

FCC Test Report

Product Name : Lyra mini
Trade Name : ASUS
Model No. : MAP-AC1300
FCC ID. : MSQ-RTACBV00

Applicant : ASUSTeK COMPUTER INC.

Address : 4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan

Date of Receipt : Nov. 17, 2016
Issued Date : Jan. 25, 2017
Report No. : 16B0409R-RFUSP03V00-A
Report Version : V1.0



The test results relate only to the samples tested.

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Test Report Certification

Issued Date : Jan. 25, 2017

Report No. : 16B0409R-RFUSP03V00-A

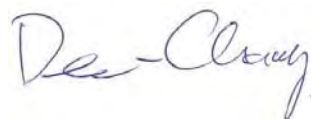


Product Name : Lyra mini
Applicant : ASUSTeK COMPUTER INC.
Address : 4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan
Manufacturer : ASUSTeK COMPUTER INC.
Model No. : MAP-AC1300
FCC ID. : MSQ-RTACBV00
EUT Voltage : AC 100-240V, 50-60Hz
Testing Voltage : AC 120V/60Hz
Trade Name : ASUS
Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2015
Test Lab : Hsin Chu Laboratory
Test Result : Complied

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Documented By :



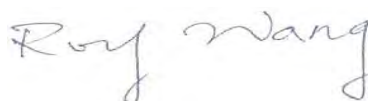
(Demi Chang / Senior Engineering Adm. Specialist)

Tested By :



(Scott Chang / Assistant Engineer)

Approved By :



(Roy Wang / Director)

Revision History

Report No.	Version	Description	Issued Date
16B0409R-RFUSP03V00-A	V1.0	Initial issue of report	Jan. 25, 2017

Laboratory Information

We, **DEKRA Testing and Certification Co., Ltd.**, are an independent RF consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025 specified testing scopes:

Taiwan R.O.C.	:	TAF, Accreditation Number: 3024
USA	:	FCC, Registration Number: 834100
Canada	:	IC, Submission No: 181665 / IC Registration Number: 22397-1 / 22397-2 / 22397-3

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:

<http://www.dekra.com.tw/english/about/certificates.aspx?bval=5>

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site : http://www.dekra.com.tw/index_en.aspx

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1. General Information

1.1. EUT Description

Product Name	Lyra mini
Trade Name	ASUS
Model No.	MAP-AC1300
Frequency Range/Channel Number	2402~2480MHz / 40 Channels
Type of Modulation	Bluetooth 4.0(GFSK)

Antenna Information	
Antenna Type	PCB Antenna
Antenna Gain	2.02 dBi
Beamforming Gain	1.77 dBi

Accessories Information	
USB Cable	Non-Shielded, 2m
LAN Cable	Non-Shielded, 2m
Power Adapter	ASUS, AD2037320910LF I/P: 100-240V~50/60Hz, 0.3A O/P: 5V $\overline{=}$ 2A Cable Out: Non-Shielded, 2m
Power Adapter	ASUS, W12-010N3A I/P: 100-240V~50/60Hz, 0.3A O/P: 5V $\overline{=}$ 2A Cable Out: Non-Shielded, 2m

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00	2402 MHz	Channel 10	2422 MHz	Channel 20	2442 MHz	Channel 30	2462 MHz
Channel 01	2404 MHz	Channel 11	2424 MHz	Channel 21	2444 MHz	Channel 31	2464 MHz
Channel 02	2406 MHz	Channel 12	2426 MHz	Channel 22	2446 MHz	Channel 32	2466 MHz
Channel 03	2408 MHz	Channel 13	2428 MHz	Channel 23	2448 MHz	Channel 33	2468 MHz
Channel 04	2410 MHz	Channel 14	2430 MHz	Channel 24	2450 MHz	Channel 34	2470 MHz
Channel 05	2412 MHz	Channel 15	2432 MHz	Channel 25	2452 MHz	Channel 35	2472 MHz
Channel 06	2414 MHz	Channel 16	2434 MHz	Channel 26	2454 MHz	Channel 36	2474 MHz
Channel 07	2416MHz	Channel 17	2436 MHz	Channel 27	2456 MHz	Channel 37	2476 MHz
Channel 08	2418 MHz	Channel 18	2438 MHz	Channel 28	2458 MHz	Channel 38	2478 MHz
Channel 09	2420 MHz	Channel 19	2440 MHz	Channel 29	2460 MHz	Channel 39	2480 MHz

Note:

1. This device is a Lyra mini including 2.4GHz b/g/n (2x2), BT2.0, BT4.0 and 5GHz a/n/ac (2x2) transmitting and receiving function.
2. Regards to the frequency band operation; the lowest 、 middle and highest frequency of channel were selected to perform the test, and then shown on this report.
3. This device is a composite device in accordance with Part 15 regulations. The receiving function was tested and its number is 16B0409R-RFUSP12V00.
4. The function BT 2.0 was measured and made a test report that the report number is 16B0409R-RFUSP03V00.
5. The function of the 2.4GHz & 5GHz transmitting is measured. The test report of the number is 16B0409R-RFUSP07V00 & 16B0409R-RFUSP05V00.

1.2. Test Mode

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Test Mode	Mode 1: Tx-AD2037320910LF Mode 2: Tx-W12-010N3A
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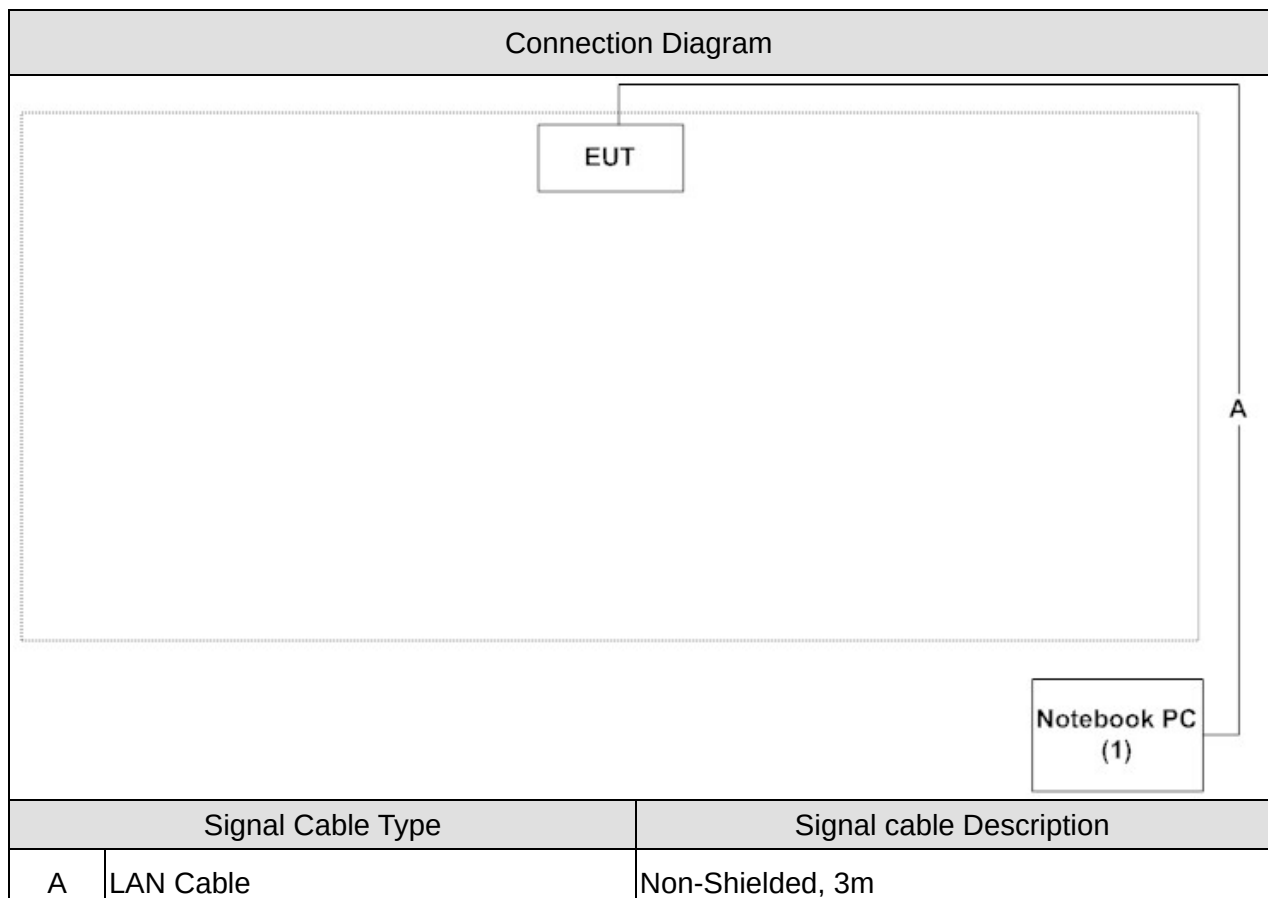
Test Items	Mode	Modulation	Channel	Antenna	Result
Conducted Emission	1/2	GFSK	19	0	Complies
Peak Power Output	1	GFSK	00/19/39	0	Complies
Radiated Emission	1/2	GFSK	00/19/39	0	Complies
RF antenna conducted test	1	GFSK	00/19/39	0	Complies
Radiated Emission Band Edge	1	GFSK	00/39	0	Complies
Occupied Bandwidth	1	GFSK	00/19/39	0	Complies
Power Density	1	GFSK	00/19/39	0	Complies

1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1 Notebook PC	ASUS	X522EP	E5N0CV04 3264197	DoC	Non-Shielded, 1.8m, one ferrite core bonded

1.4. Configuration of tested System



1.5. EUT Exercise Software

1	Setup the EUT as shown in Section 1.4.
2	Execute the test program "QCA Radio Control Toolkit".
3	Configure the test mode, the test channel, and the data rate.
4	Press "Start TX" to start the continuous transmitting.
5	Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 C 15.207 Conducted Emission	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output	15 - 35	24
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission	15 - 35	25
Humidity (%RH)		25 - 75	54
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Band Edge	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth	15 - 35	24
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 RF antenna conducted test	15 - 35	24
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Power Density	15 - 35	24
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000

2. Conducted Emission

2.1. Test Equipment

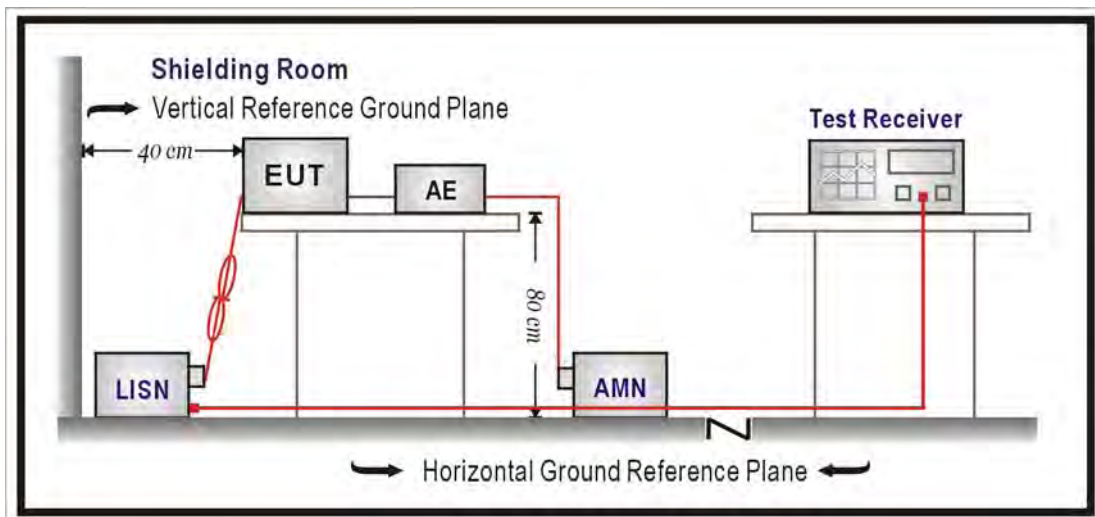
The following test equipments are used during the test:

Conducted Emission / SR2-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Artificial Mains Network	R&S	ENV4200	848411/010	2017/01/20
LISN	R&S	ENV216	100092	2017/08/16
Test Receiver	R&S	ESCS 30	836858/022	2018/01/14

Note: All equipments that need to calibrate are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

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

Remarks: In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT was setup according to ANSI C63.10:2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

2.5. Test Specification

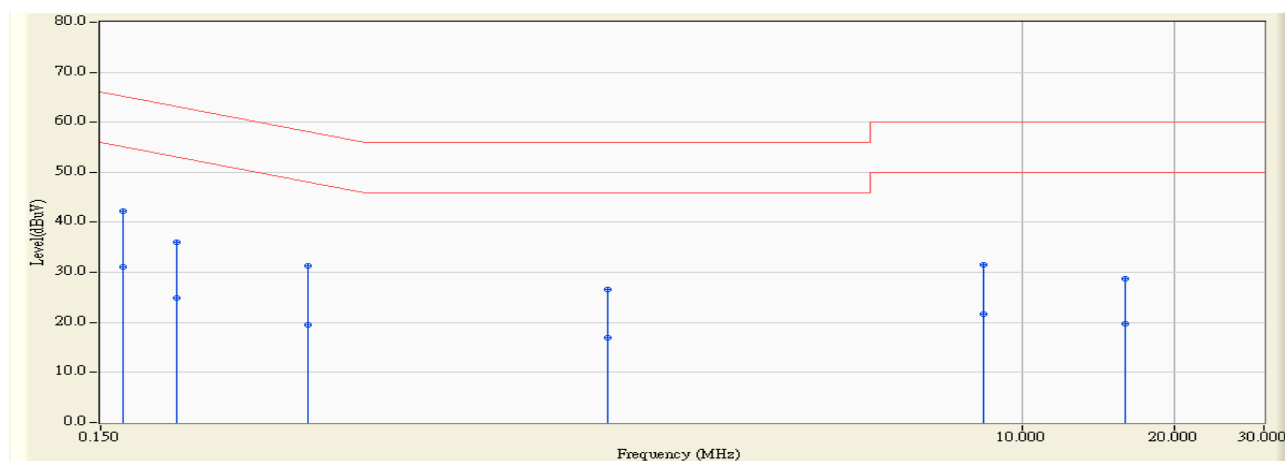
According to FCC Part 15 Subpart C Paragraph 15.207: 2015

2.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

2.7. Test Result

Site : SR2-H	Time : 2017/01/18
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR2-H_LISN(16A)-6_0712 - Line1	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.1.15_BLE_2440MHz Mode 1: Tx-AD2037320910LF

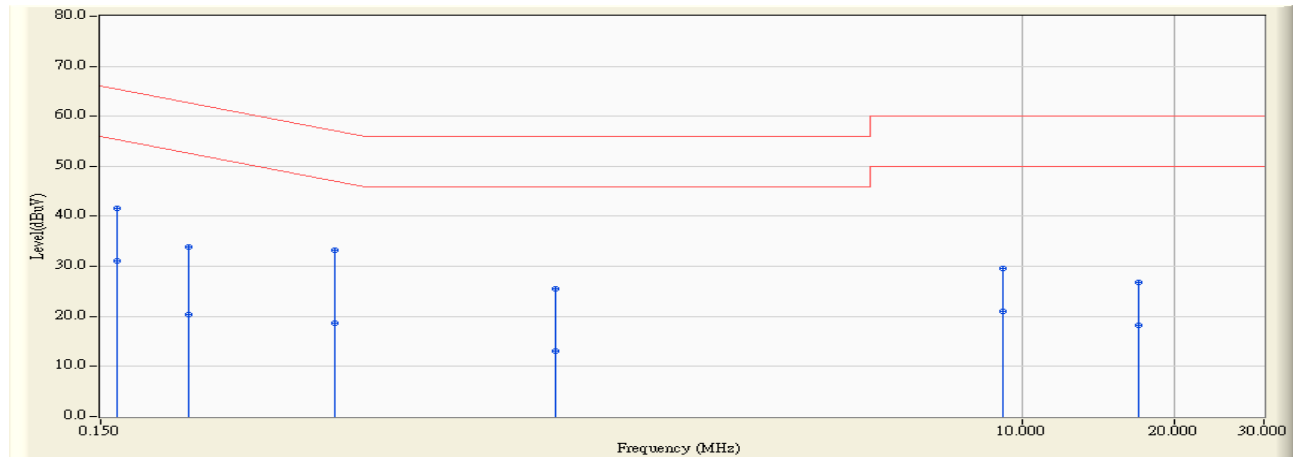


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.166	9.753	32.540	42.293	-22.884	65.177	QUASIPeAK
2		0.166	9.753	21.310	31.063	-24.114	55.177	AVERAGE
3		0.212	9.749	26.340	36.089	-27.018	63.107	QUASIPeAK
4		0.212	9.749	15.040	24.789	-28.318	53.107	AVERAGE
5		0.384	9.732	21.620	31.352	-26.833	58.184	QUASIPeAK
6		0.384	9.732	9.800	19.532	-28.653	48.184	AVERAGE
7		1.505	9.840	16.700	26.540	-29.460	56.000	QUASIPeAK
8		1.505	9.840	7.130	16.970	-29.030	46.000	AVERAGE
9		8.373	10.062	21.480	31.542	-28.458	60.000	QUASIPeAK
10		8.373	10.062	11.520	21.582	-28.418	50.000	AVERAGE
11		15.904	10.242	18.600	28.842	-31.158	60.000	QUASIPeAK
12		15.904	10.242	9.450	19.692	-30.308	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR2-H	Time : 2017/01/18
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR2-H_LISN(16A)-6_0712 - Line2	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.1.15_BLE_2440MHz Mode 1: Tx-AD2037320910LF

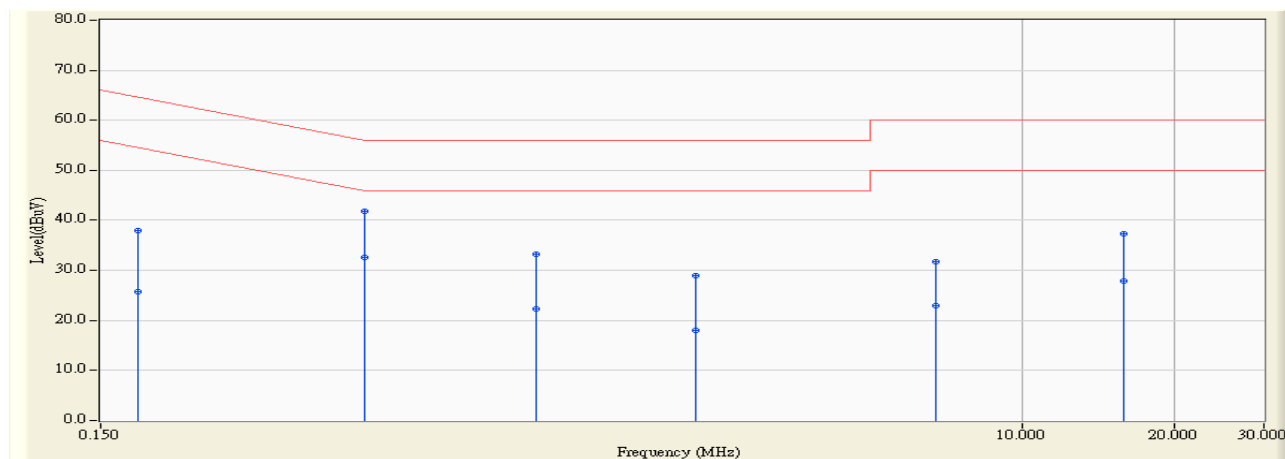


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.162	9.754	31.880	41.634	-23.741	65.375	QUASIPeAK
2		0.162	9.754	21.310	31.064	-24.311	55.375	AVERAGE
3		0.224	9.750	24.140	33.890	-28.771	62.661	QUASIPeAK
4		0.224	9.750	10.670	20.420	-32.241	52.661	AVERAGE
5		0.435	9.748	23.460	33.208	-23.945	57.154	QUASIPeAK
6		0.435	9.748	8.950	18.698	-28.455	47.154	AVERAGE
7		1.193	9.826	15.620	25.446	-30.554	56.000	QUASIPeAK
8		1.193	9.826	3.250	13.076	-32.924	46.000	AVERAGE
9		9.119	10.099	19.440	29.539	-30.461	60.000	QUASIPeAK
10		9.119	10.099	10.980	21.079	-28.921	50.000	AVERAGE
11		16.904	10.382	16.520	26.902	-33.098	60.000	QUASIPeAK
12		16.904	10.382	7.880	18.262	-31.738	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR2-H	Time : 2017/01/18
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR2-H_LISN(16A)-6_0712 - Line1	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.1.15_BLE_2440MHz Mode 2: Tx-W12-010N3A

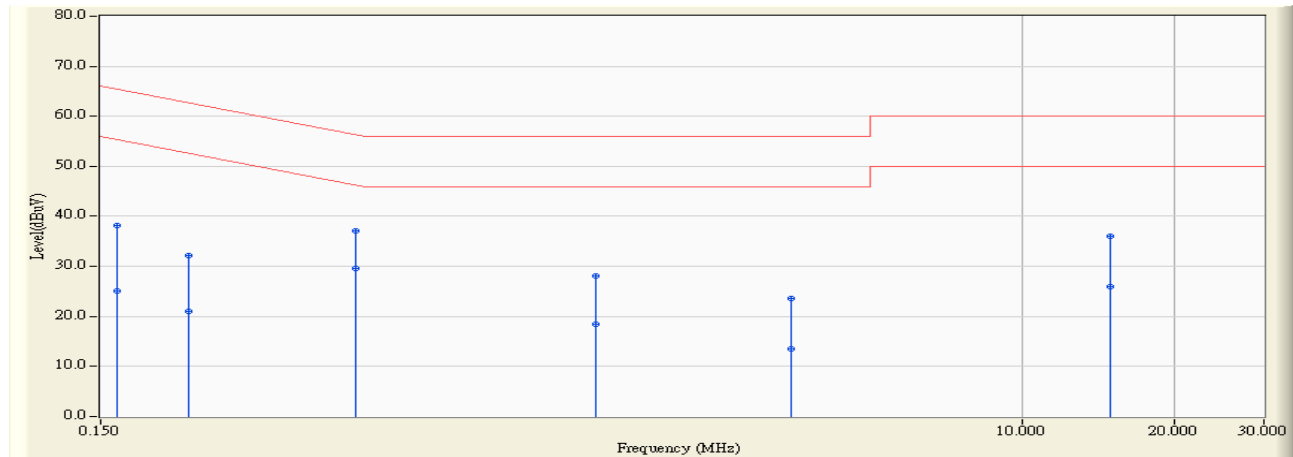


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.177	9.752	28.300	38.052	-26.557	64.609	QUASIPeAK
2		0.177	9.752	15.880	25.632	-28.977	54.609	AVERAGE
3		0.498	9.729	32.100	41.829	-14.210	56.039	QUASIPeAK
4	*	0.498	9.729	22.820	32.549	-13.490	46.039	AVERAGE
5		1.091	9.824	23.420	33.244	-22.756	56.000	QUASIPeAK
6		1.091	9.824	12.500	22.324	-23.676	46.000	AVERAGE
7		2.255	9.868	19.040	28.908	-27.092	56.000	QUASIPeAK
8		2.255	9.868	8.090	17.958	-28.042	46.000	AVERAGE
9		6.728	9.994	21.780	31.774	-28.226	60.000	QUASIPeAK
10		6.728	9.994	12.990	22.984	-27.016	50.000	AVERAGE
11		15.798	10.239	27.140	37.379	-22.621	60.000	QUASIPeAK
12		15.798	10.239	17.540	27.779	-22.221	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR2-H	Time : 2017/01/18
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR2-H_LISN(16A)-6_0712 - Line2	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.1.15_BLE_2440MHz Mode 2: Tx-W12-010N3A



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.162	9.754	28.440	38.194	-27.181	65.375	QUASIPeAK
2		0.162	9.754	15.350	25.104	-30.271	55.375	AVERAGE
3		0.224	9.750	22.480	32.230	-30.431	62.661	QUASIPeAK
4		0.224	9.750	11.280	21.030	-31.631	52.661	AVERAGE
5		0.478	9.746	27.320	37.066	-19.305	56.372	QUASIPeAK
6	*	0.478	9.746	19.840	29.586	-16.785	46.372	AVERAGE
7		1.431	9.833	18.240	28.073	-27.927	56.000	QUASIPeAK
8		1.431	9.833	8.570	18.403	-27.597	46.000	AVERAGE
9		3.478	9.843	13.760	23.603	-32.397	56.000	QUASIPeAK
10		3.478	9.843	3.720	13.563	-32.437	46.000	AVERAGE
11		14.920	10.307	25.760	36.067	-23.933	60.000	QUASIPeAK
12		14.920	10.307	15.650	25.957	-24.043	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

3. Peak Power Output

3.1. Test Equipment

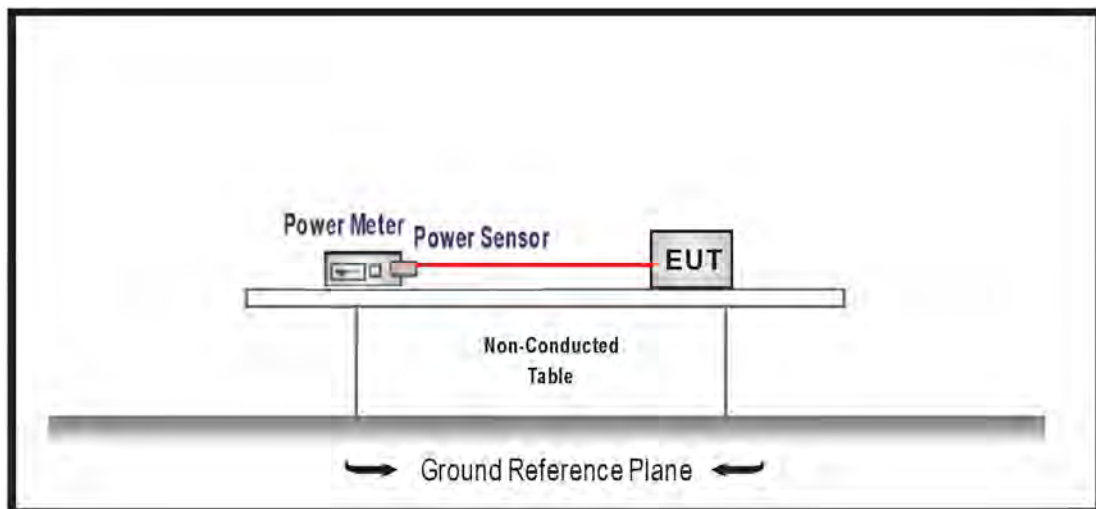
The following test equipment is used during the test:

Peak Power Output / SR10-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2017/02/09
Pulse Power Sensor	Anritsu	MA2411B	1531043	2017/01/13
Pulse Power Sensor	Anritsu	MA2411B	1531044	2017/01/13

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

3.2. Test Setup



3.3. Test procedures

The EUT was setup according to ANSI C63.10:2013; tested according to DTS test procedure of KDB558074 V03R02 for compliance to FCC 47CFR 15.247 requirements.

3.4. Limits

The maximum peak power shall be less 1 Watt.

3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

3.6. Test Result

Product	Lyra mini		
Test Item	Peak Power Output		
Test Mode	Mode 1: Tx-AD2037320910LF		
Date of Test	2016/12/25	Test Site	SR10-H

GFSK

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	2.32	30	Pass
19	2440	3.19	30	Pass
39	2480	3.33	30	Pass

4. Radiated Emission

4.1. Test Equipment

The following test equipments are used during the test:

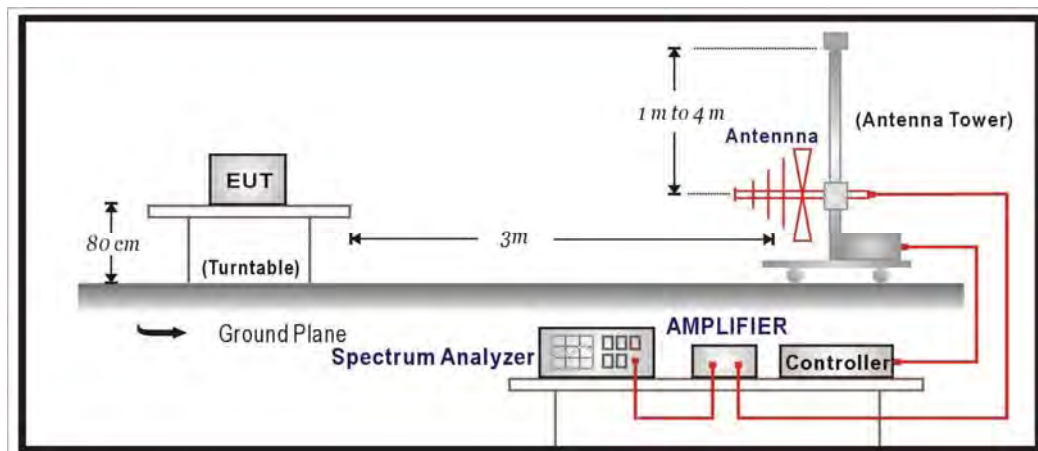
Radiated Emission / CB4-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Bilog Antenna	Schaffner	CBL6112B	2891	2017/08/14
Horn Antenna	Schwarzbeck	BBHA 9120	D312	2017/10/25
Pre-Amplifier	EMCI	EMC0031835	980233	2017/01/26
Pre-Amplifier	Schwarzbeck	DBL-1840N506	013	2017/09/29
Pre-Amplifier	Miteq	JS41-00104000 0-58-5P	1573954	2017/10/04
Horn Antenna	Schwarzbeck	BBHA 9170	203	2017/08/28
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/05

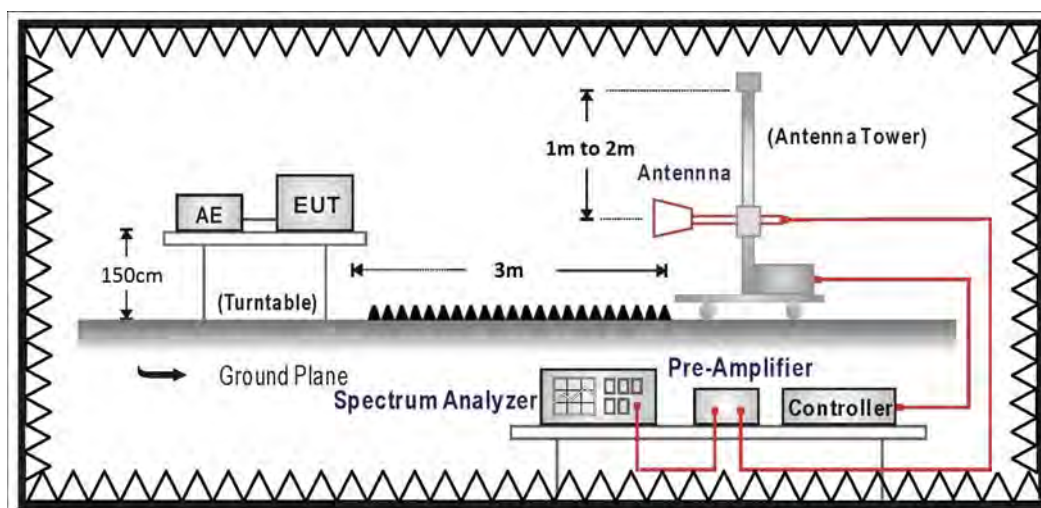
Note: All equipments that need to calibrate are with calibration period of 1 year.

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m	dBuV/m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.4. Test Procedure

The EUT was setup according to ANSI C63.10:2013 and tested according to DTS test procedure of KDB558074 V03R02 for compliance to FCC 47CFR 15.247 requirements. The EUT and its simulators are placed on a turn table which is 0.8 or 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2013 on radiated measurement.

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

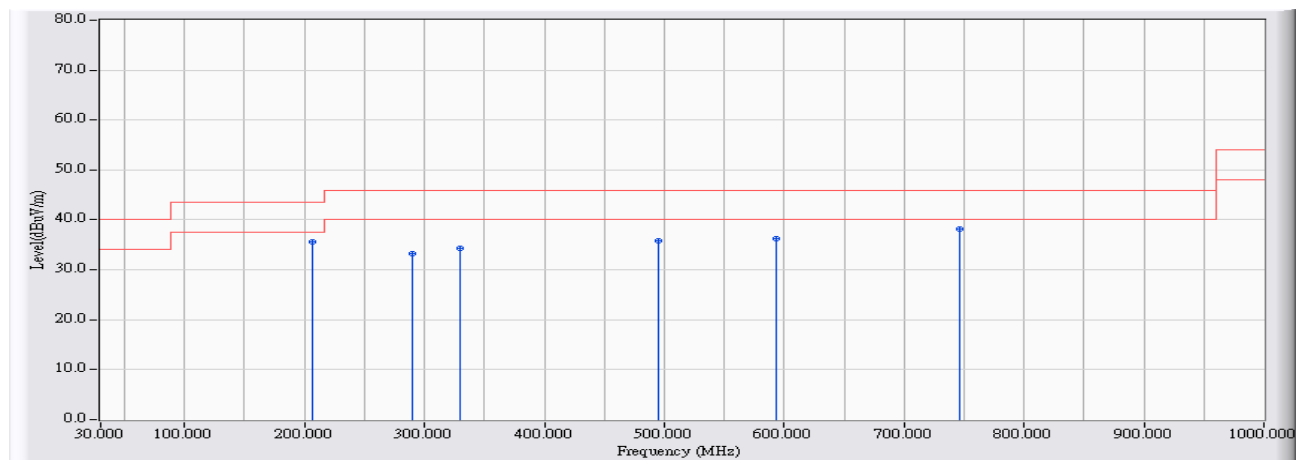
4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

4.6. Test Result

30MHz-1GHz Spurious

Site : CB4-H	Time : 2017/01/22
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4-H_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.1.15_BLE_2440MHz Mode 1: Tx-AD2037320910LF

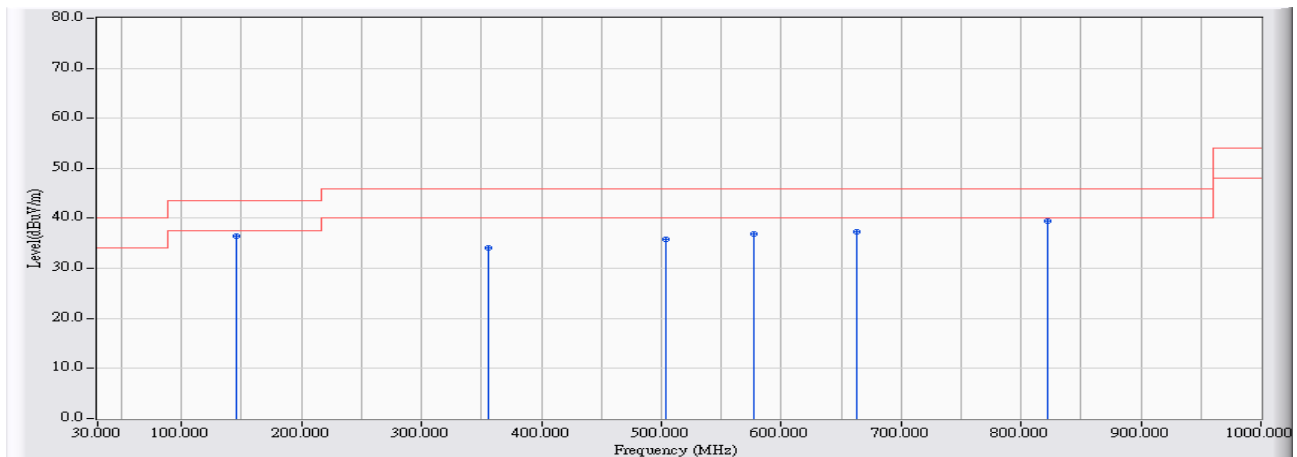


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		206.134	21.159	14.402	35.561	-7.939	43.500	QUASIPeAK
2		289.449	23.992	9.250	33.242	-12.758	46.000	QUASIPeAK
3		329.603	24.969	9.302	34.271	-11.729	46.000	QUASIPeAK
4		494.972	28.270	7.646	35.916	-10.084	46.000	QUASIPeAK
5		593.320	29.180	7.034	36.214	-9.786	46.000	QUASIPeAK
6	*	745.691	30.251	8.015	38.266	-7.734	46.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : CB4-H	Time : 2017/01/22
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4-H_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.1.15_BLE_2440MHz Mode 1: Tx-AD2037320910LF

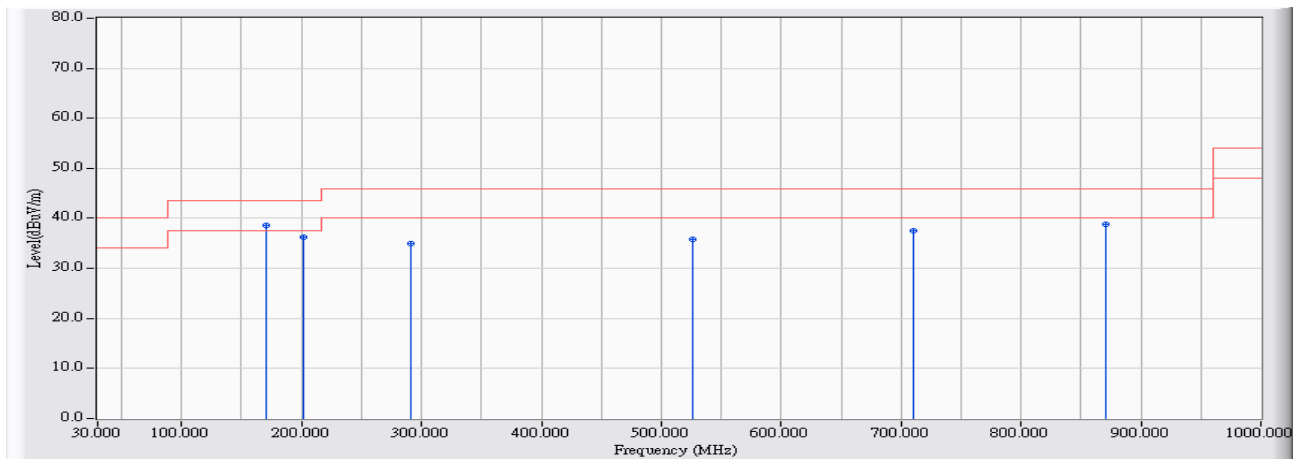


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		146.097	22.544	13.972	36.516	-6.984	43.500	QUASIPeAK
2		355.402	25.691	8.324	34.015	-11.985	46.000	QUASIPeAK
3		503.507	28.372	7.356	35.728	-10.272	46.000	QUASIPeAK
4		576.831	29.031	7.877	36.908	-9.092	46.000	QUASIPeAK
5		662.377	29.614	7.741	37.355	-8.645	46.000	QUASIPeAK
6	*	822.508	30.943	8.542	39.485	-6.515	46.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : CB4-H	Time : 2017/01/22
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4-H_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.1.15_BLE_2440MHz Mode 2: Tx-W12-010N3A

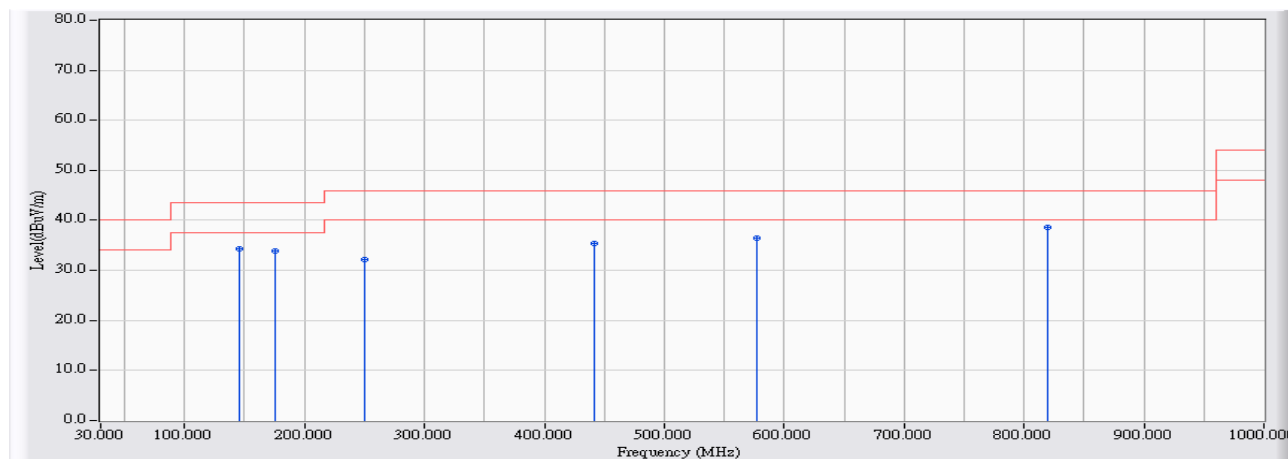


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	170.442	20.909	17.614	38.523	-4.977	43.500	QUASIPeAK
2		202.158	20.952	15.393	36.345	-7.155	43.500	QUASIPeAK
3		290.710	24.010	10.983	34.993	-11.007	46.000	QUASIPeAK
4		525.911	28.573	7.346	35.919	-10.081	46.000	QUASIPeAK
5		710.775	29.937	7.581	37.518	-8.482	46.000	QUASIPeAK
6		871.003	31.379	7.523	38.902	-7.098	46.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : CB4-H	Time : 2017/01/22
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4-H_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.1.15_BLE_2440MHz Mode 2: Tx-W12-010N3A



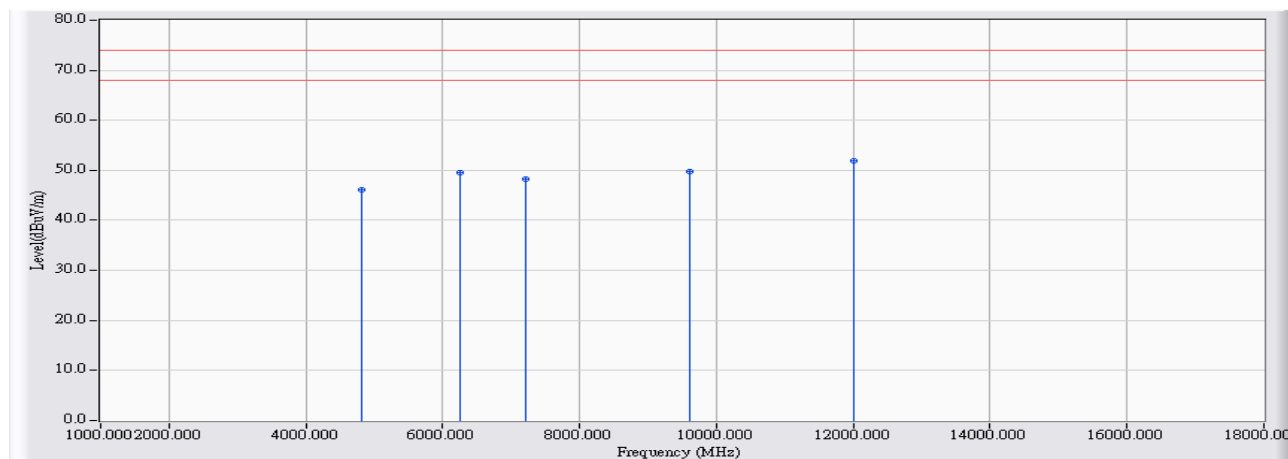
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		145.321	22.594	11.719	34.313	-9.187	43.500	QUASIPeAK
2		175.970	20.522	13.325	33.847	-9.653	43.500	QUASIPeAK
3		249.974	23.433	8.745	32.178	-13.822	46.000	QUASIPeAK
4		441.821	27.525	7.877	35.402	-10.598	46.000	QUASIPeAK
5		577.801	29.040	7.521	36.561	-9.439	46.000	QUASIPeAK
6	*	820.083	30.921	7.606	38.527	-7.473	46.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Harmonic & Spurious:

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2402MHz Mode 1: Tx-AD2037320910LF

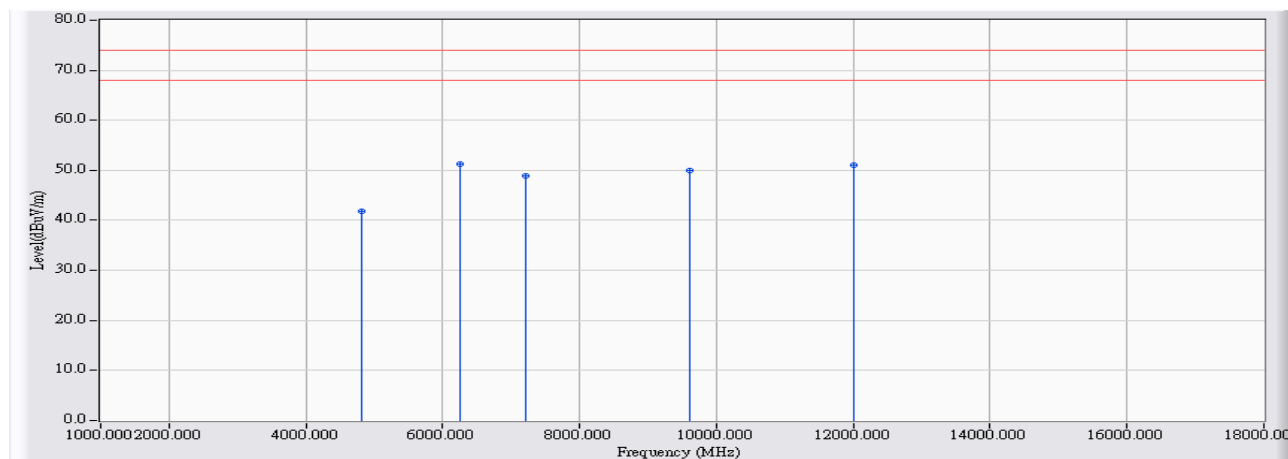


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4803.955	-0.376	46.520	46.144	-27.856	74.000	PEAK
2		6250.110	3.445	46.180	49.626	-24.374	74.000	PEAK
3		7206.715	7.035	41.160	48.195	-25.805	74.000	PEAK
4		9603.315	12.046	37.710	49.756	-24.244	74.000	PEAK
5	*	12006.460	17.187	34.810	51.997	-22.003	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2402MHz Mode 1: Tx-AD2037320910LF

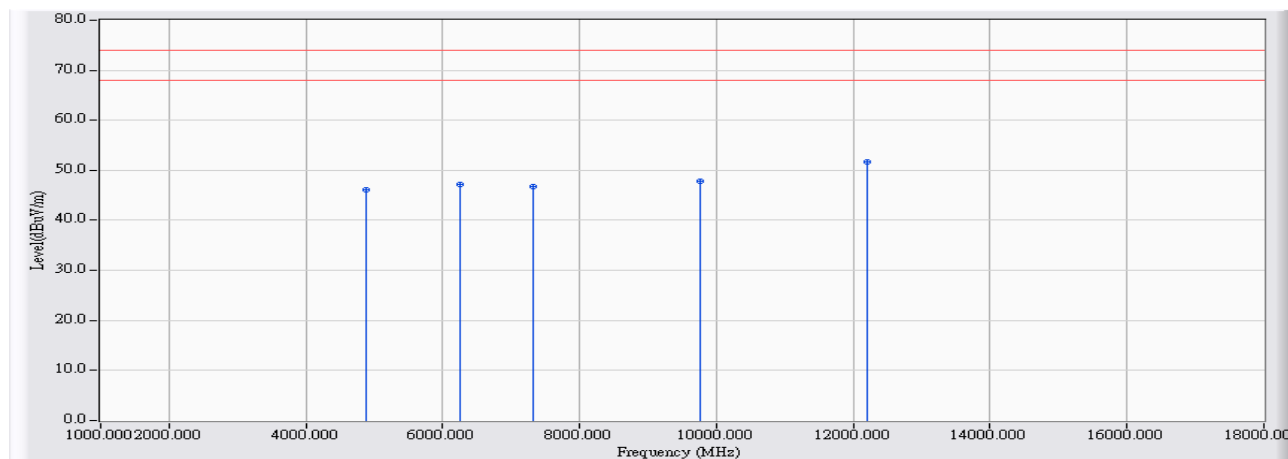


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4803.855	-0.376	42.150	41.774	-32.226	74.000	PEAK
2	*	6249.865	3.444	47.810	51.254	-22.746	74.000	PEAK
3		7201.630	7.011	41.810	48.820	-25.180	74.000	PEAK
4		9604.410	12.048	37.820	49.867	-24.133	74.000	PEAK
5		12011.825	17.178	33.930	51.109	-22.891	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2440MHz Mode 1: Tx-AD2037320910LF

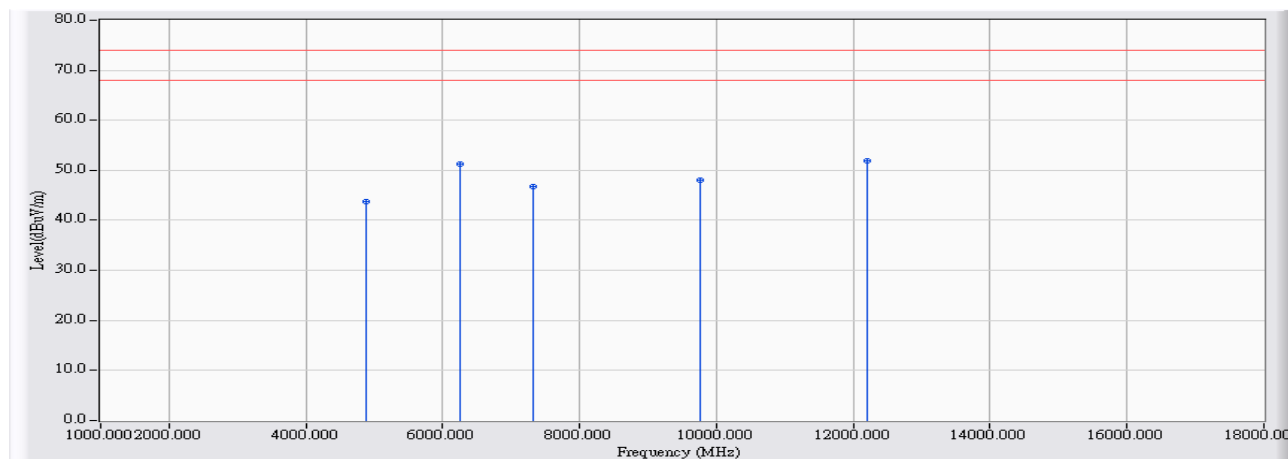


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4880.180	-0.187	46.360	46.173	-27.827	74.000	PEAK
2		6250.000	3.445	43.700	47.145	-26.855	74.000	PEAK
3		7315.000	7.572	39.170	46.742	-27.258	74.000	PEAK
4		9764.000	12.300	35.600	47.900	-26.100	74.000	PEAK
5	*	12199.000	16.840	34.900	51.739	-22.261	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2440MHz Mode 1: Tx-AD2037320910LF

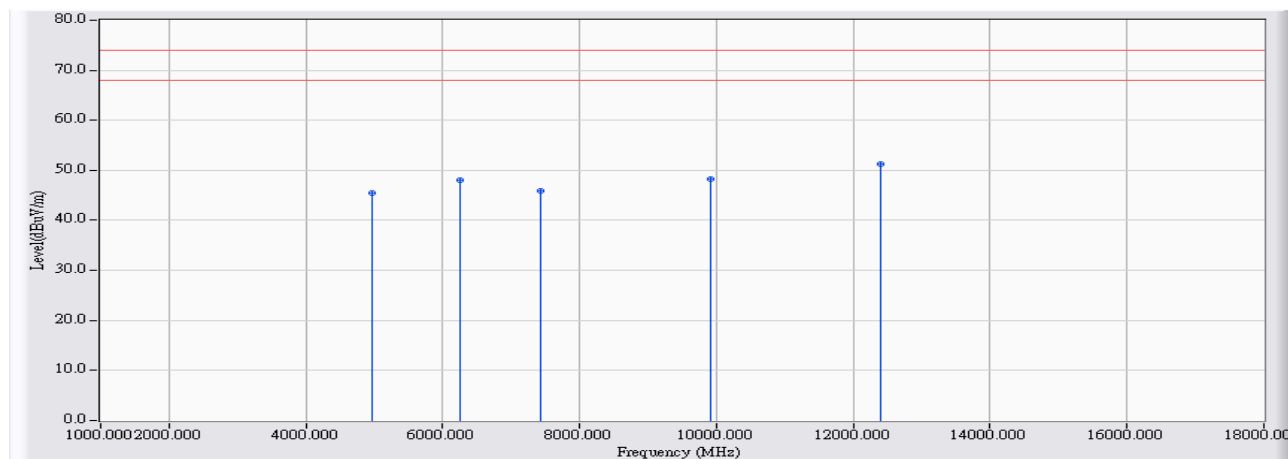


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4880.000	-0.188	43.920	43.732	-30.268	74.000	PEAK
2		6248.000	3.434	47.880	51.314	-22.686	74.000	PEAK
3		7319.000	7.592	39.170	46.762	-27.238	74.000	PEAK
4		9757.000	12.290	35.740	48.030	-25.970	74.000	PEAK
5	*	12200.000	16.838	35.050	51.887	-22.113	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2480MHz Mode 1: Tx-AD2037320910LF

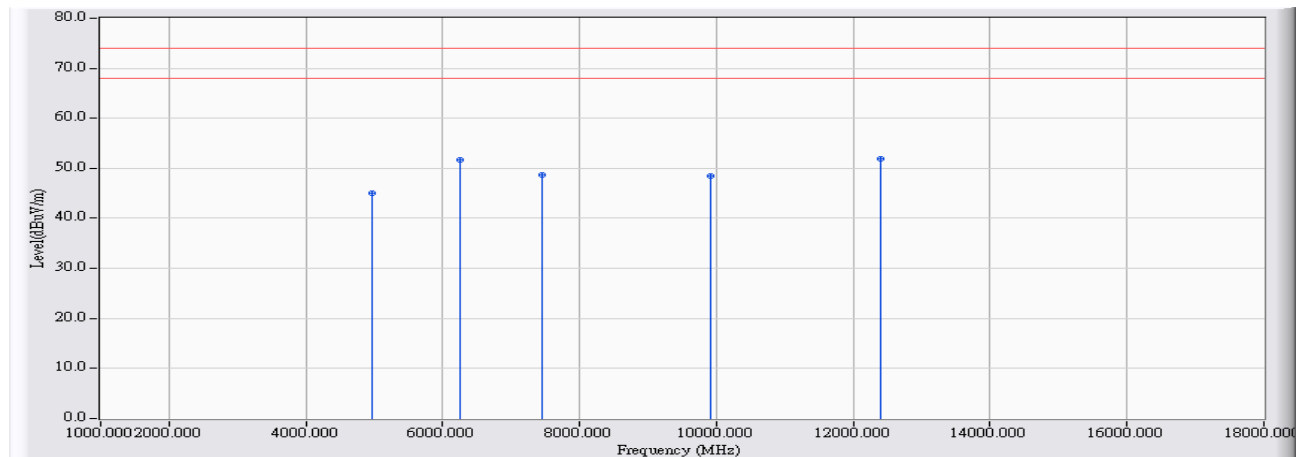


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4960.000	0.011	45.370	45.381	-28.619	74.000	PEAK
2		6250.000	3.445	44.650	48.095	-25.905	74.000	PEAK
3		7440.000	8.200	37.660	45.860	-28.140	74.000	PEAK
4		9919.000	12.519	35.690	48.208	-25.792	74.000	PEAK
5	*	12395.000	16.427	34.880	51.307	-22.693	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2480MHz Mode 1: Tx-AD2037320910LF



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4959.785	0.011	45.040	45.050	-28.950	74.000	PEAK
2		6250.065	3.445	48.300	51.745	-22.255	74.000	PEAK
3		7444.020	8.222	40.460	48.681	-25.319	74.000	PEAK
4		9917.970	12.516	35.970	48.487	-25.513	74.000	PEAK
5	*	12403.640	16.410	35.400	51.809	-22.191	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

5. RF antenna conducted test

5.1. Test Equipment

The following test equipment is used during the test:

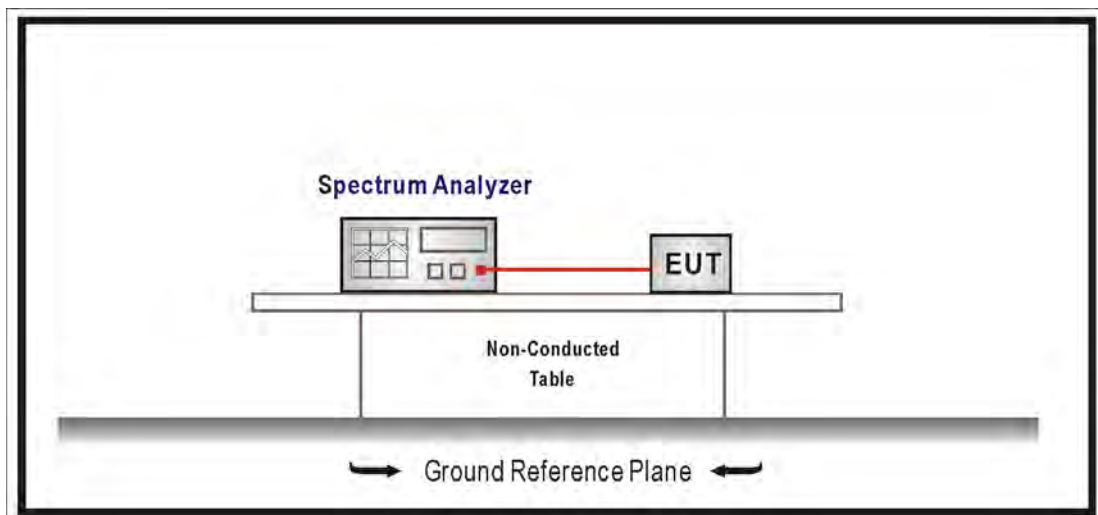
RF antenna conducted test / SR10-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/22

Note: All equipments that need to calibrate are with calibration period of 1 year.

5.2. Test Setup

RF Conducted Measurement:



5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on an RF conducted or radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4. Test Procedure

The EUT was setup according to ANSI C63.10:2013 and tested according to DTS test procedure of KDB558074 V03R02 for compliance to FCC 47CFR 15.247 requirements. Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

5.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

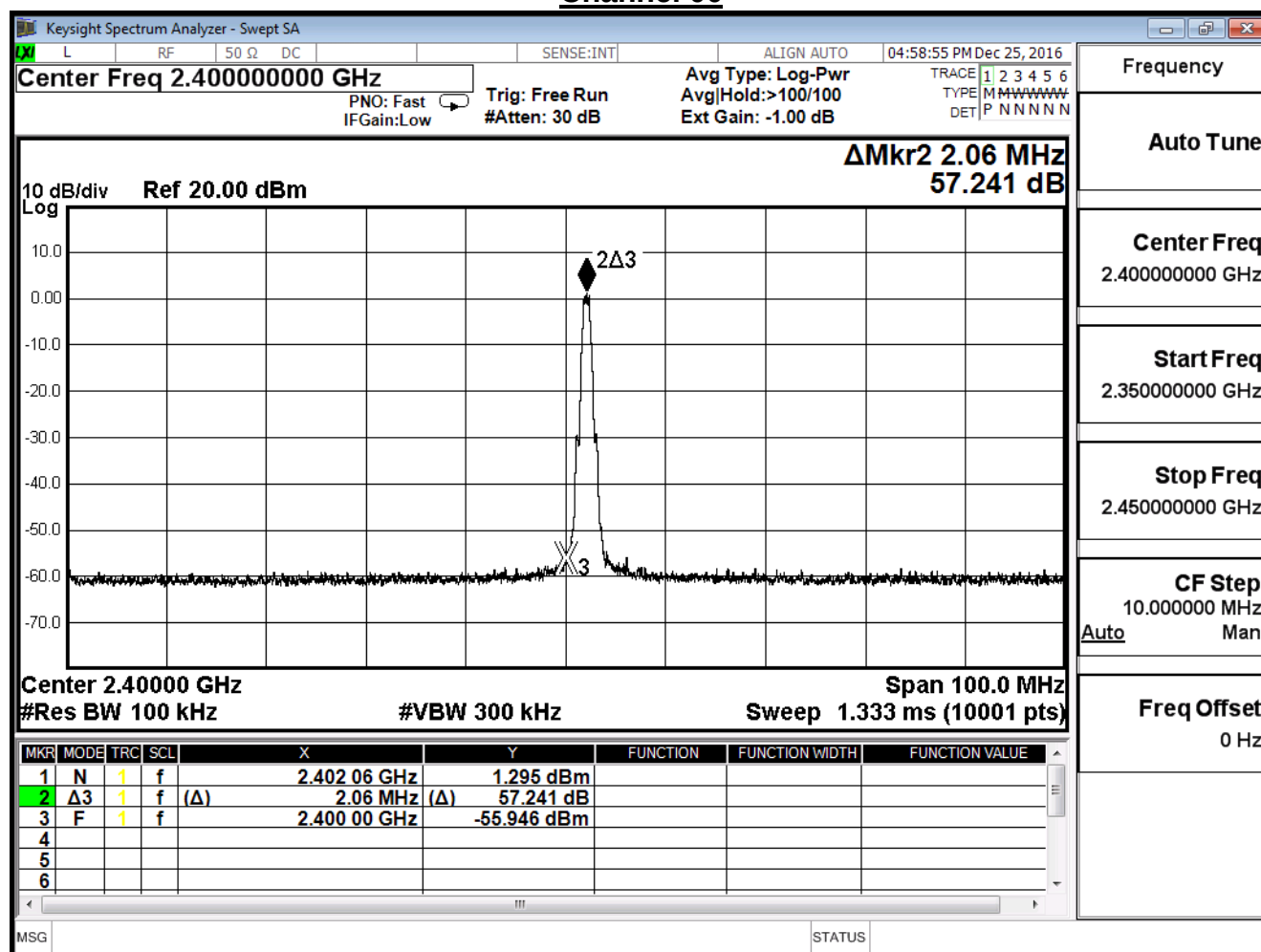
5.6. Test Result

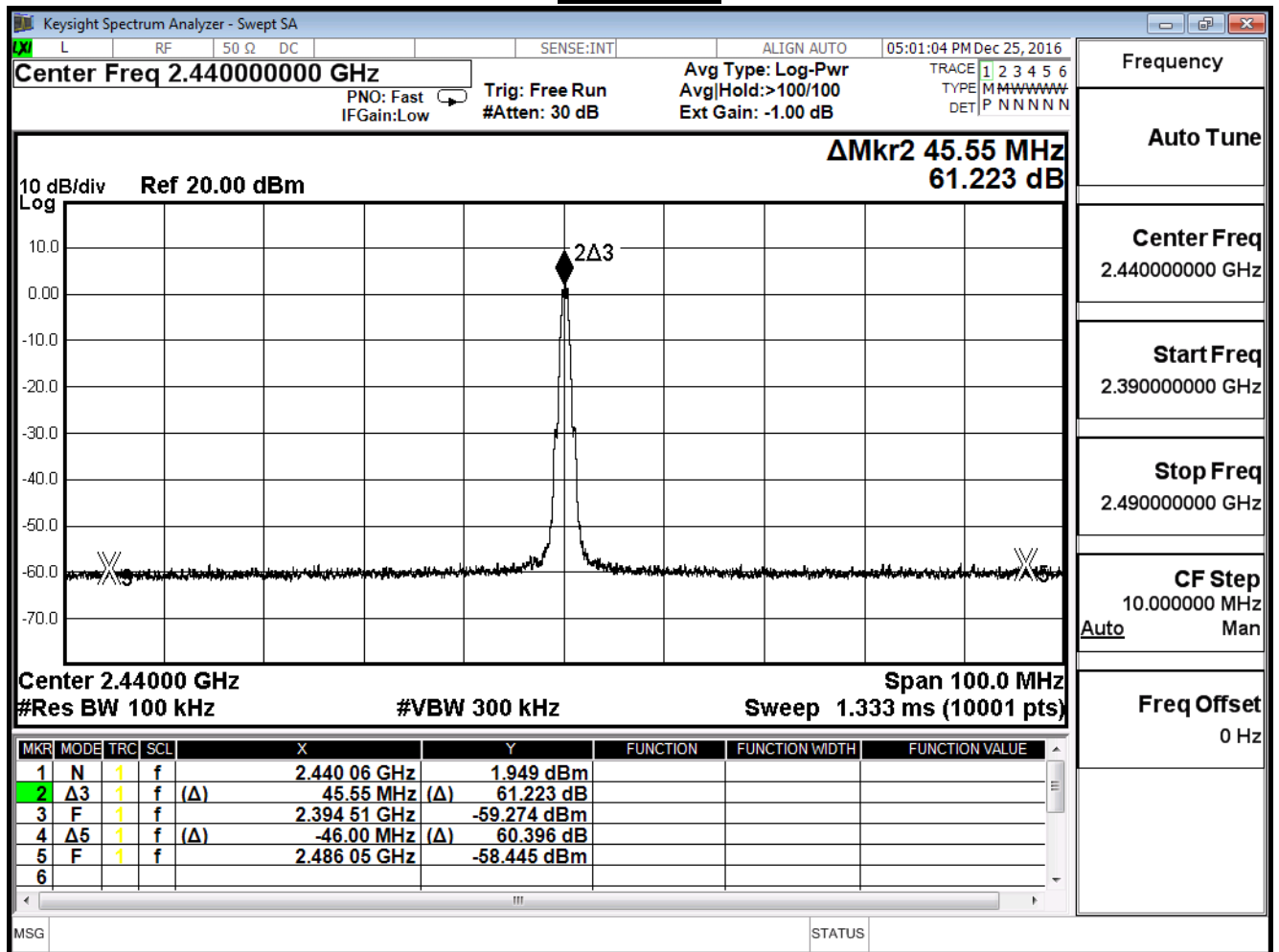
Product	Lyra mini		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Tx-AD2037320910LF		
Date of Test	2016/12/25	Test Site	SR10-H

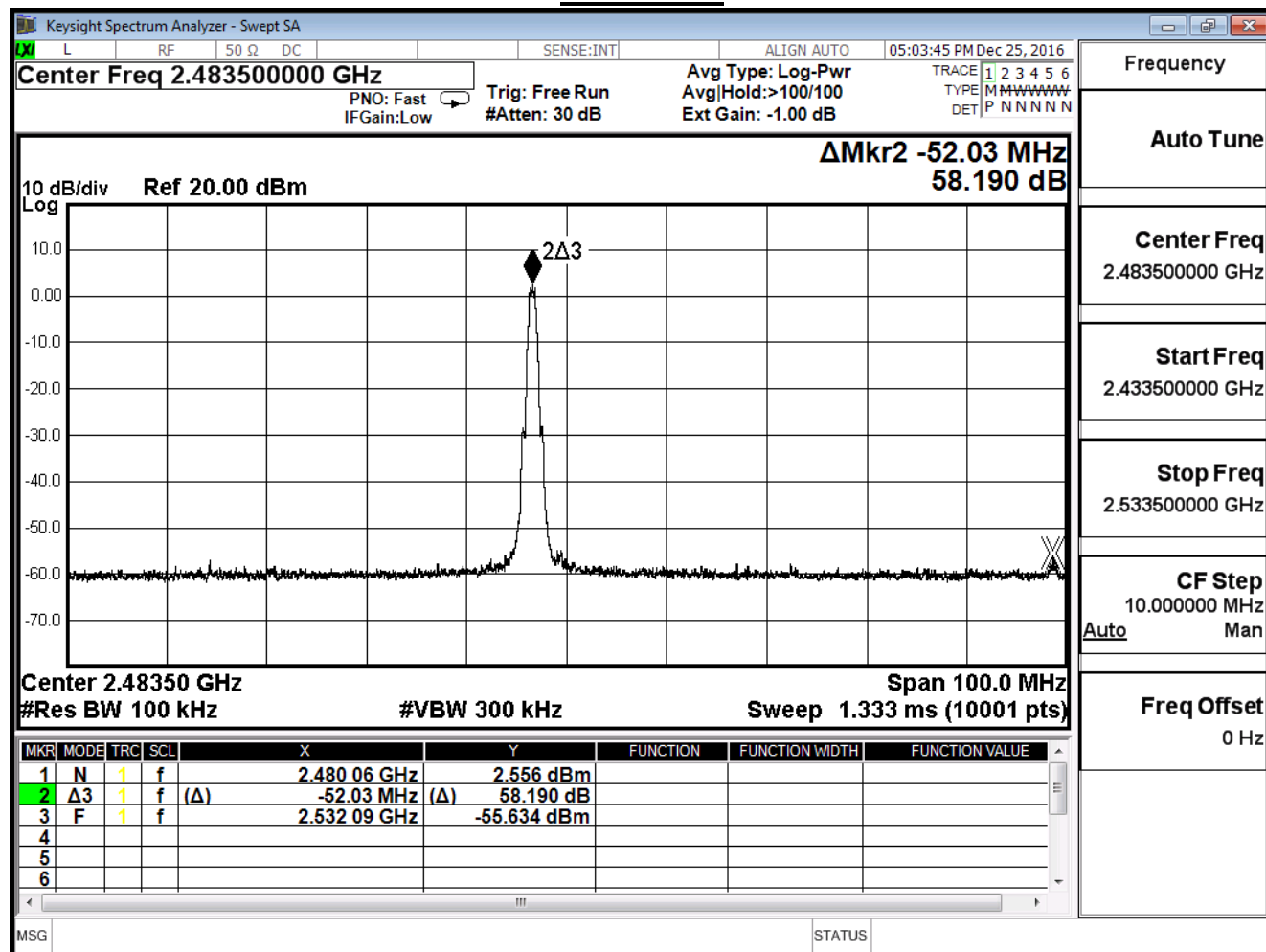
GFSK

Channel	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
00	2402	57.241	≥ 20	Pass
19	2440	60.396	≥ 20	Pass
39	2480	58.190	≥ 20	Pass

Channel 00

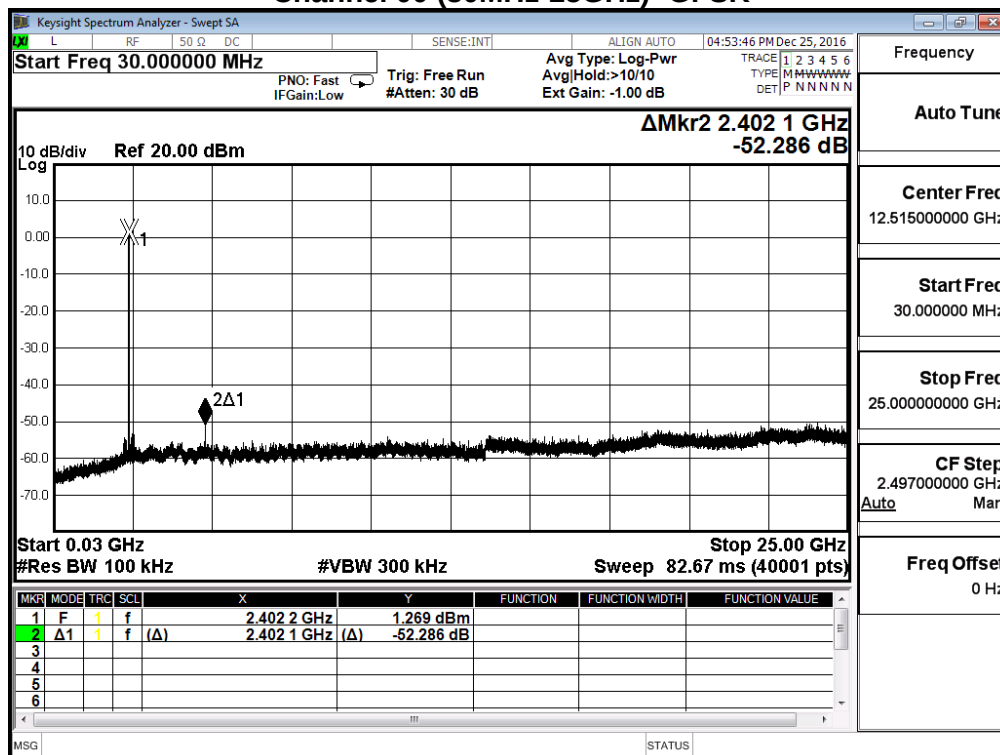


Channel 19

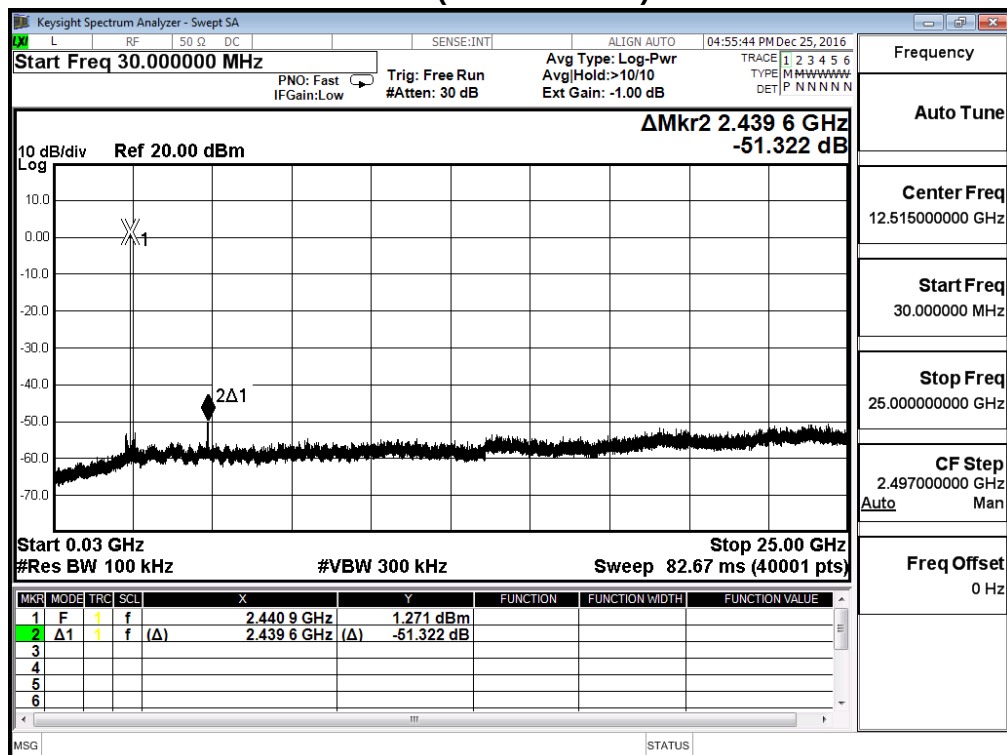
Channel 39

Product	Lyra mini		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Tx-AD2037320910LF		
Date of Test	2016/12/25	Test Site	SR10-H

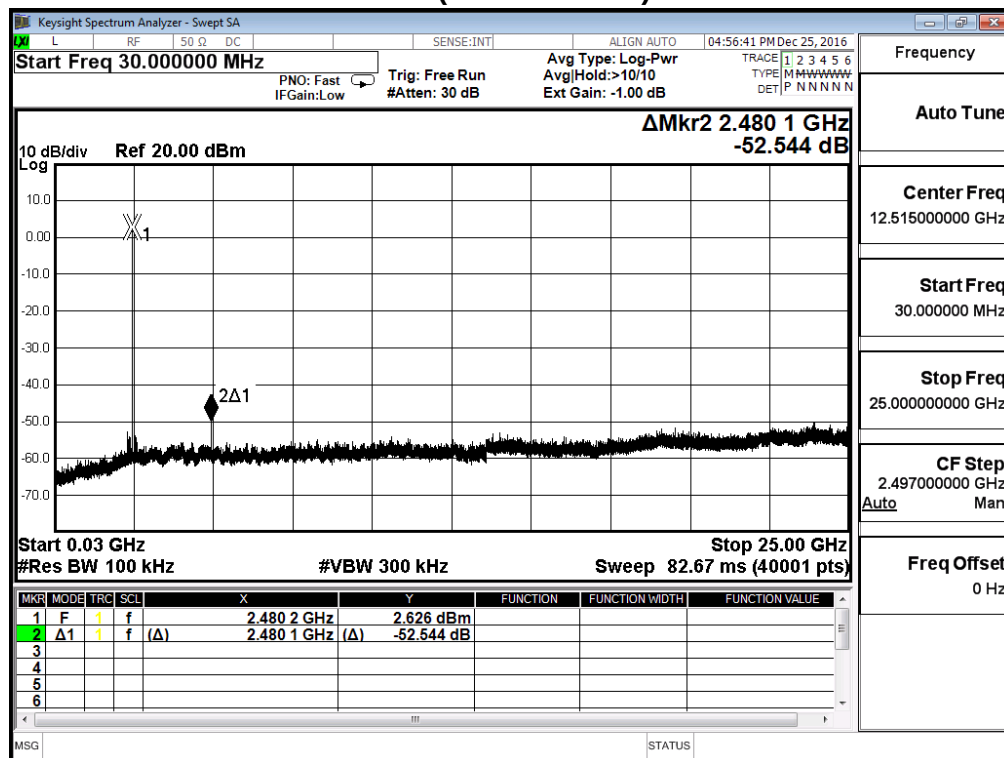
Channel 00 (30MHz-25GHz)- GFSK



Channel 19 (30MHz-25GHz)- GFSK



Channel 39 (30MHz-25GHz)- GFSK



6. Band Edge

6.1. Test Equipment

The following test equipments are used during the test:

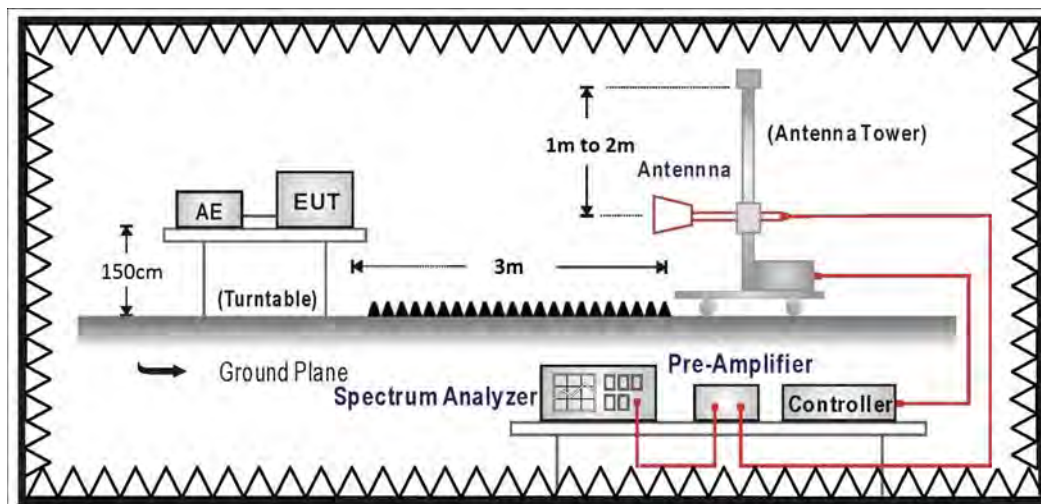
Band Edge / CB4-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Horn Antenna	Schwarzbeck	BBHA 9120	D312	2017/10/25
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/05

Note: All equipments that need to calibrate are with calibration period of 1 year.

6.2. Test Setup

RF Radiated Measurement:



6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.4. Test Procedure

The EUT was setup according to ANSI C63.10:2013 and tested according to DTS test procedure of KDB558074 V03R02 for compliance to FCC 47CFR 15.247 requirements. The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

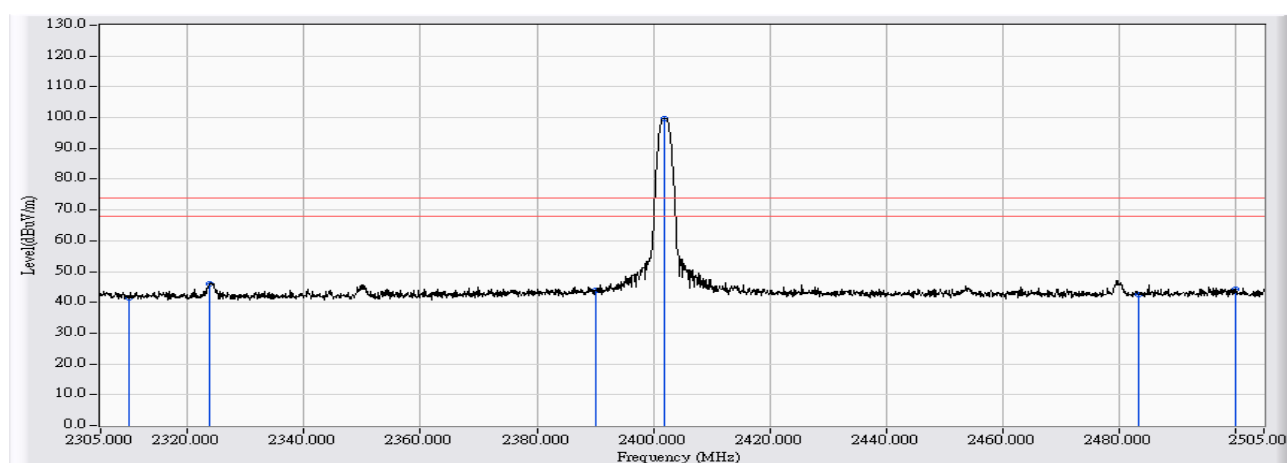
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2013 on radiated measurement.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

6.6. Test Result

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2402MHz Mode 1: Tx-AD2037320910LF

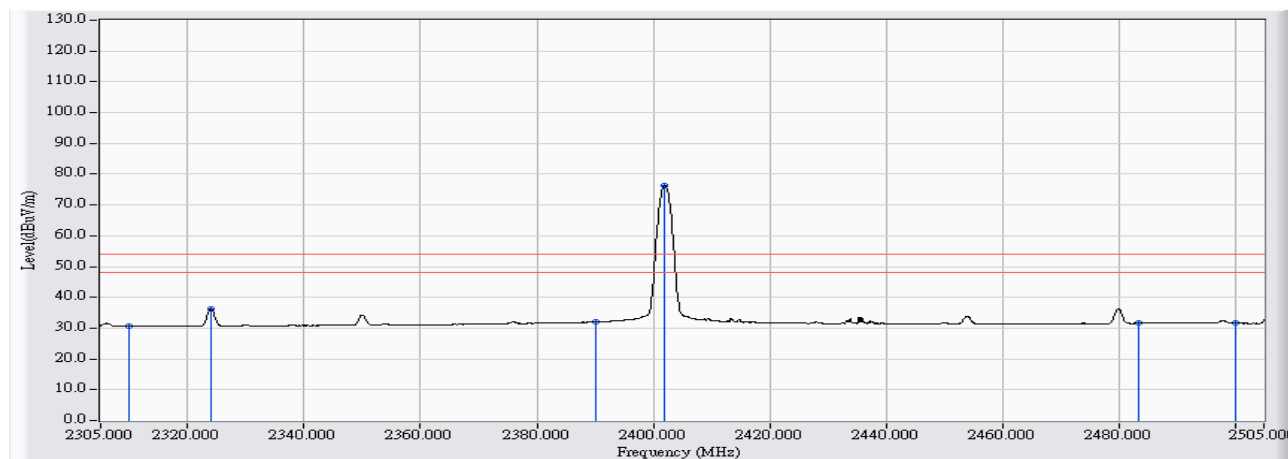


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.346	28.021	41.367	-32.633	74.000	PEAK
2		2323.800	13.431	32.590	46.021	-27.979	74.000	PEAK
3		2390.000	13.840	29.976	43.816	-30.184	74.000	PEAK
4	*	2401.800	13.913	85.918	99.831	25.831	74.000	PEAK
5		2483.500	14.417	27.939	42.357	-31.643	74.000	PEAK
6		2500.000	14.518	29.728	44.247	-29.753	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2402MHz Mode 1: Tx-AD2037320910LF

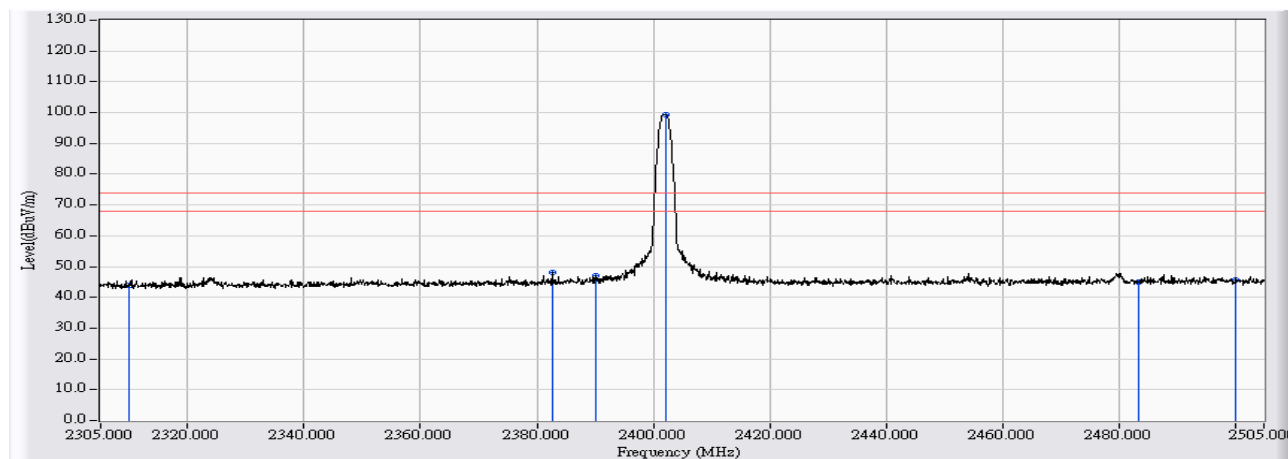


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.346	17.354	30.700	-23.300	54.000	AVERAGE
2		2323.900	13.431	22.789	36.221	-17.779	54.000	AVERAGE
3		2390.000	13.840	18.172	32.012	-21.988	54.000	AVERAGE
4	*	2402.000	13.914	62.499	76.413	22.413	54.000	AVERAGE
5		2483.500	14.417	17.165	31.583	-22.417	54.000	AVERAGE
6		2500.000	14.518	17.256	31.775	-22.225	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2402MHz Mode 1: Tx-AD2037320910LF

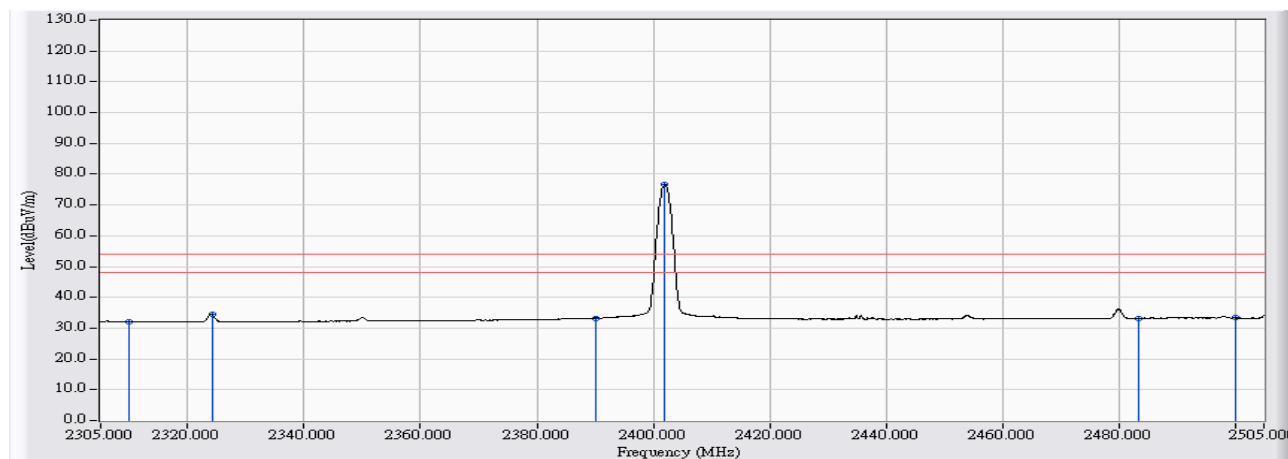


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.346	30.721	44.067	-29.933	74.000	PEAK
2		2382.600	13.794	34.235	48.029	-25.971	74.000	PEAK
3		2390.000	13.840	33.093	46.933	-27.067	74.000	PEAK
4	*	2402.200	13.916	85.452	99.368	25.368	74.000	PEAK
5		2483.500	14.417	30.445	44.863	-29.137	74.000	PEAK
6		2500.000	14.518	31.297	45.816	-28.184	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2402MHz Mode 1: Tx-AD2037320910LF

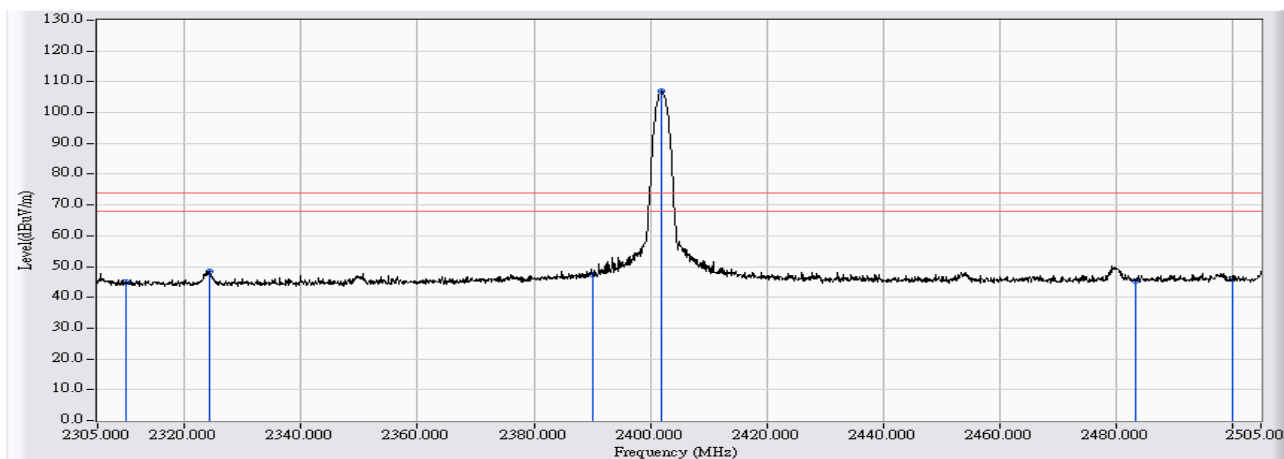


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.346	18.723	32.069	-21.931	54.000	AVERAGE
2		2324.200	13.434	20.968	34.402	-19.598	54.000	AVERAGE
3		2390.000	13.840	19.430	33.270	-20.730	54.000	AVERAGE
4	*	2402.000	13.914	62.667	76.581	22.581	54.000	AVERAGE
5		2483.500	14.417	18.785	33.203	-20.797	54.000	AVERAGE
6		2500.000	14.518	18.811	33.330	-20.670	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_EDR_3DH5_2440MHz Mode 1: Tx-AD2037320910LF

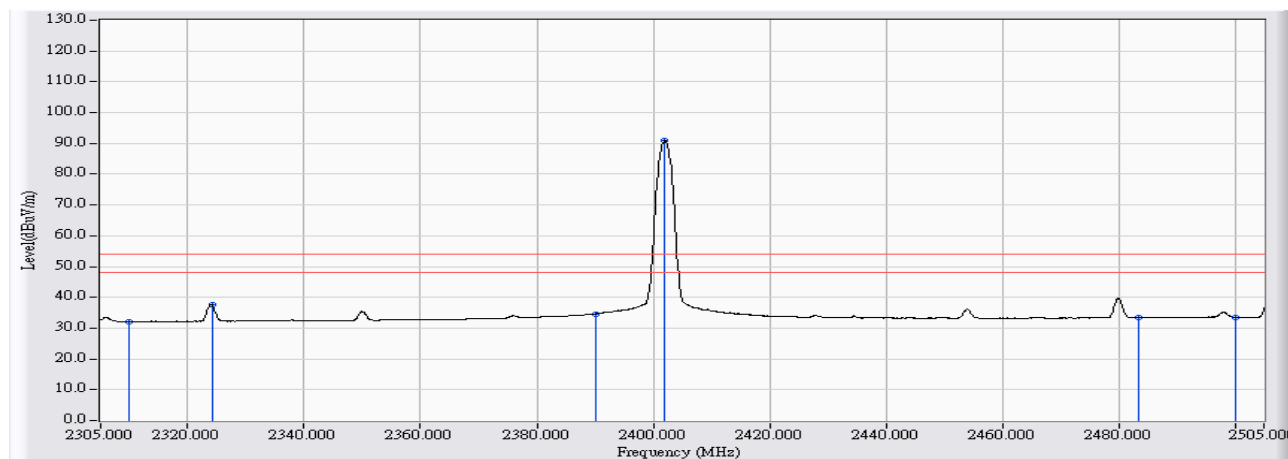


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.346	31.601	44.947	-29.053	74.000	PEAK
2		2324.300	13.434	35.107	48.541	-25.459	74.000	PEAK
3		2390.000	13.840	33.718	47.558	-26.442	74.000	PEAK
4	*	2402.000	13.914	92.918	106.832	32.832	74.000	PEAK
5		2483.500	14.417	30.801	45.219	-28.781	74.000	PEAK
6		2500.000	14.518	31.395	45.914	-28.086	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_EDR_3DH5_2440MHz Mode 1: Tx-AD2037320910LF

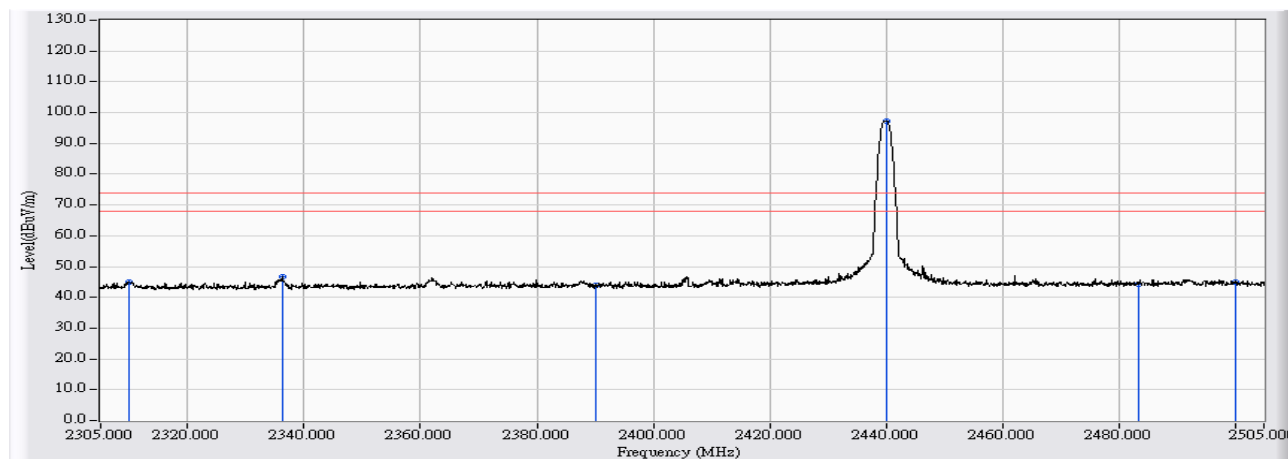


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.346	18.801	32.147	-21.853	54.000	AVERAGE
2		2324.200	13.434	24.214	37.648	-16.352	54.000	AVERAGE
3		2390.000	13.840	20.790	34.630	-19.370	54.000	AVERAGE
4	*	2401.900	13.914	77.060	90.974	36.974	54.000	AVERAGE
5		2483.500	14.417	19.073	33.491	-20.509	54.000	AVERAGE
6		2500.000	14.518	19.000	33.519	-20.481	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2440MHz Mode 1: Tx-AD2037320910LF



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.346	31.507	44.853	-29.147	74.000	PEAK
2		2336.200	13.508	33.108	46.616	-27.384	74.000	PEAK
3		2390.000	13.840	30.226	44.066	-29.934	74.000	PEAK
4	*	2440.200	14.150	83.106	97.256	23.256	74.000	PEAK
5		2483.500	14.417	29.975	44.393	-29.607	74.000	PEAK
6		2500.000	14.518	30.419	44.938	-29.062	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2440MHz Mode 1: Tx-AD2037320910LF

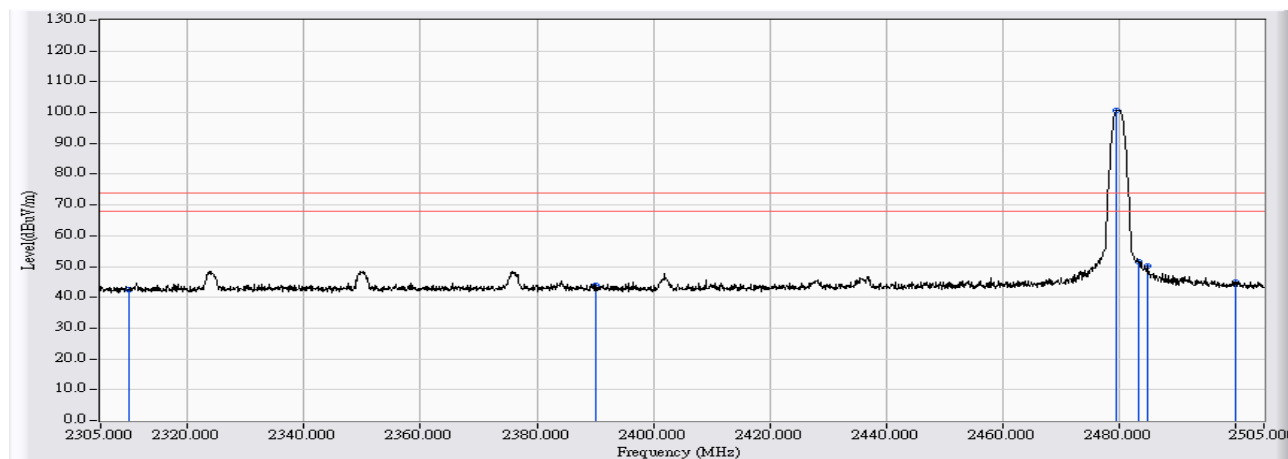


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.346	19.544	32.890	-21.110	54.000	AVERAGE
2		2336.200	13.508	20.139	33.647	-20.353	54.000	AVERAGE
3		2390.000	13.840	17.104	30.944	-23.056	54.000	AVERAGE
4	*	2440.000	14.149	60.553	74.702	20.702	54.000	AVERAGE
5		2483.500	14.417	17.181	31.599	-22.401	54.000	AVERAGE
6		2500.000	14.518	17.685	32.204	-21.796	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2480MHz Mode 1: Tx-AD2037320910LF

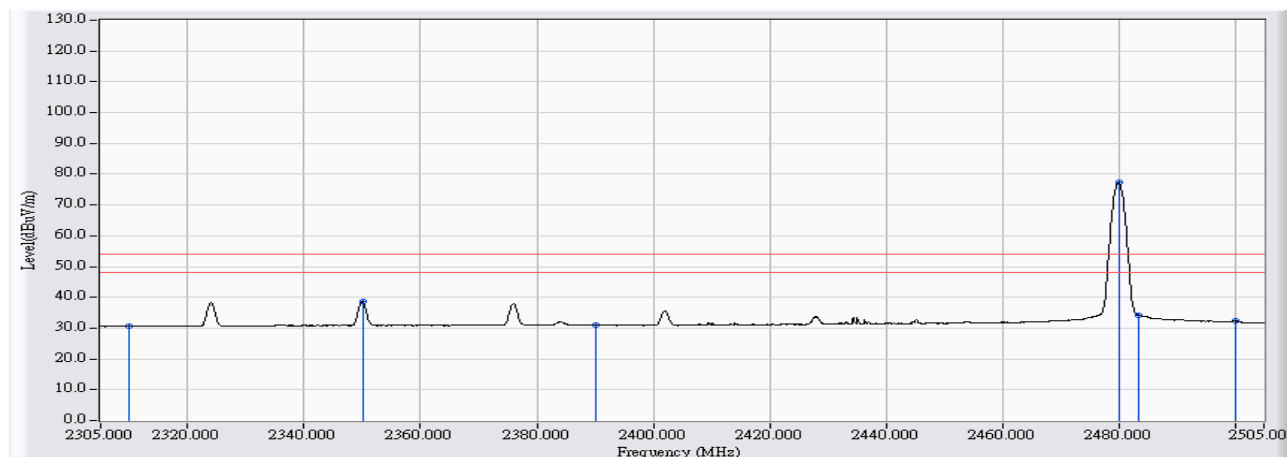


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2310.000	13.346	29.228	42.574	-31.426	74.000	PEAK
2	2390.000	13.840	29.979	43.819	-30.181	74.000	PEAK
3	* 2479.700	14.394	86.405	100.800	26.800	74.000	PEAK
4	2483.500	14.417	37.067	51.485	-22.515	74.000	PEAK
5	2485.100	14.428	35.615	50.043	-23.957	74.000	PEAK
6	2500.000	14.518	30.409	44.928	-29.072	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2480MHz Mode 1: Tx-AD2037320910LF

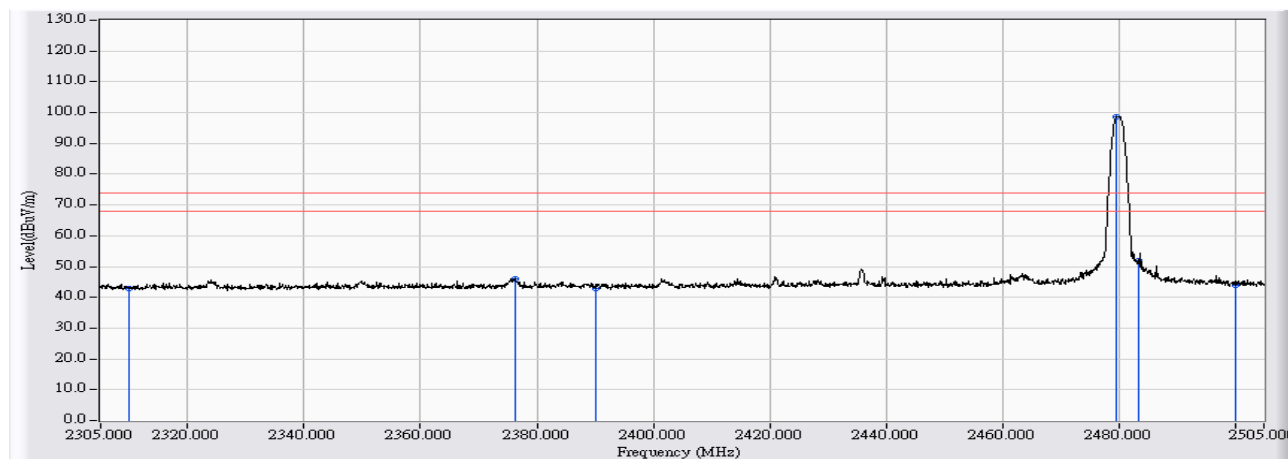


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.346	17.215	30.561	-23.439	54.000	AVERAGE
2		2350.100	13.593	25.013	38.607	-15.393	54.000	AVERAGE
3		2390.000	13.840	17.136	30.976	-23.024	54.000	AVERAGE
4	*	2480.000	14.396	62.841	77.237	23.237	54.000	AVERAGE
5		2483.500	14.417	19.733	34.151	-19.849	54.000	AVERAGE
6		2500.000	14.518	17.943	32.462	-21.538	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2480MHz Mode 1: Tx-AD2037320910LF

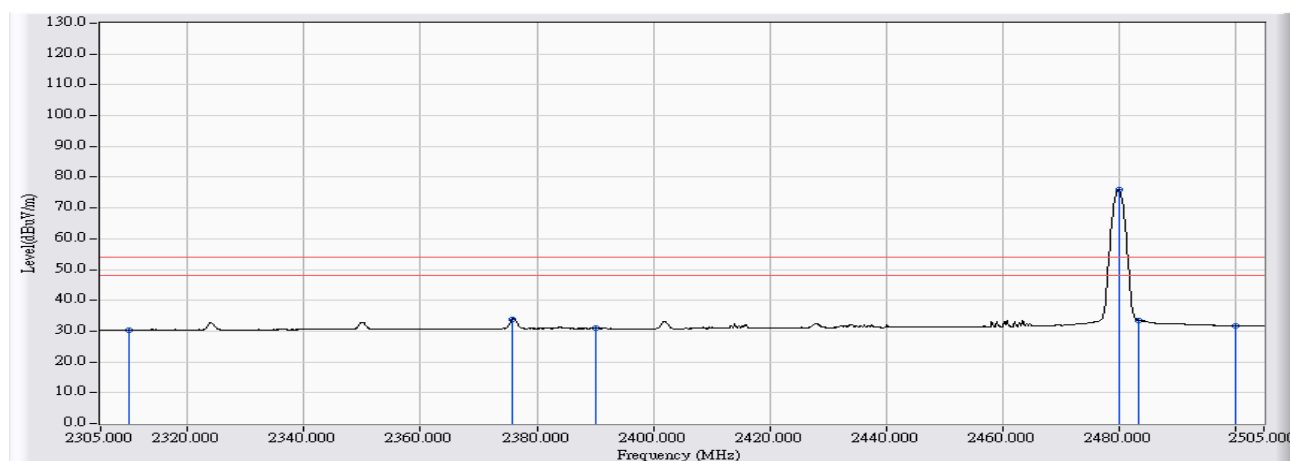


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.346	29.608	42.954	-31.046	74.000	PEAK
2		2376.200	13.755	32.084	45.839	-28.161	74.000	PEAK
3		2390.000	13.840	28.923	42.763	-31.237	74.000	PEAK
4	*	2479.700	14.394	84.309	98.704	24.704	74.000	PEAK
5		2483.500	14.417	37.553	51.971	-22.029	74.000	PEAK
6		2500.000	14.518	29.477	43.996	-30.004	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	Time : 2016/12/19
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	Power : AC 120V / 60Hz
EUT : Lyra mini	Note : 802.15.1_BLE_2480MHz Mode 1: Tx-AD2037320910LF



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.346	17.085	30.431	-23.569	54.000	AVERAGE
2		2375.700	13.752	20.145	33.897	-20.103	54.000	AVERAGE
3		2390.000	13.840	17.015	30.855	-23.145	54.000	AVERAGE
4	*	2480.000	14.396	61.433	75.829	21.829	54.000	AVERAGE
5		2483.500	14.417	19.048	33.466	-20.534	54.000	AVERAGE
6		2500.000	14.518	17.263	31.782	-22.218	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

7. Occupied Bandwidth

7.1. Test Equipment

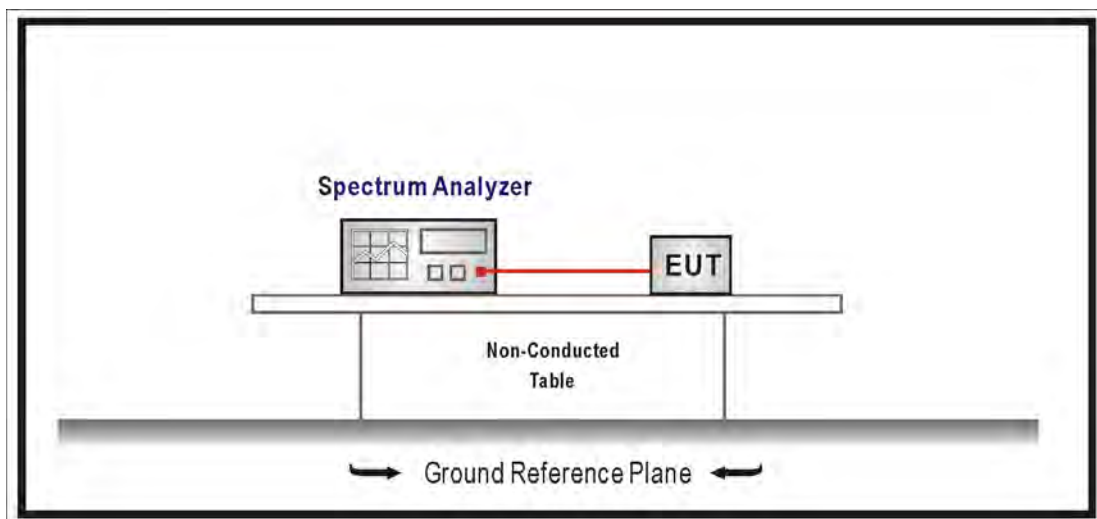
The following test equipment is used during the test:

Occupied Bandwidth / SR10-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/22

Note: All equipments that need to calibrate are with calibration period of 1 year.

7.2. Test Setup



7.3. Limits

The 6 dB bandwidth must be greater than 500 kHz.

7.4. Test Procedures

The EUT was setup according to ANSI C63.10:2013; tested according to DTS test procedure of KDB558074 V03R02 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 1% of EBW, Span greater than RBW.

7.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

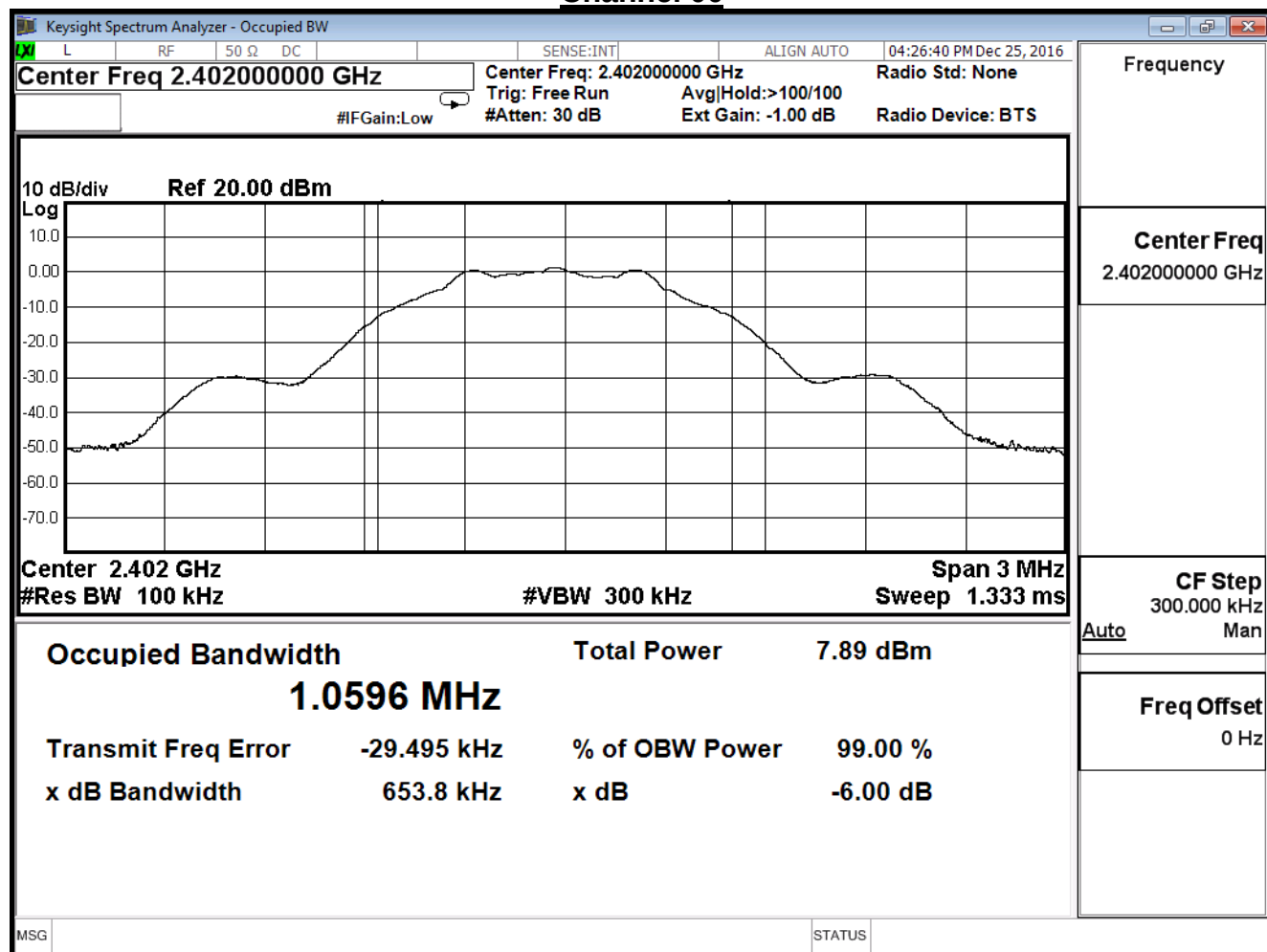
7.6. Test Result

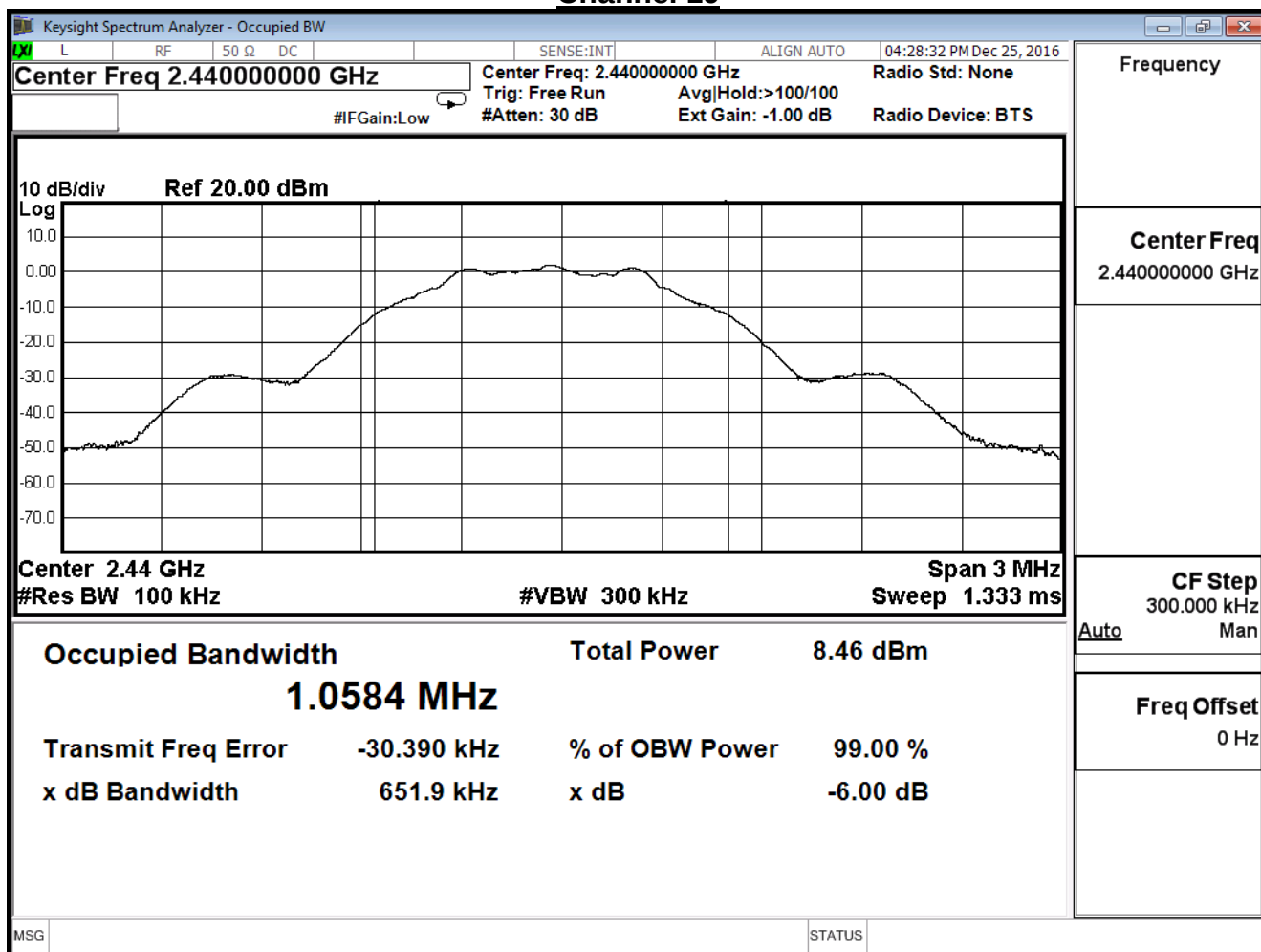
Product	Lyra mini		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Tx-AD2037320910LF		
Date of Test	2016/12/25	Test Site	SR10-H

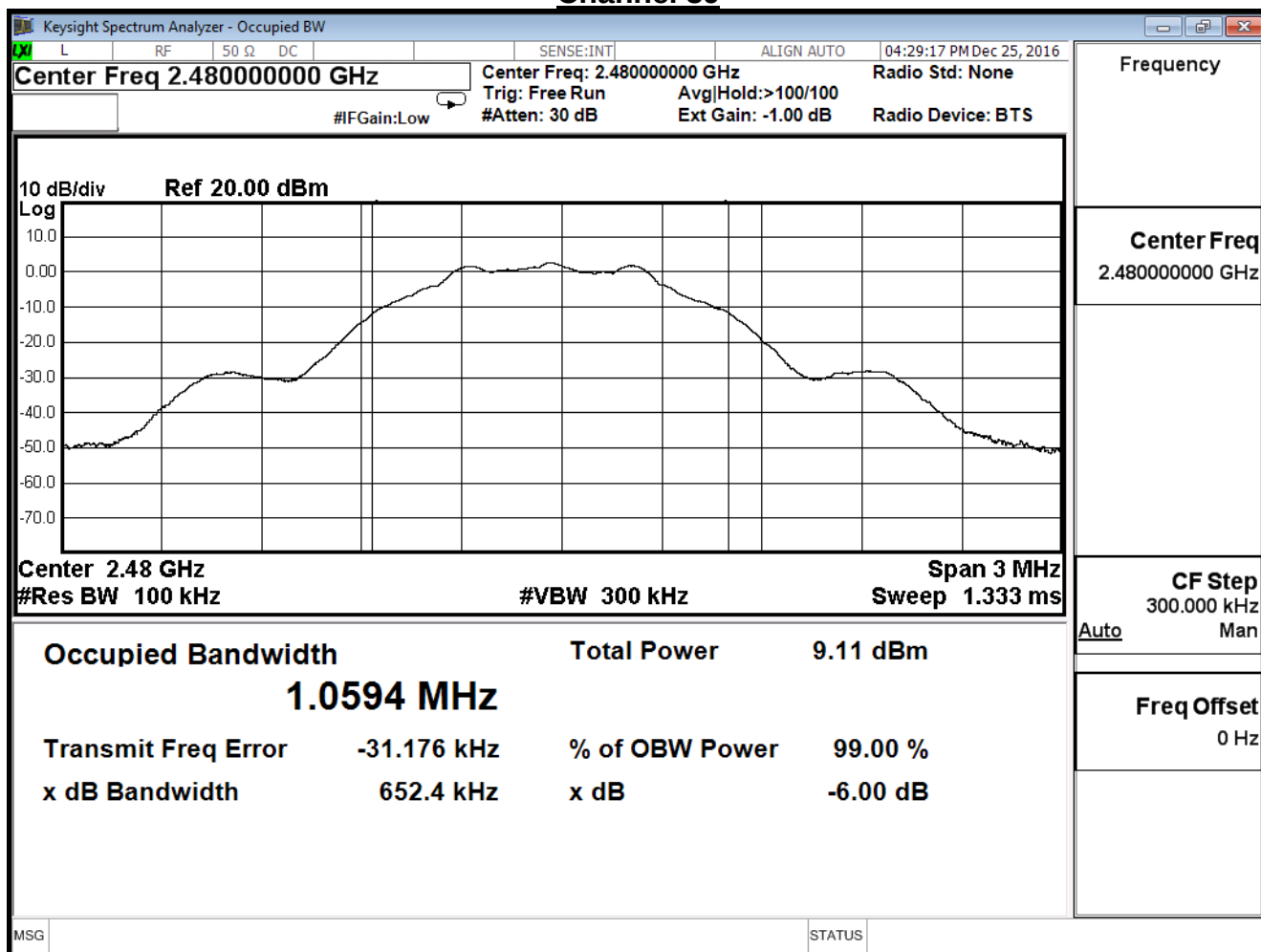
GFSK

Channel No.	Frequency (MHz)	Measure Level (KHz)	Limit (MHz)	Result
00	2402	653.80	≥ 0.5	Pass
19	2440	651.90	≥ 0.5	Pass
39	2480	652.40	≥ 0.5	Pass

Channel 00



Channel 19

Channel 39

8. Power Density

8.1. Test Equipment

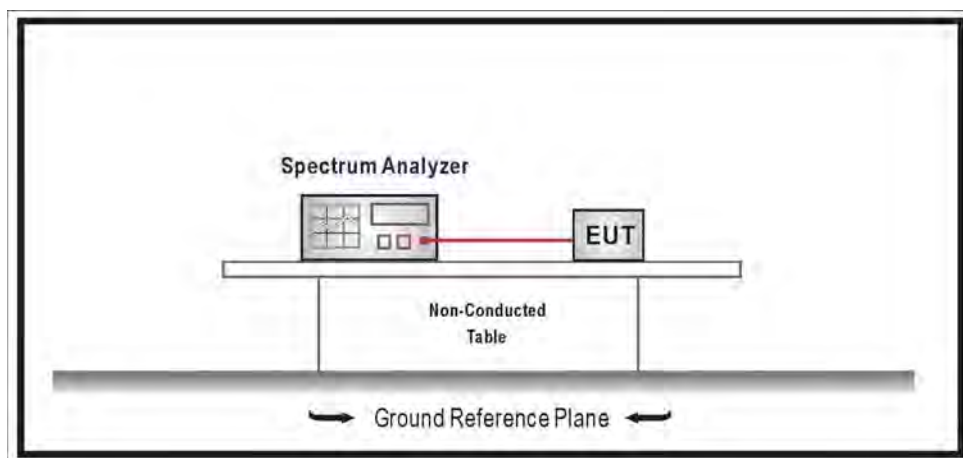
The following test equipment is used during the test:

Power Density / SR10-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/22

Note: All equipments that need to calibrate are with calibration period of 1 year.

8.2. Test Setup



8.3. Limits

The peak power spectral density conducted from the intentional radiated to the antenna shall not be greater than +8dBm in any 3kHz band during any time interval of continuous transmission.

8.4. Test Procedures

The EUT was setup according to ANSI C63.10:2013; tested according to DTS test procedure of KDB558074 V03R02 for compliance to FCC 47CFR 15.247 requirements.

8.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

8.6. Uncertainty

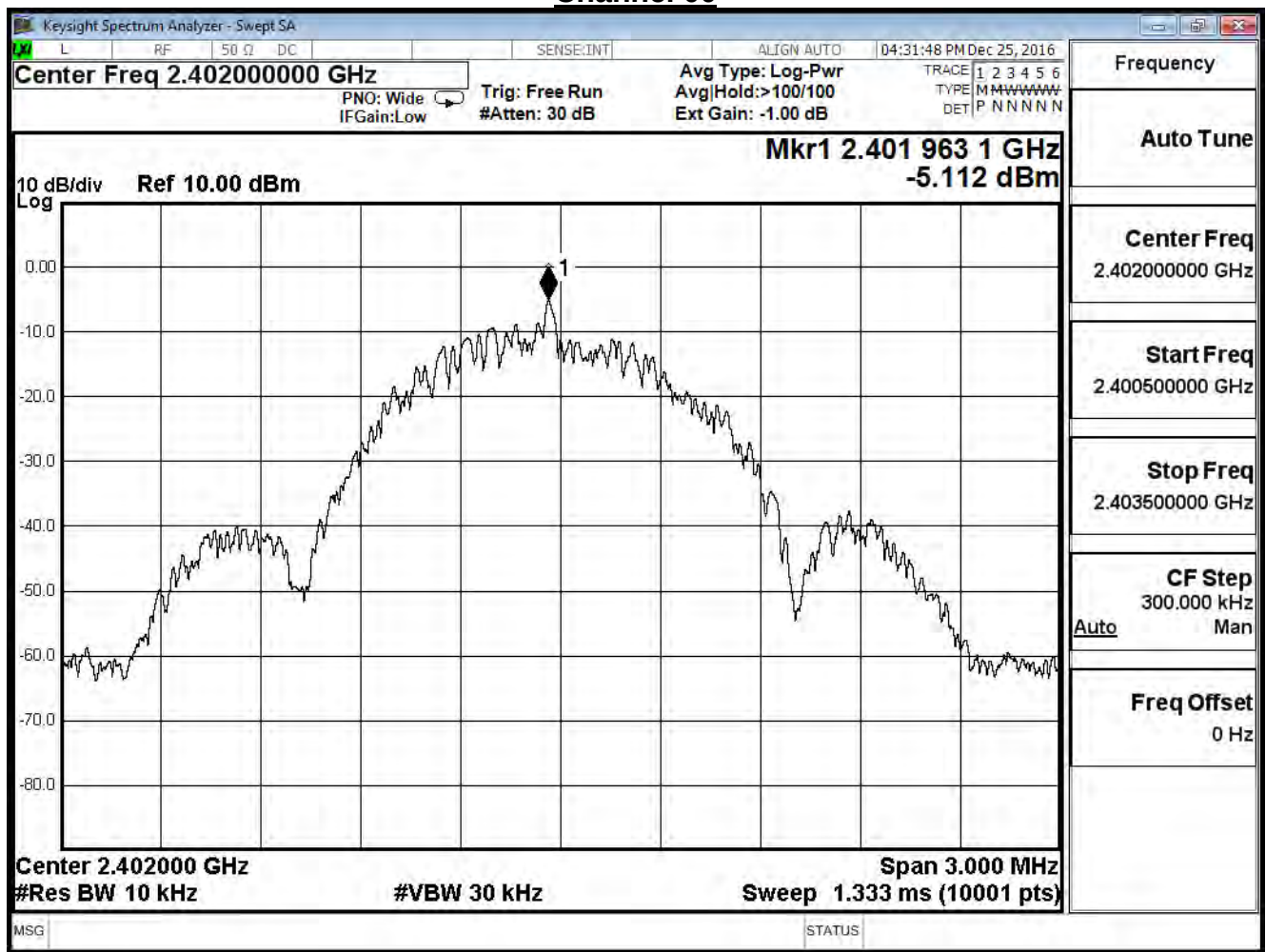
The measurement uncertainty is defined as $\pm 1.27\text{dB}$.

8.7. Test Result

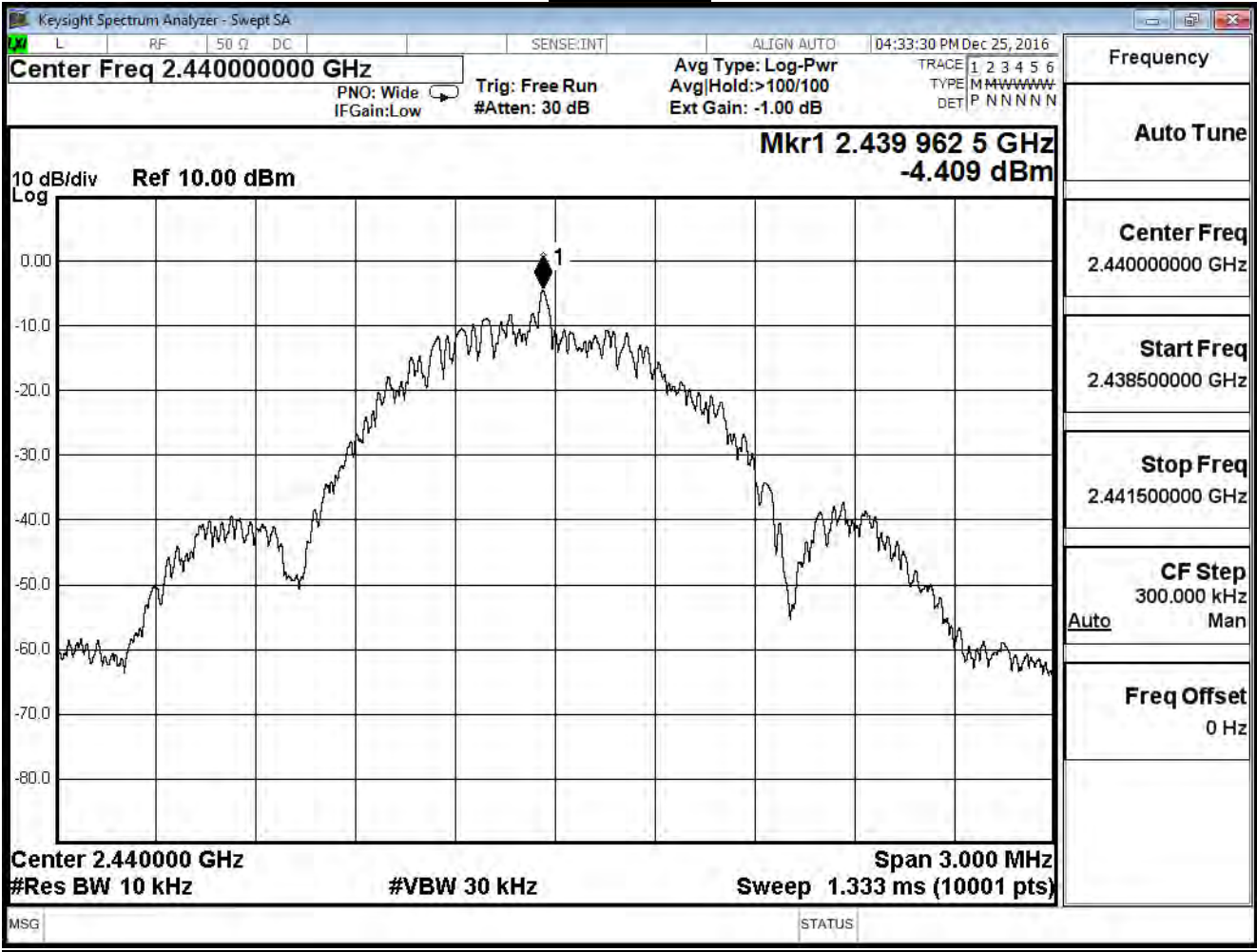
Product	Lyra mini		
Test Item	Power Density		
Test Mode	Mode 1: Tx-AD2037320910LF		
Date of Test	2016/12/25	Test Site	SR7

Channel No.	Frequency (MHz)	Measure Level(dBm)	Limit (dBm)	Result
00	2402	-5.112	≤ 8	Pass
19	2440	-4.409	≤ 8	Pass
39	2480	-3.802	≤ 8	Pass

Channel 00



Channel 19



Channel 39

