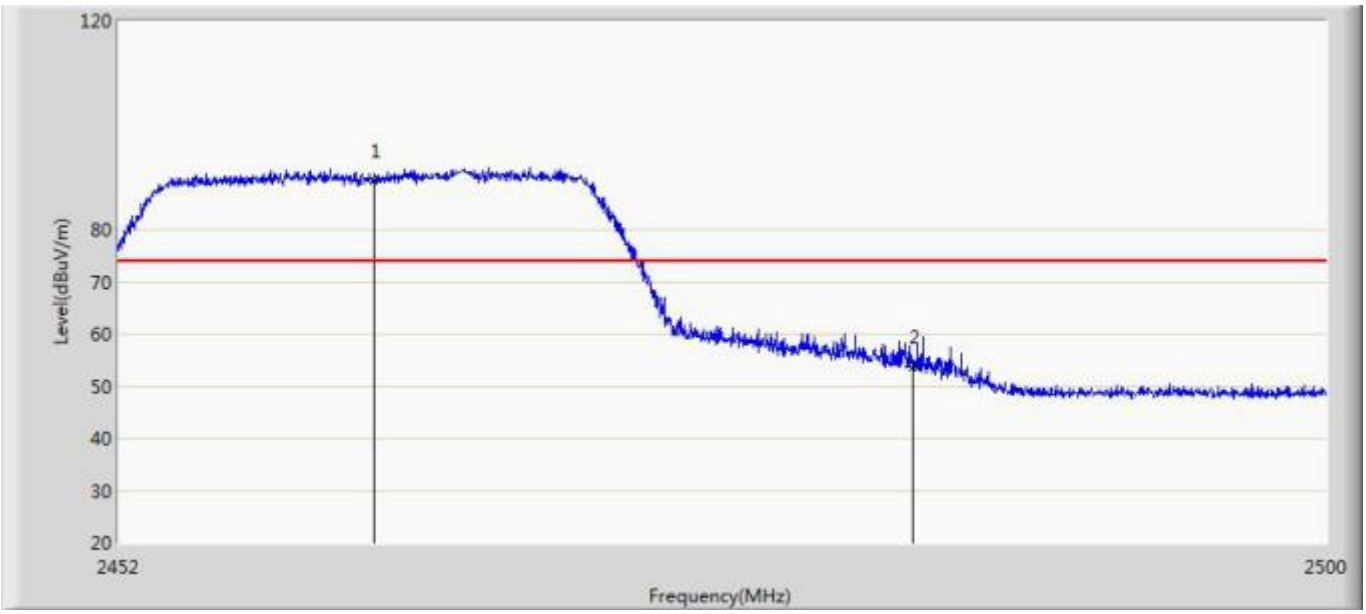
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.152	95.286	58.659	N/A	N/A	36.627	PK
2		2483.500	59.901	23.434	-14.099	74.000	36.467	PK

Engineer: Tommie	
Site: AC5	Time: 2018/02/28 - 09:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2462MHz by 802.11n20 with Ant 2	



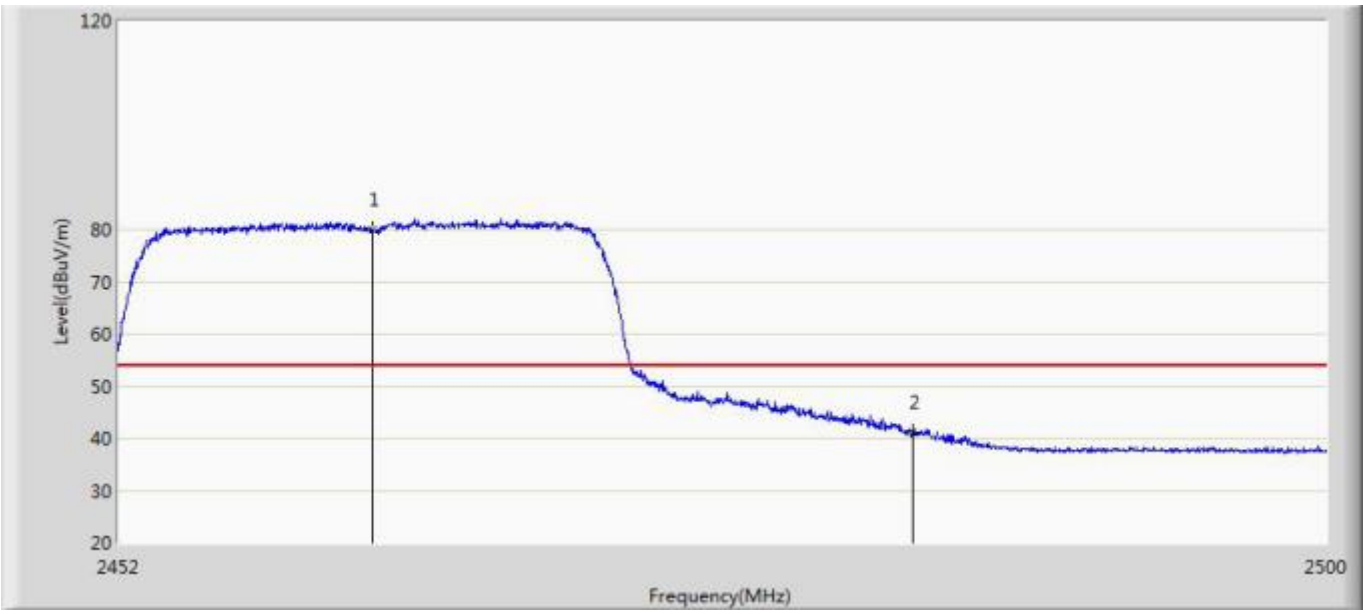
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2461.744	84.361	47.737	N/A	N/A	36.624	AV
2		2483.500	43.632	7.165	-10.368	54.000	36.467	AV

Engineer: Tommie	
Site: AC5	Time: 2018/02/28 - 09:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2462MHz by 802.11n20 with Ant 2	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.104	89.315	52.687	N/A	N/A	36.627	PK
2		2483.500	53.503	17.036	-20.497	74.000	36.467	PK

Engineer: Tommie	
Site: AC5	Time: 2018/02/28 - 09:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Connected Sleep & Wake-up light	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2462MHz by 802.11n20 with Ant 2	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.056	80.120	43.492	N/A	N/A	36.628	AV
2		2483.500	41.020	4.553	-12.980	54.000	36.467	AV

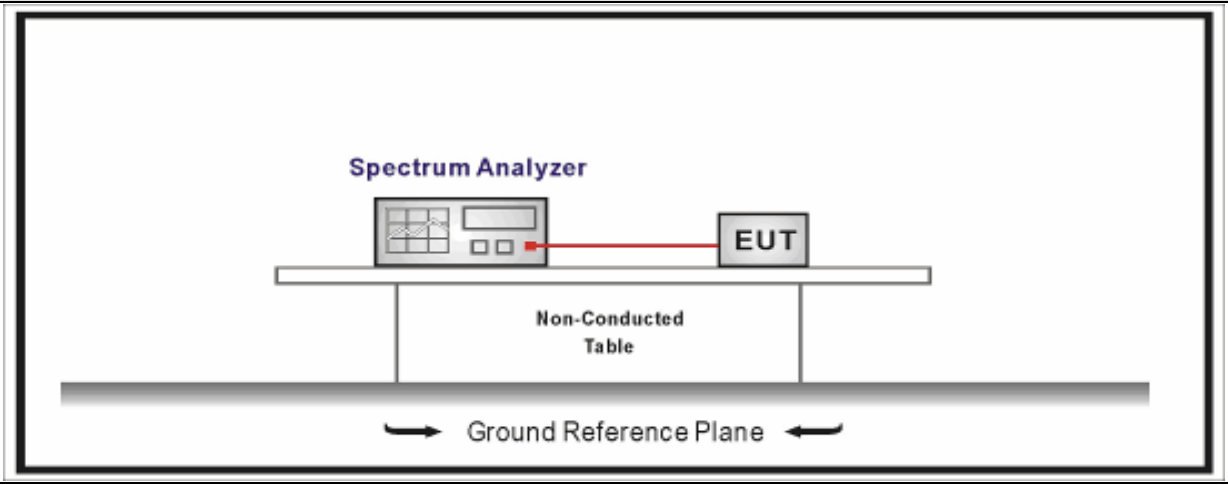
7. Occupied Bandwidth

7.1. Test Equipment

Occupied Bandwidth / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2018.02.04	2019.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2017.04.09	2018.04.08
MXA Signal Anlyzer	Keysight	N9020A	MY56060147	2017.04.09	2018.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2017.04.10	2018.04.09
Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

7.2. Test Setup

Occupied Bandwidth test setup:



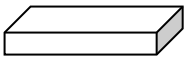
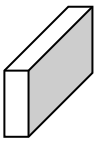
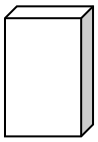
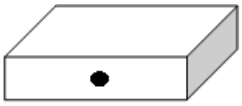
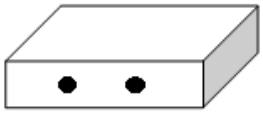
7.3. Limit

Occupied Bandwidth
Systems using digital modulation techniques operate in the2400-2483.5 MHz .The minimum 6 dB bandwidth shall be at least 500 kHz

7.4. Test Procedure

Test Method				
	Reference Rule		Chapter	Description
☒	ANSI C63.10		11.8	DTS bandwidth
	☐	ANSI C63.10	11.8.1	Option 1
	☒	ANSI C63.10	11.8.2	Option 2

7.5. EUT test definition

Item	Occupied Bandwidth			
Device Category	☐	Fixed point-to-point		
	☐	Emit multiple directional beams, simultaneously or sequentially		
	☒	Other cases		
Test mode	Mode 1~3			
Test method	☐	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis ☐	Worst Axis ☐	Worst Axis ☐
	☒	Conducted		
	☐	Chain 1		
				
	☒	Chain 1	Chain 2	
				
	☐	Chain 1	Chain 2	Chain 3

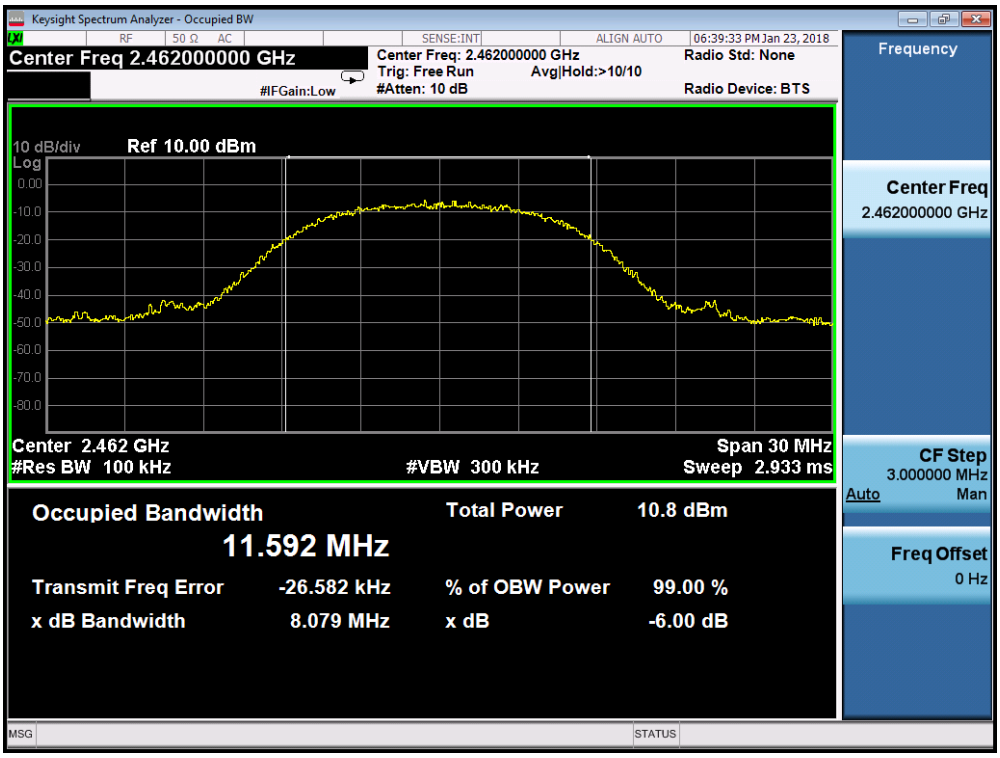
7.6. Test Result

Product Name	:	Wake-up Light	Power	:	AC 120V/60Hz
Test Mode	:	Mode1~3	Test Site	:	TR8
Test Date	:	2018.01.23	Test Engineer	:	Tommie

Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (MHz)		6dB Occupied Bandwidth (MHz)		Limit (kHz)	Result
			Ant 1	Ant 2	Ant 1	Ant 2		
1	01	2412	11.600	11.578	8.584	8.610	>500	Pass
1	06	2437	11.590	11.551	8.657	8.412	>500	Pass
1	11	2462	11.611	11.578	8.799	9.157	>500	Pass
2	01	2412	11.564	11.553	8.662	8.320	>500	Pass
2	06	2437	11.631	11.547	8.448	8.502	>500	Pass
2	11	2462	11.592	11.533	8.079	8.351	>500	Pass
3	01	2412	17.760	17.724	17.720	17.740	>500	Pass
3	06	2437	17.786	17.731	17.770	17.770	>500	Pass
3	11	2462	17.772	17.731	17.760	17.750	>500	Pass

Note : The worst case of Occupied Bandwidth as below in next page:

Mode 2 CH11 (2462MHz) Ant 1



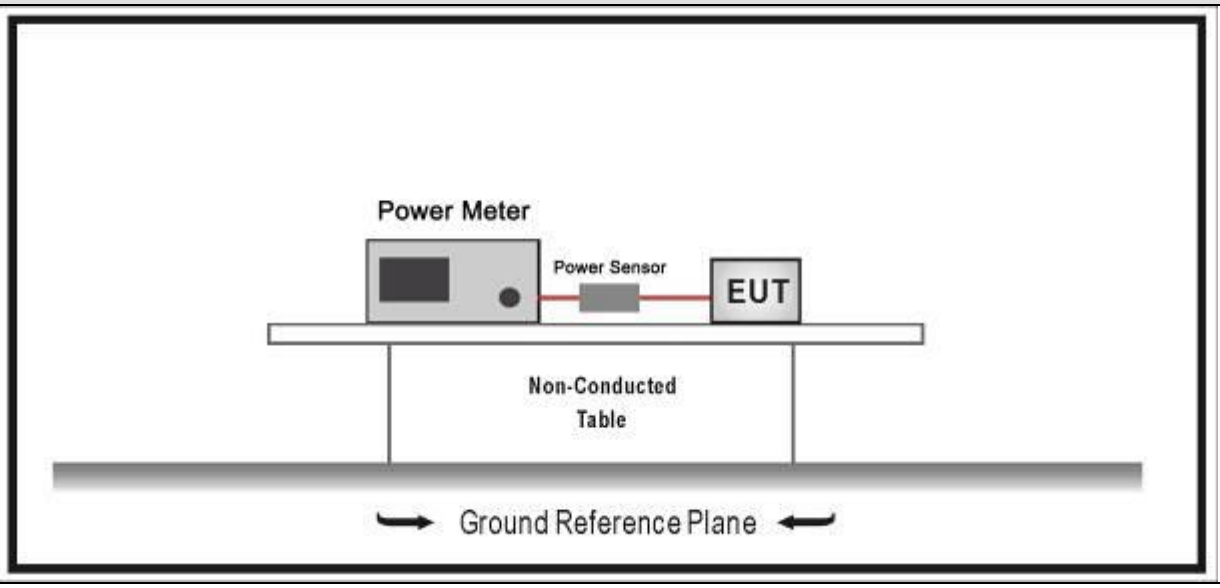
8. Fundamental emission output power

8.1. Test Equipment

Fundamental emission output power/ TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2018.01.04	2019.01.03
Spectrum Analyzer	Agilent	N9010A	MY48030494	2018.02.04	2019.02.03
Wideband Peak Power Meter	Anritsu	ML2495A	0905006	2017.10.14	2018.10.13
Power Sensor	Anritsu	MA2411B	0846014	2017.10.14	2018.10.13
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2017.04.10	2018.04.09
Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

8.2. Test Setup

Fundamental emission output power test setup



8.3. Limit

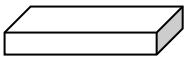
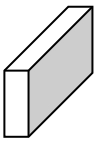
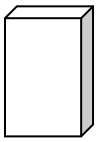
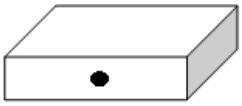
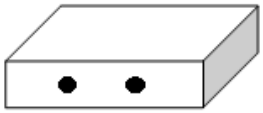
Fundamental emission output power Limit			
☒	G_{TX} ＜6dBi		P_{out}≤30dBm
☐	G_{TX} ＞6dBi		
	☐	Non-Fix point-point	P_{out}≤30-(G_{TX} -6)
	☐	Fix point-point	P_{out}≤30-[(G_{TX}-6)]/3
	☐	Point-to-multipoint	Pout≤30-(GTX-6)
	☐	Overlap Beams	P_{out}≤30-[(G_{TX}-6)]/3
	☐	Aggregate power transmitted simultaneously on all beams	P_{out}≤30-[(G_{TX}-6)]/3
	☐	single directional beam	P_{out}≤30-[(G_{TX}-6)]/3+8dB
Note 1 : G_{TX} directional gain of transmitting antennas. Note 2 : P_{out} is maximum peak conducted output power .			

8.4. Test Procedure

Fundamental emission output power Test Method						
	References Rule				Chapter	Description
☒	ANSI C63.10				11.9	Fundamental emission output power
	☒	ANSI C63.10			11.9.1	Maximum peak conducted output power
		☐	ANSI C63.10		11.9.1.1	RBW ≥ DTS bandwidth
		☐	ANSI C63.10		11.9.1.2	Integrated band power method
		☒	ANSI C63.10		11.9.1.3	PKPM1 Peak power meter method
	☐	ANSI C63.10			11.9.2	Maximum conducted (average) output power
		☐	ANSI C63.10		11.9.2.2	Measurement using a spectrum analyzer (SA)
			☐	ANSI C63.10	11.9.2.2.2	Method AVGSA-1(Duty cycle⩾98%)
			☐	ANSI C63.10	11.9.2.2.3	Method AVGSA-1A(Duty cycle⩾98%)
			☐	ANSI C63.10	11.9.2.2.4	Method AVGSA-2(Duty cycle⩽98%)
			☐	ANSI C63.10	11.9.2.2.5	Method AVGSA-2A(Duty cycle⩽98%)
			☐	ANSI C63.10	11.9.2.2.4	Method AVGSA-3
			☐	ANSI C63.10	11.9.2.2.5	Method AVGSA-3A
		☐	ANSI C63.10		11.9.2.3	Measurement using a power meter (PM)
			☐	ANSI C63.10	11.9.2.3.1	Method AVGPM
			☐	ANSI C63.10	11.9.2.3.2	Method AVGPM-G

Directional Gain Calculations for In-Band test method				
	References Rule		Chapter	Description
☐	KDB 662911		F2)a)	Basic methodology
	☐	KDB 662911	F2)a) (i)	transmit signals are correlated
	☐	KDB 662911	F2)a) (ii)	transmit signals are uncorrelated
☐	KDB 662911		F2)b)	Sectorized antenna systems.
☐	KDB 662911		F2)c)	Cross-polarized antennas
	☐	ANSI C63.10	F2)c) (i)	Cross-polarized antennas
	☐	ANSI C63.10	F2)c) (ii)	Multiple antennas
☒	KDB 662911		F2)e)	Spatial Multiplexing
	☐	KDB 662911	F2)e) (i)	Antennas have the same gain
	☐	KDB 662911	F2)e) (ii)	Antenna have the different gain with one spatial stream
	☒	KDB 662911	F2)e) (iii)	Antenna have the different gain with more than one spatial stream
☒	KDB 662911		F2)f)	Cyclic Delay Diversity (CDD)
	☐	KDB 662911	F2)f) (i)	Antennas have the same gain
	☒	KDB 662911	F2)f) (ii)	Antenna have the different gain with one spatial stream
	☐	KDB 662911	F2)f) (iii)	Antenna have the different gain with more than one spatial stream

8.5. EUT test definition

Item	Fundamental emission output power			
Device Category	☐	Fixed point-to-point		
	☐	Emit multiple directional beams, simultaneously or sequentially		
	☒	Other cases		
Test mode	Mode 1~3			
Test method	☐	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis ☐	Worst Axis ☐	Worst Axis ☐
	☒	Conducted		
	☐	Chain 1		
				
	☒	Chain 1	Chain 2	
				
	☐	Chain 1	Chain 2	Chain 3

8.6. Test Result

Product Name	:	Wake-up Light	Power	:	AC 120V/60Hz
Test Mode	:	Mode1~3	Test Site	:	TR8
Test Date	:	2018.03.05	Test Engineer	:	Tommie

Mode	Channel	Test Frequency (MHz)	Peak Power Output (dBm)		Limit (dBm)	Result
			Ant 1	Ant 2		
1	01	2412	15.01	18.37	30	Pass
1	06	2437	14.94	18.23	30	Pass
1	11	2462	14.92	18.55	30	Pass
2	01	2412	14.98	18.37	30	Pass
2	06	2437	14.91	18.25	30	Pass
2	11	2462	14.87	18.52	30	Pass
3	01	2412	19.23	22.63	30	Pass
3	06	2437	19.34	22.65	30	Pass
3	11	2462	19.35	23.03	30	Pass

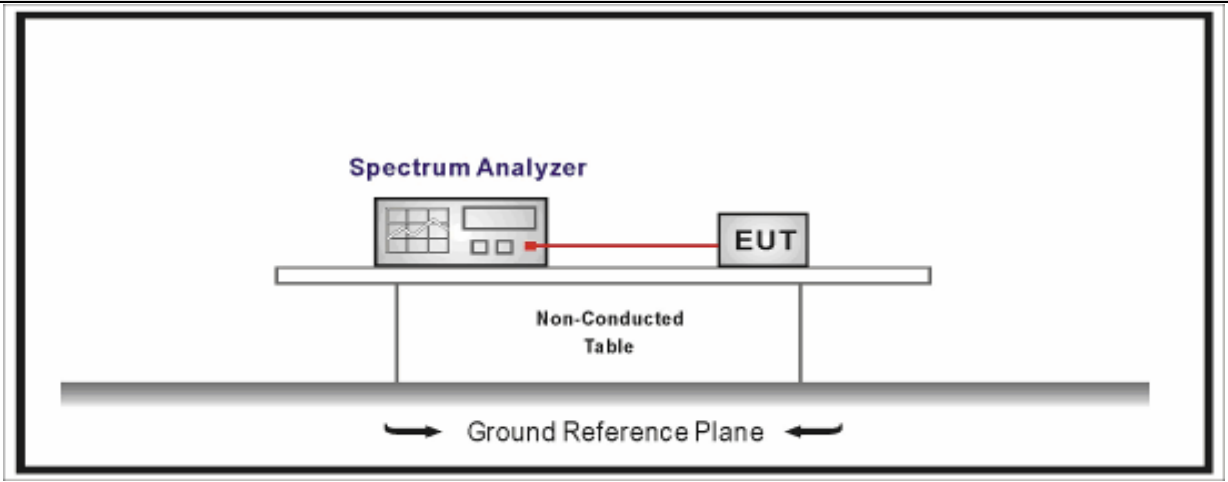
9. Power Spectral Density

9.1. Test Equipment

Power Spectral Density / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2018.02.04	2019.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2017.04.09	2018.04.08
MXA Signal Anlyzer	Keysight	N9020A	MY56060147	2017.04.09	2018.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2017.04.10	2018.04.09
Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

9.2. Test Setup

Power Spectral Density test setup



9.3. Limit

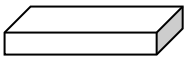
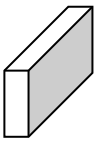
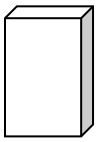
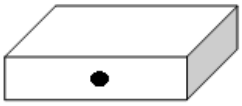
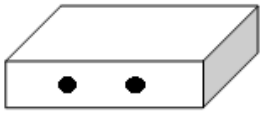
Power Spectral Density Limit
Power Spectral Density≤8dBm/3kHz

9.4. Test Procedure

Power Spectral Density Test Method				
	References Rule		Chapter	Description
☒	ANSI C63.10		11.10	Maximum power spectral density level in the fundamental emission
	☒	ANSI C63.10	11.10.2	Method PKPSD (peak PSD)
	☐	ANSI C63.10	11.10.3	Method AVGPSD-1(Duty cycle⩾98%)
	☐	ANSI C63.10	11.10.4	Method AVGPSD-1A(Duty cycle⩾98%)
	☐	ANSI C63.10	11.10.5	Method AVGPSD-2(Duty cycle＜98%)
	☐	ANSI C63.10	11.10.6	Method AVGPSD-2A(Duty cycle＜98%)
	☐	ANSI C63.10	11.10.7	Method AVGPSD-3
	☐	ANSI C63.10	11.10.8	Method AVGPSD-3A

Directional Gain Calculations for In-Band test method				
	Referred Rule		Chapter	Description
☐	KDB 662911		F2)a)	Basic methodology
	☐	KDB 662911	F2)a) (i)	transmit signals are correlated
	☐	KDB 662911	F2)a) (ii)	transmit signals are uncorrelated
☐	KDB 662911		F2)b)	Sectorized antenna systems.
☐	KDB 662911		F2)c)	Cross-polarized antennas
	☐	ANSI C63.10	F2)c) (i)	Cross-polarized antennas
	☐	ANSI C63.10	F2)c) (ii)	Multiple antennas
☒	KDB 662911		F2)e)	Spatial Multiplexing
	☐	KDB 662911	F2)e) (i)	Antennas have the same gain
	☐	KDB 662911	F2)e) (ii)	Antenna have the different gain with one spatial stream
	☒	KDB 662911	F2)e) (iii)	Antenna have the different gain with more than one spatial stream
☒	KDB 662911		F2)f)	Cyclic Delay Diversity (CDD)
	☐	KDB 662911	F2)f) (i)	Antennas have the same gain
	☒	KDB 662911	F2)f) (ii)	Antenna have the different gain with one spatial stream
	☐	KDB 662911	F2)f) (iii)	Antenna have the different gain with more than one spatial stream

9.5. EUT test definition

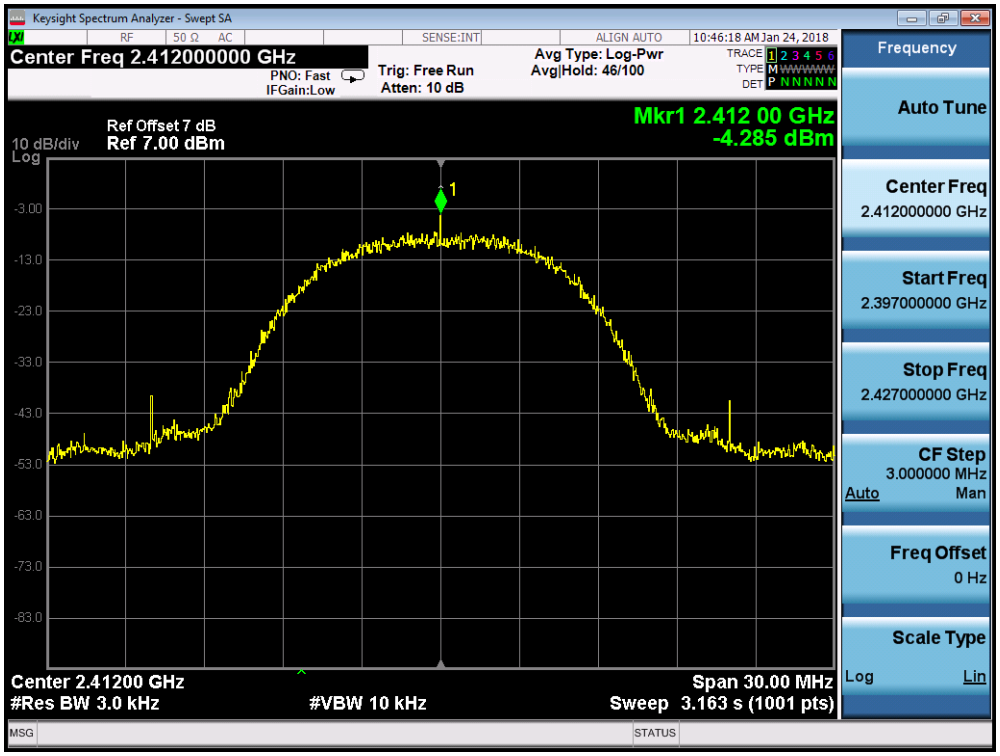
Item	Power Spectral Density Test Method			
Device Category	☐	Fixed point-to-point		
	☐	Emit multiple directional beams, simultaneously or sequentially		
	☒	Other cases		
Test mode	Mode 1~3			
Test method	☐	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis ☐	Worst Axis ☐	Worst Axis ☐
	☒	Conducted		
	☐	Chain 1		
				
	☒	Chain 1	Chain 2	
				
	☐	Chain 1	Chain 2	Chain 3

9.6. Test Result

Product Name	:	Wake-up Light	Power	:	AC 120V/60Hz
Test Mode	:	Mode1~3	Test Site	:	TR8
Test Date	:	2018.03.05	Test Engineer	:	Tommie

Mode	Channel	Test Frequency (MHz)	Measurement PSD (dBm/3kHz)		Limit (dBm/3kHz)	Result
			Ant 1	Ant 2		
1	01	2412	-9.580	-4.285	8.0	Pass
1	06	2437	-12.241	-5.046	8.0	Pass
1	11	2462	-10.751	-4.611	8.0	Pass
2	01	2412	-10.026	-6.534	8.0	Pass
2	06	2437	-12.353	-5.155	8.0	Pass
2	11	2462	-10.061	-6.288	8.0	Pass
3	01	2412	-12.970	-8.504	8.0	Pass
3	06	2437	-13.864	-7.999	8.0	Pass
3	11	2462	-13.104	-8.497	8.0	Pass

Mode 1 CH01(2412MHz) Ant 2



10. Antenna Requirement

10.1. Limit

Antenna Requirement Limit
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 or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

10.2. Antenna Connector Construction

Antenna Connector Construction	
☐	The use of a permanently attached antenna
☐	The antenna use of a unique coupling to the intentional radiator
☒	The use of a nonstandard antenna jack or electrical connector
Please refer to the attached document “Internal Photograph” to show the antenna connector.	

The End