

FCC Test Report

Product Name : HRM-BLE-300

Model No. : HR-08

FCC ID. : RXIHRM300

Applicant : G.PULSE INTERNATIONAL CO.,LTD.

Address : 16-3 LANE 852 TU CHENG ROAD,TA
LI,TAICHUNG CITY,TAIWAN R.O.C.

Date of Receipt : 2014/08/08

Issued Date : 2014/10/03

Report No. : 1480253R-RFUSP01V00-A

Report Version : V1.0



Testing Laboratory

3024

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Test Report Certification

Issued Date : 2014/10/03

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 Applicant : G.PULSE INTERNATIONAL CO.,LTD.
 Address : 16-3 LANE 852 TU CHENG ROAD,TA LI,TAICHUNG
 CITY,TAIWAN R.O.C.
 Manufacturer : G.PULSE INTERNATIONAL CO.,LTD.
 Model No. : HR-08
 FCC ID. : RXIHRM300
 EUT Voltage : DC 3V (Power by Battery)
 Trade Name : GPULSE
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2013
 Test Result : Complied

The test results relate only to the samples tested.

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Documented By

:

(Demi Chang / Engineering Adm. Specialist)

Reviewed By

:

(Jimmie Liu / Senior Engineer)

Approved By

:

(Roy Wang / Director)

Laboratory Information

We, **QuieTek Corporation**, 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
		NCC, Certificate No: NCC-RCB-07
USA	:	FCC, Registration Number: 365520
Canada	:	IC, Submission No: 150981

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site:<http://www.quietek.com/tw/ctg/cts/accreditations.htm>

The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site :
<http://www.quietek.com/>

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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1. General Information

1.1. EUT Description

Product Name	HRM-BLE-300
Trade Name	GPULSE
Model No.	HR-08
Frequency Range/Channel Number	2402~2480MHz / 40 Channels
Type of Modulation	Bluetooth 4.0(GFSK)
Antenna Type	Printed
Antenna Gain	0dBi

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 HRM-BLE-300 including a 2.4GHz Bluetooth 4.0 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 Bluetooth 4.0 in accordance with Part 15 regulations. The function receiving was measured and made a test report that the report number is 1480253R-RFUSP01V00 under Declaration of Conformity.

1.2. Test Mode

QuieTek 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:

Pre-Test Mode	
EMI	Mode 1: Transmit
Final Test Mode	
EMI	Mode 1: Transmit

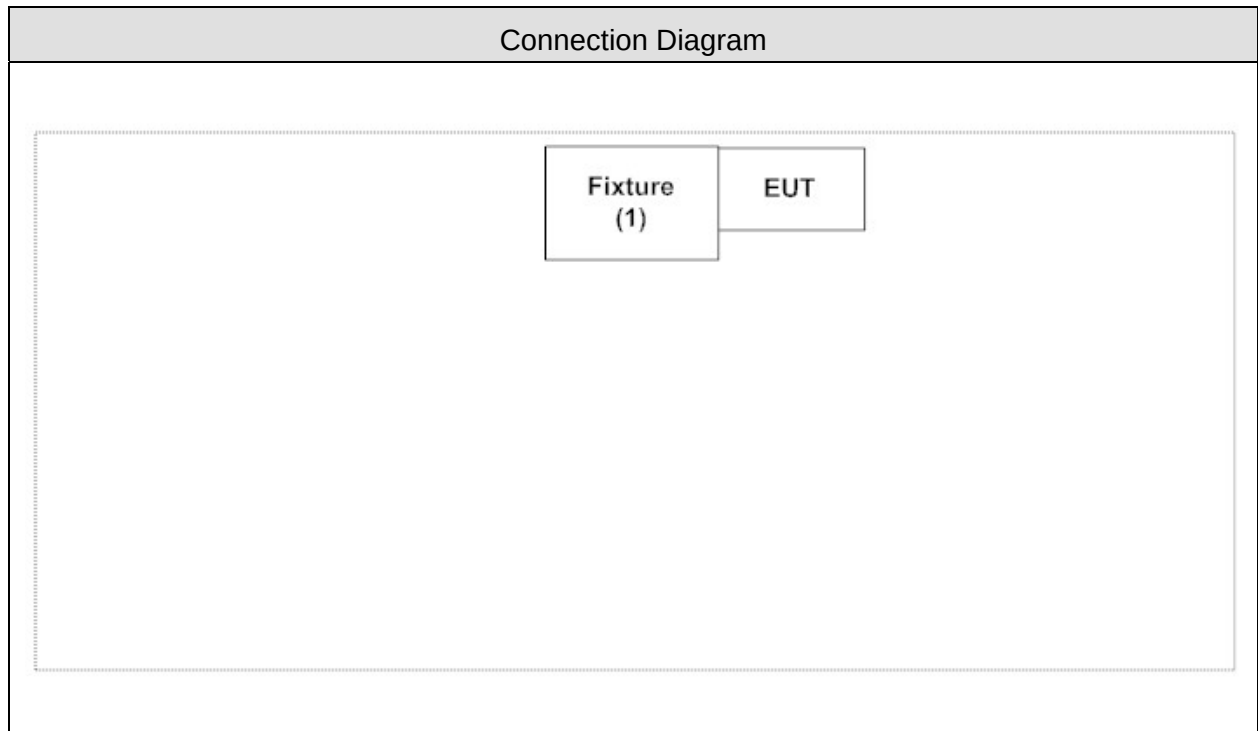
Test Items	Mode	Modulation	Channel	Antenna	Result
Conducted Emission	1	GFSK	19	0	NA
Peak Power Output	1	GFSK	0/19/39	0	Complies
Radiated Emission	1	GFSK	0/19/39	0	Complies
RF antenna conducted test	1	GFSK	0/19/39	0	Complies
Radiated Emission Band Edge	1	GFSK	0/39	0	Complies
Occupied Bandwidth	1	GFSK	0/19/39	0	Complies
Power Density	1	GFSK	0/19/39	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	Fixture	G-PULSE Antenna	N/A	N/A	DoC	--

1.4. Configuration of tested System



1.5. EUT Exercise Software

1	Setup the EUT as shown in Section 1.4.
2	Execute the setting with the fixture.
3	Configure the test mode, the test channel to start the continuous transmit.
4	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 15.247 Peak Power Output	15 - 35	23
Humidity (%RH)		25 - 75	50
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	48
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	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Power Density	15 - 35	24
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000

2. Peak Power Output

2.1. Test Equipment

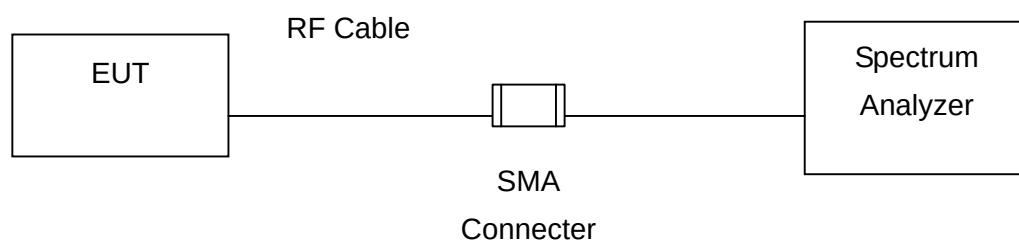
The following test equipment is used during the test:

Peak Power Output / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2015/07/14

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

2.2. Test Setup



2.3. Test procedures

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

2.4. Limits

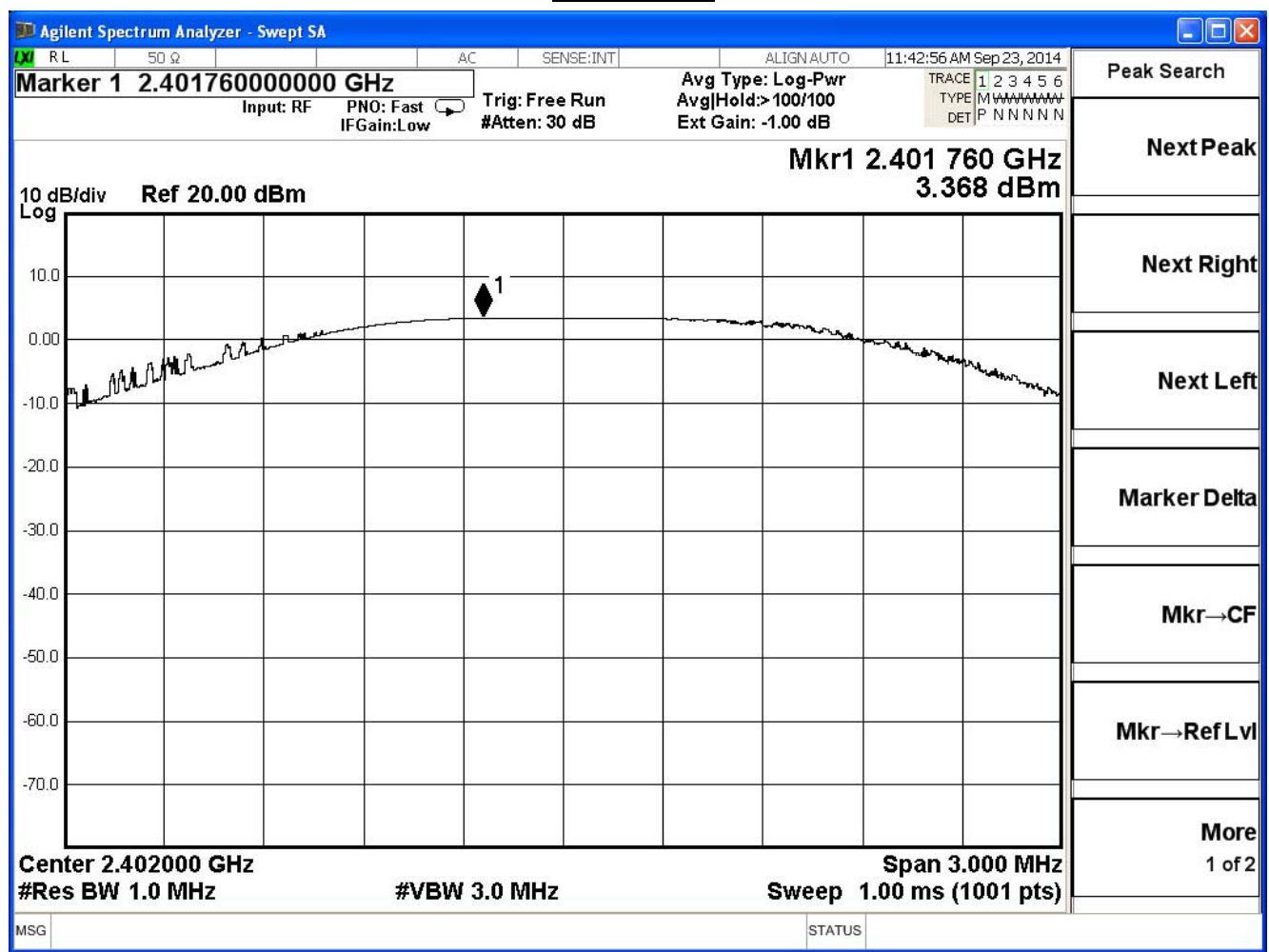
The maximum peak power shall be less 1 Watt.

2.5. Test Specification

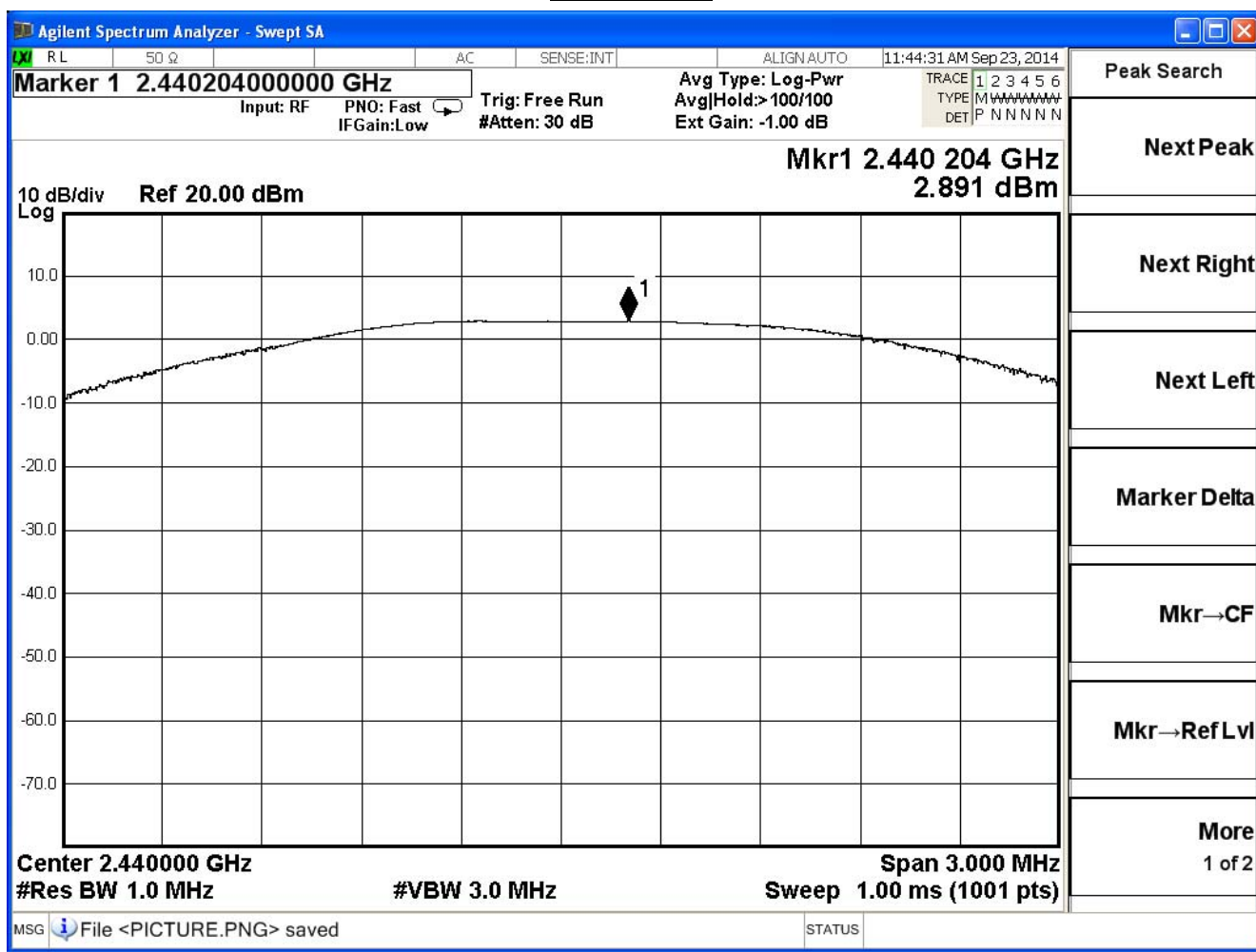
According to FCC Part 15 Subpart C Paragraph 15.247

Product	HRM-BLE-300		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2014/09/23	Test Site	SR7

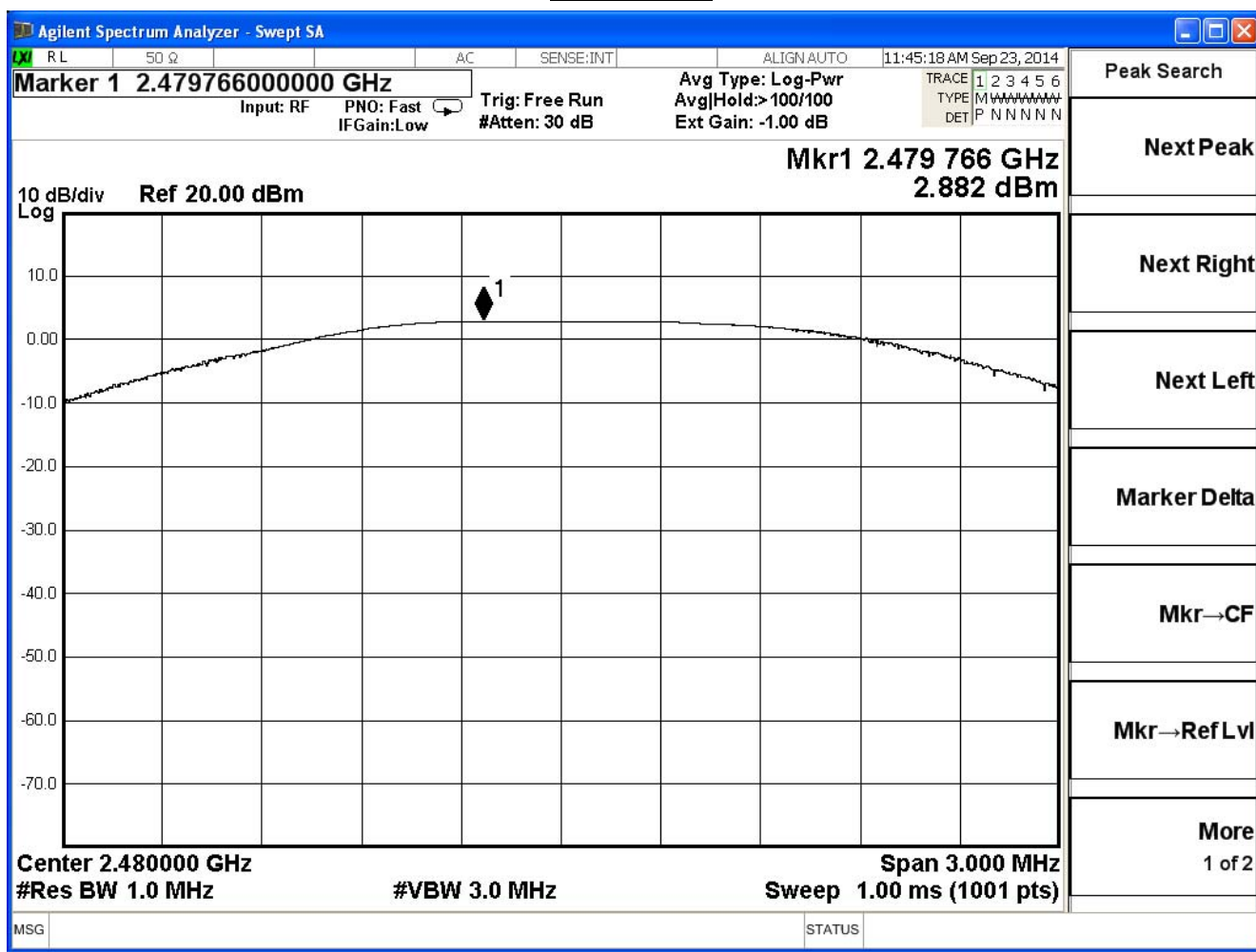
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	3.368	30	Pass
19	2440	2.891	30	Pass
39	2480	2.882	30	Pass



Channel 19



Channel 39



3. Radiated Emission

3.1. Test Equipment

The following test equipments are used during the test:

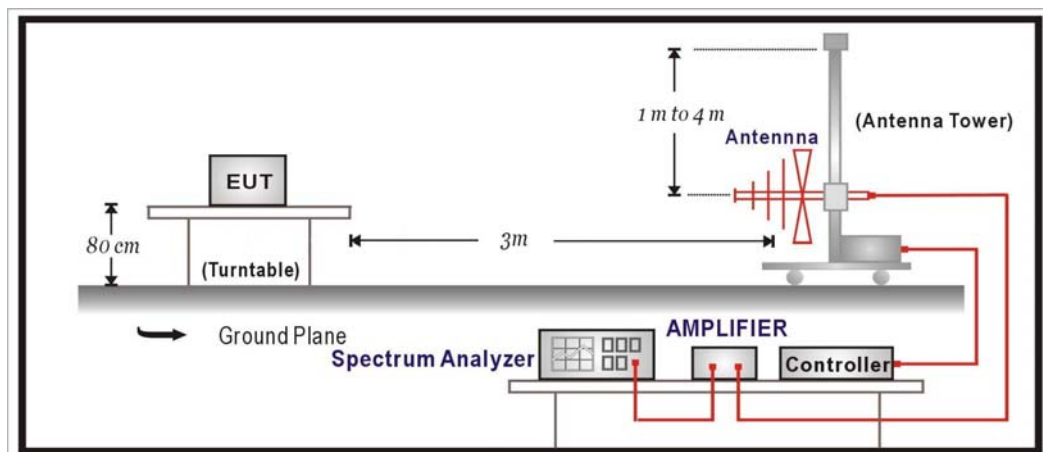
Radiated Emission / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Bilog Antenna	SCHAFFNER	CBL6112B	2895(CB1)	2015/08/14
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120	D743	2015/02/12
Pre-Amplifier	Quietek	AMF-4D.	888003	2015/06/02
Pre-Amplifier	QuieTek	AP-025C	CHM-0706049	2015/02/06
Spectrum Analyzer	Agilent	E4440A	MY46187335	2015/01/12
k Type Cable	Huber Suhner	Sucoflex 102	25623/2	2015/02/10
Bilog Antenna	SCHAFFNER	CBL6112B	2895(CB1)	2015/08/14

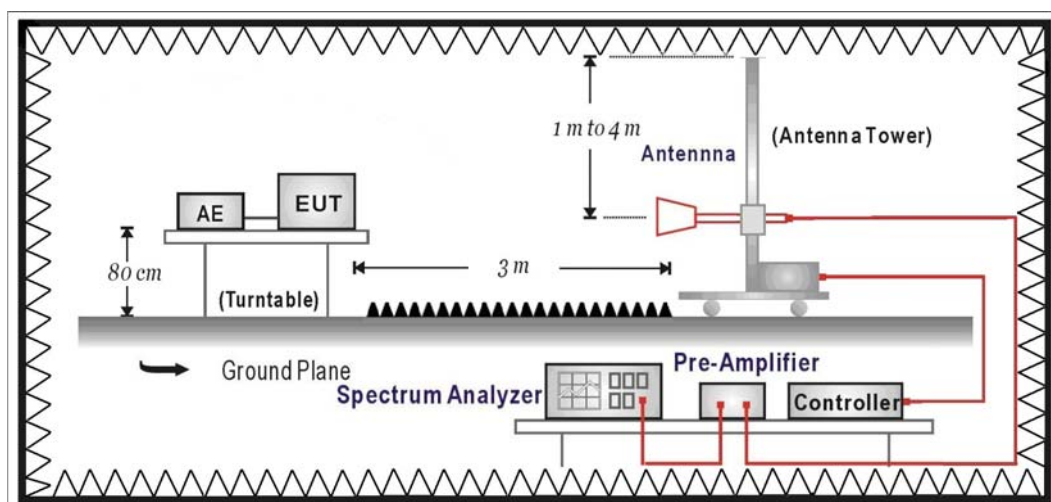
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

3.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



3.3. 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.

3.4. Test Procedure

The EUT was setup according to ANSI C63.10 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 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 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.

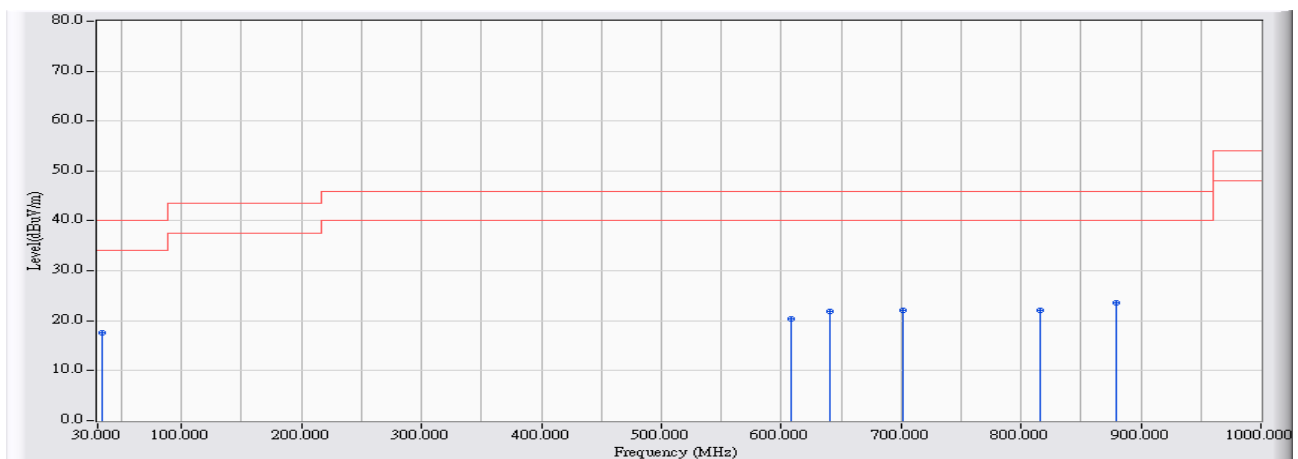
3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

3.6. Test Result

30MHz-1GHz Spurious

Site : CB1	Time : 2014/09/22 - 15:04
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_EFS_30-1G-2_1011 - HORIZONTAL	Power : DC 3V
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2440MHz

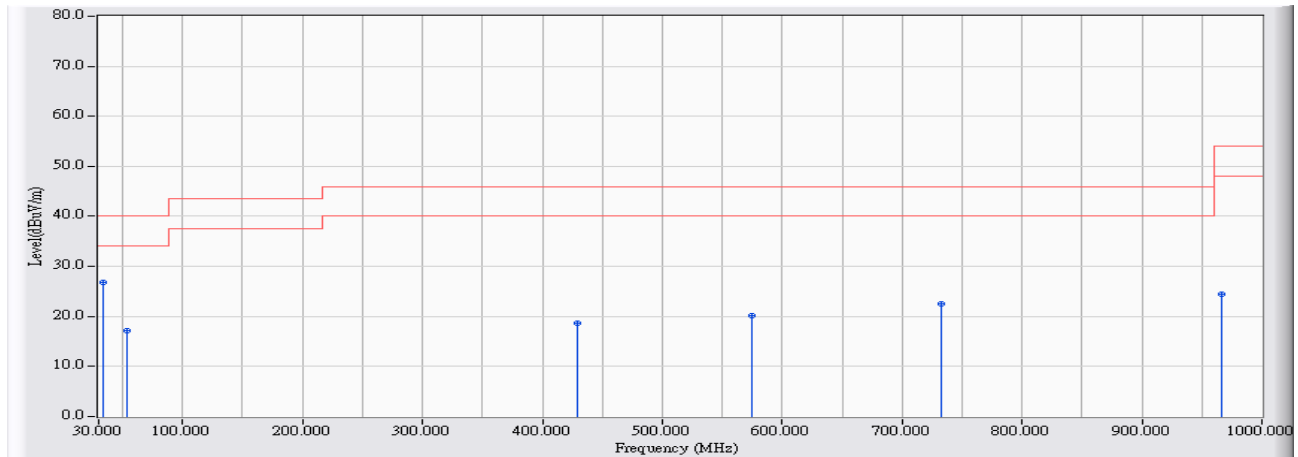


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	33.880	-19.810	37.494	17.683	-22.317	40.000	QUASIPeAK
2		608.120	-14.392	34.686	20.294	-25.706	46.000	QUASIPeAK
3		641.100	-14.081	36.003	21.922	-24.078	46.000	QUASIPeAK
4		701.240	-12.265	34.295	22.030	-23.970	46.000	QUASIPeAK
5		815.700	-11.524	33.703	22.178	-23.822	46.000	QUASIPeAK
6		879.720	-11.102	34.669	23.567	-22.433	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 : CB1	Time : 2014/09/22 - 14:33
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_EFS_30-1G-2_1011 - VERTICAL	Power : DC 3V
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2440MHz



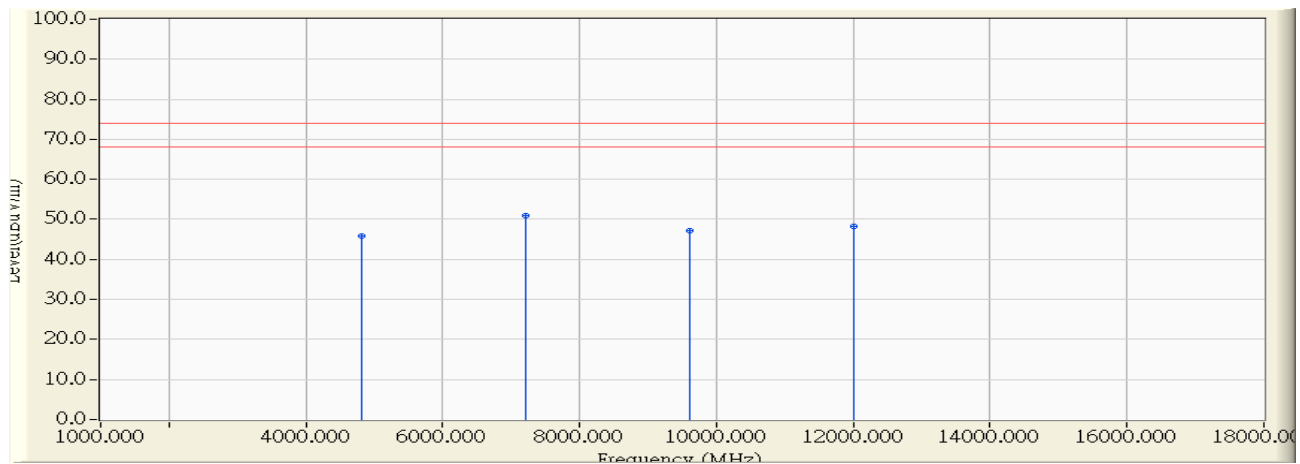
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	33.880	-19.810	46.520	26.709	-13.291	40.000	QUASIPeAK
2		53.280	-26.716	43.942	17.225	-22.775	40.000	QUASIPeAK
3		429.640	-16.659	35.423	18.764	-27.236	46.000	QUASIPeAK
4		575.140	-14.558	34.730	20.172	-25.828	46.000	QUASIPeAK
5		732.280	-12.462	34.921	22.460	-23.540	46.000	QUASIPeAK
6		967.020	-10.024	34.579	24.556	-29.444	54.000	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 : CB1	Time : 2014/08/22 - 11:30
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power :
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2402MHz

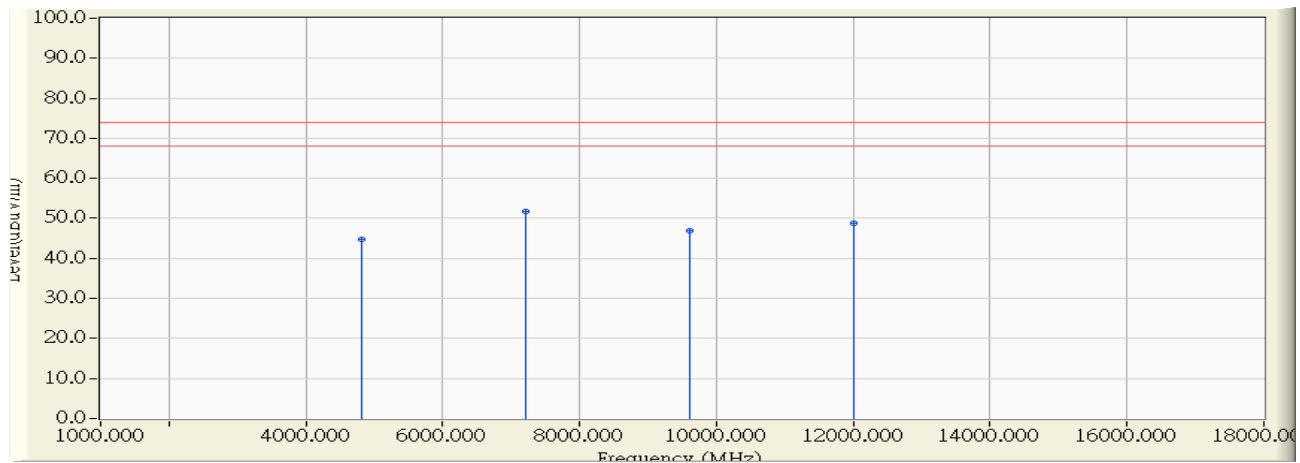


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4804.000	-0.582	46.470	45.888	-28.112	74.000	PEAK
2	*	7206.000	5.454	45.590	51.044	-22.956	74.000	PEAK
3		9608.000	9.187	37.980	47.167	-26.833	74.000	PEAK
4		12010.000	11.122	37.190	48.313	-25.687	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 : CB1	Time : 2014/08/22 - 11:21
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power :
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2402MHz

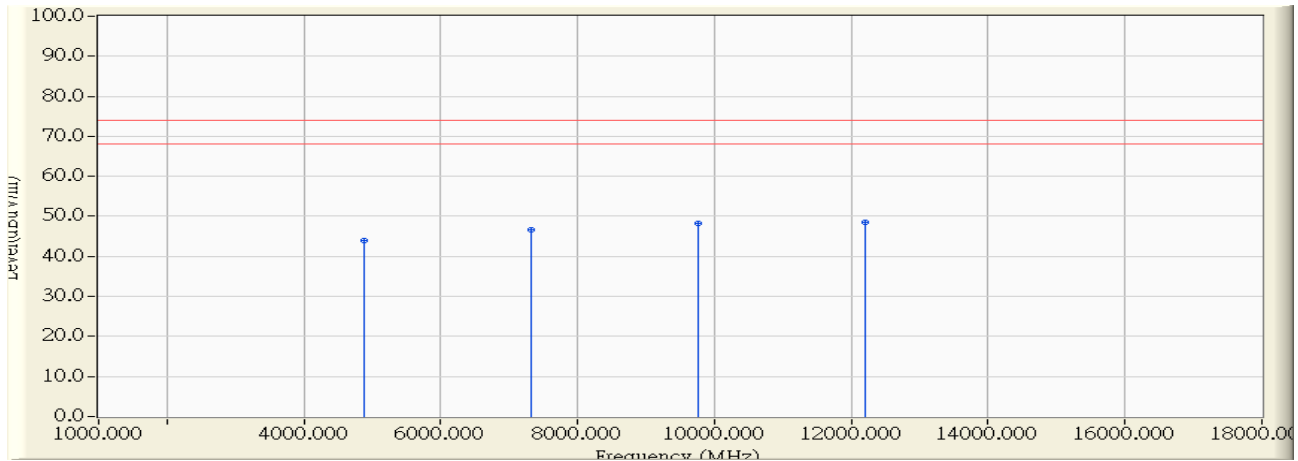


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4804.000	-0.582	45.370	44.788	-29.212	74.000	PEAK
2	*	7206.000	5.454	46.370	51.824	-22.176	74.000	PEAK
3		9608.000	9.187	37.790	46.977	-27.023	74.000	PEAK
4		12010.000	11.122	37.650	48.773	-25.227	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 : CB1	Time : 2014/08/22 - 11:36
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power :
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2440MHz

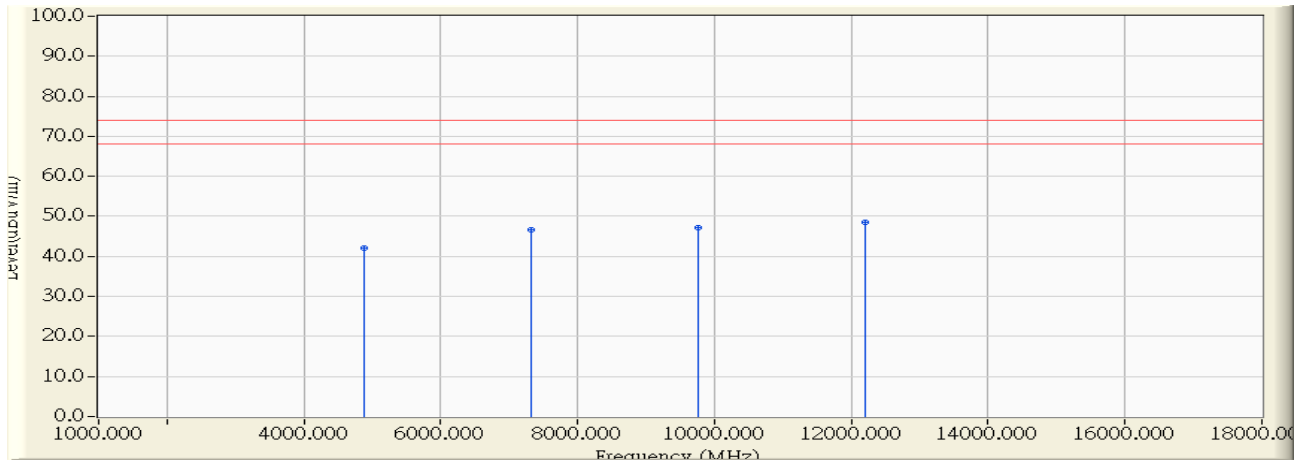


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4880.000	-0.397	44.360	43.963	-30.037	74.000	PEAK
2		7320.000	5.700	40.880	46.581	-27.419	74.000	PEAK
3		9760.000	10.171	38.210	48.381	-25.619	74.000	PEAK
4	*	12200.000	11.035	37.530	48.566	-25.434	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 : CB1	Time : 2014/08/22 - 11:40
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power :
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2440MHz

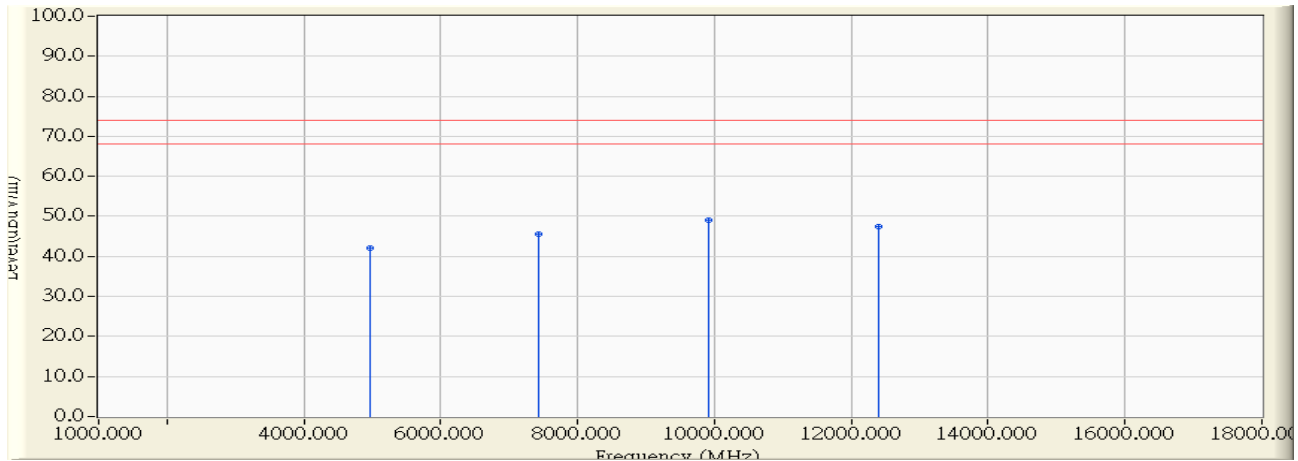


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4880.000	-0.397	42.590	42.193	-31.807	74.000	PEAK
2		7320.000	5.700	40.960	46.661	-27.339	74.000	PEAK
3		9760.000	10.171	37.060	47.231	-26.769	74.000	PEAK
4	*	12200.000	11.035	37.410	48.446	-25.554	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 : CB1	Time : 2014/08/22 - 11:50
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power :
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2480MHz

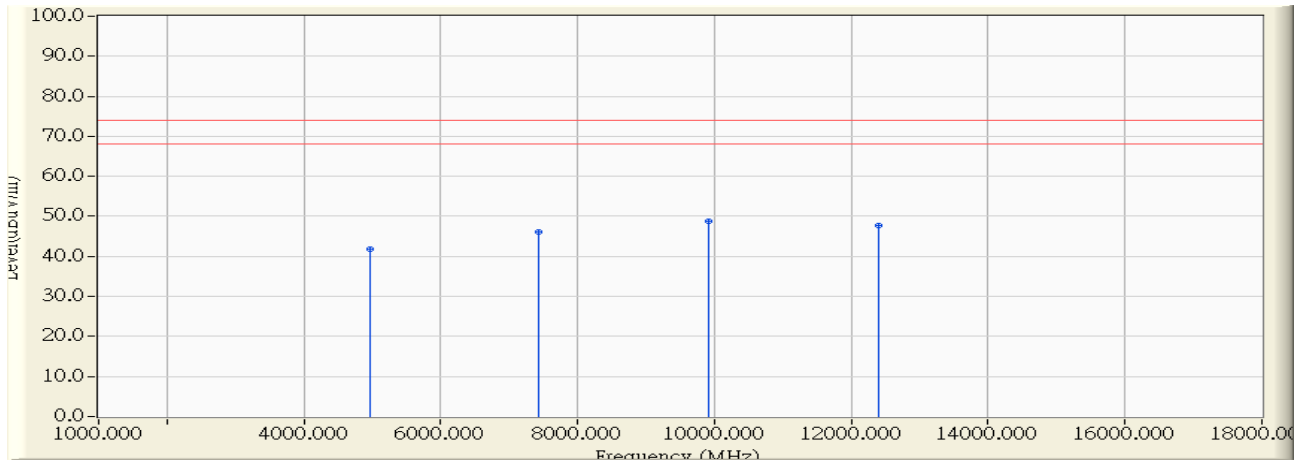


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4960.000	-0.202	42.340	42.138	-31.862	74.000	PEAK
2	7440.000	5.960	39.750	45.710	-28.290	74.000	PEAK
3	* 9920.000	11.207	37.840	49.047	-24.953	74.000	PEAK
4	12400.000	10.944	36.380	47.325	-26.675	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 : CB1	Time : 2014/08/22 - 11:45
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power :
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2480MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4960.000	-0.202	41.950	41.748	-32.252	74.000	PEAK
2		7440.000	5.960	40.130	46.090	-27.910	74.000	PEAK
3	*	9920.000	11.207	37.650	48.857	-25.143	74.000	PEAK
4		12400.000	10.944	36.650	47.595	-26.405	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.

4. RF antenna conducted test

4.1. Test Equipment

The following test equipment is used during the test:

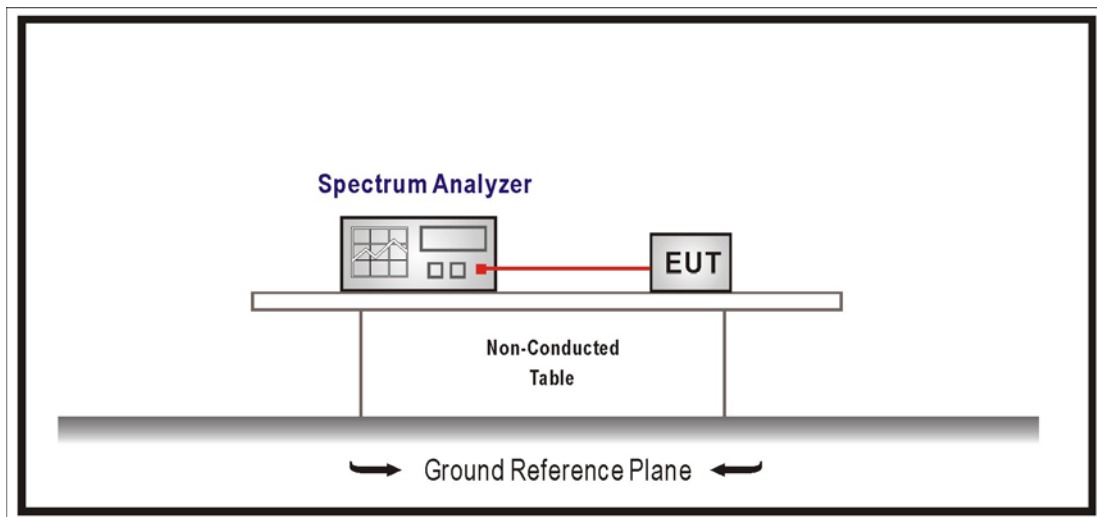
RF antenna conducted test / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2015/07/14

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

4.2. Test Setup

RF Conducted Measurement:



4.3. 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)).

4.4. Test Procedure

The EUT was setup according to ANSI C63.10 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.

4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

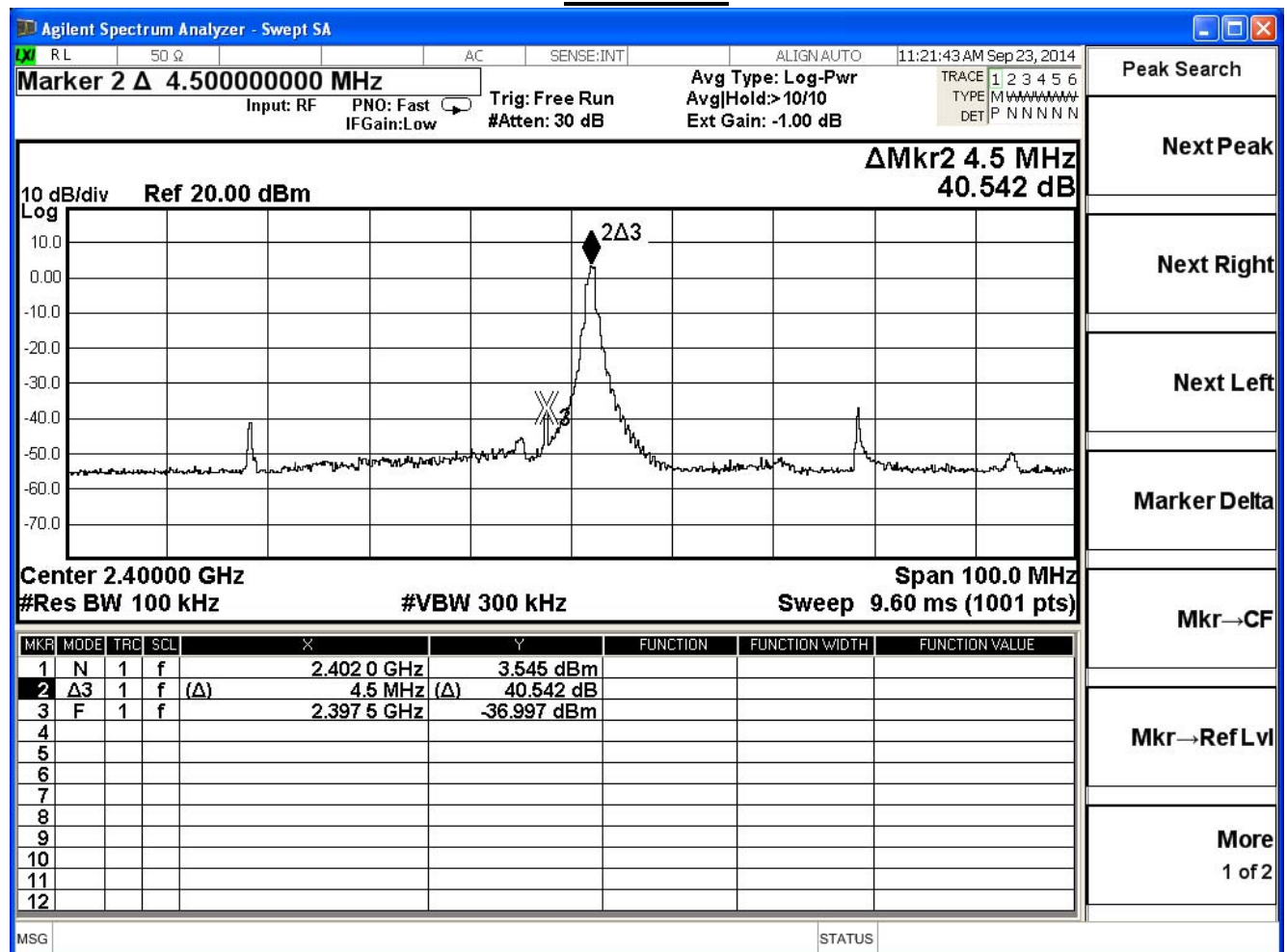
4.6. Test Result

Product	HRM-BLE-300		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2014/09/23	Test Site	SR7

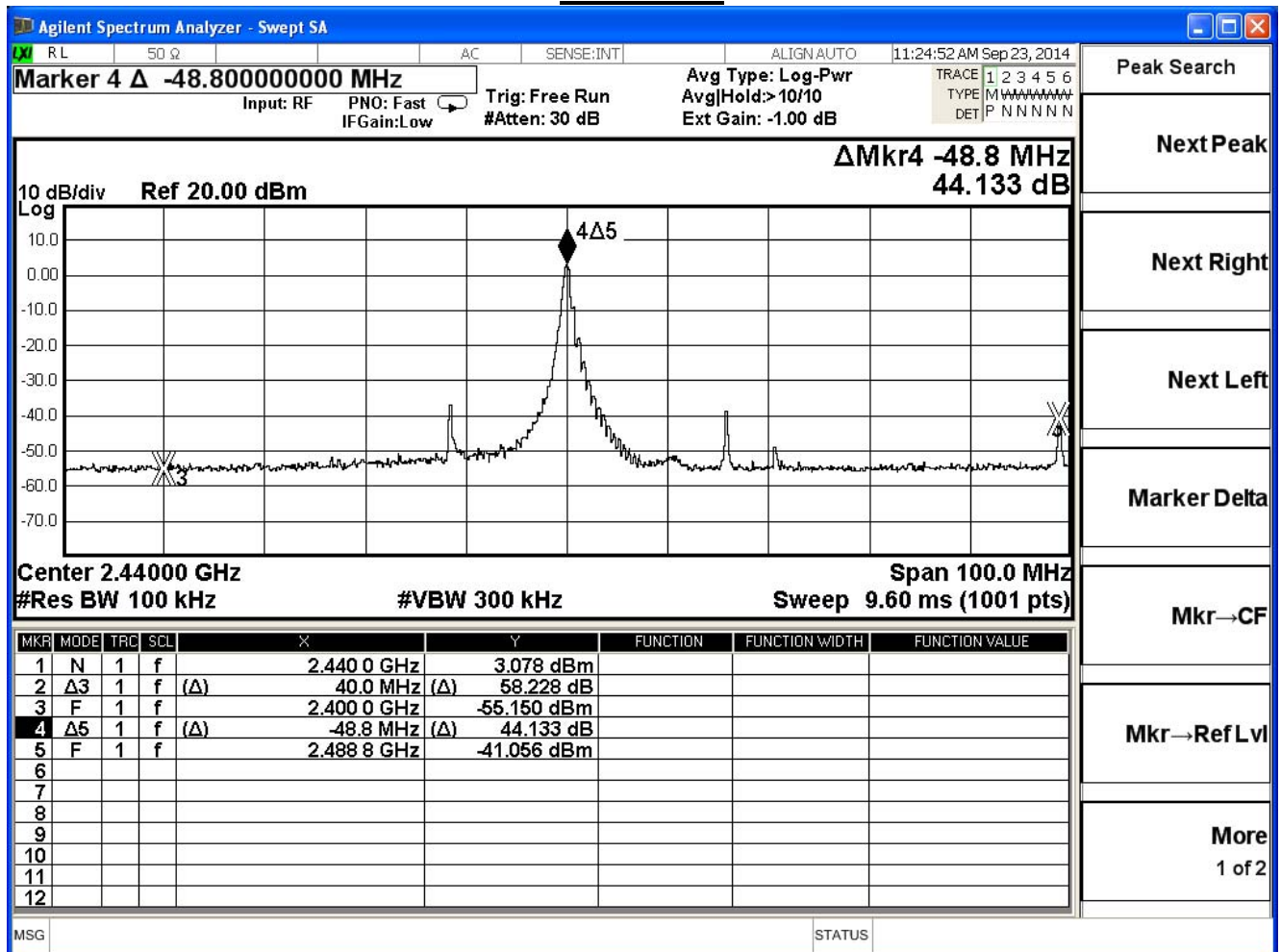
GFSK

Channel No.	Frequency (MHz)	Measurement Level (dB)	Required Limit (dBc)	Result
00	2402	40.542	≥ 20	Pass
19	2440	44.133	≥ 20	Pass
39	2480	39.901	≥ 20	Pass

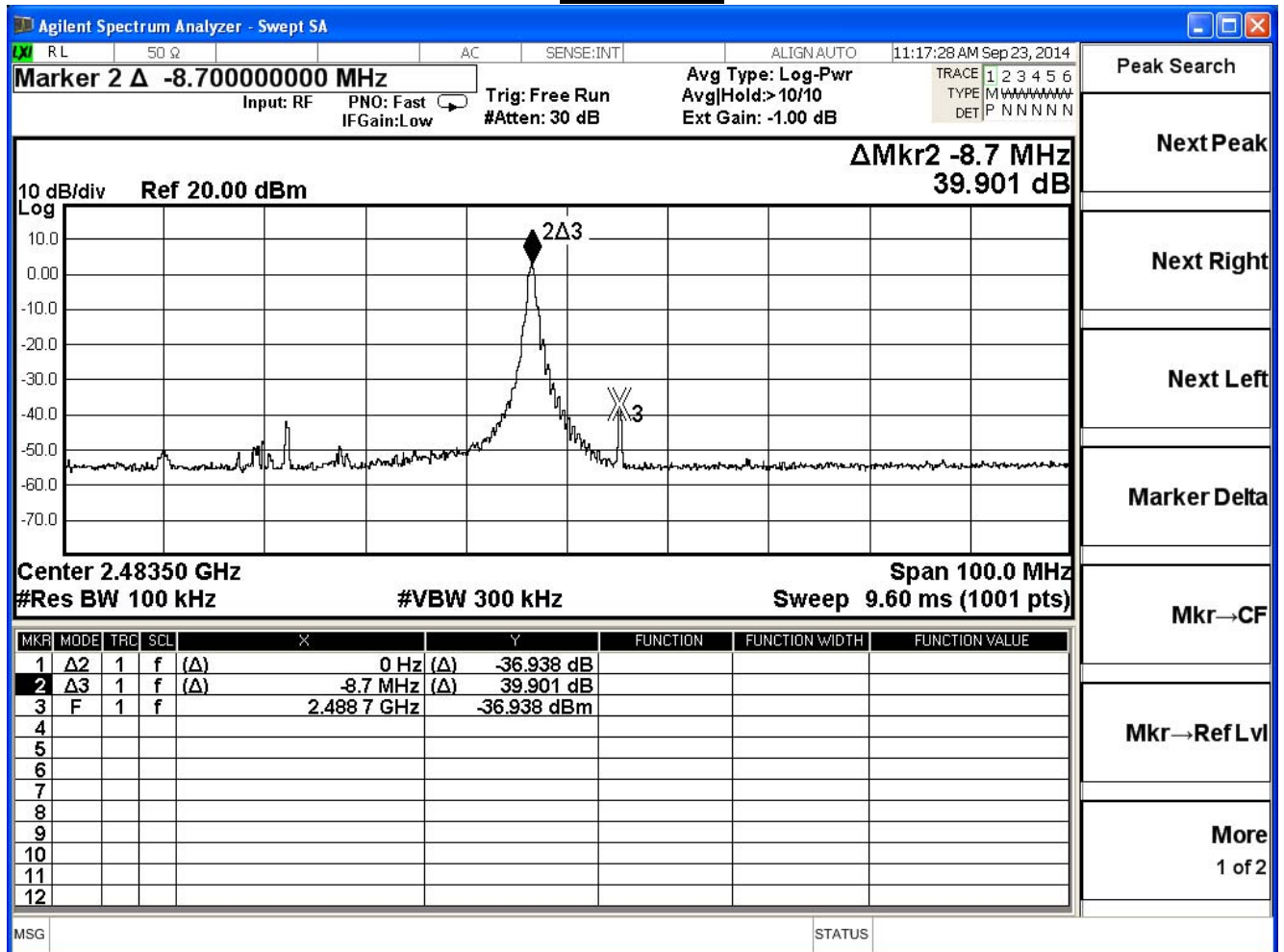
Channel 00



Channel 19

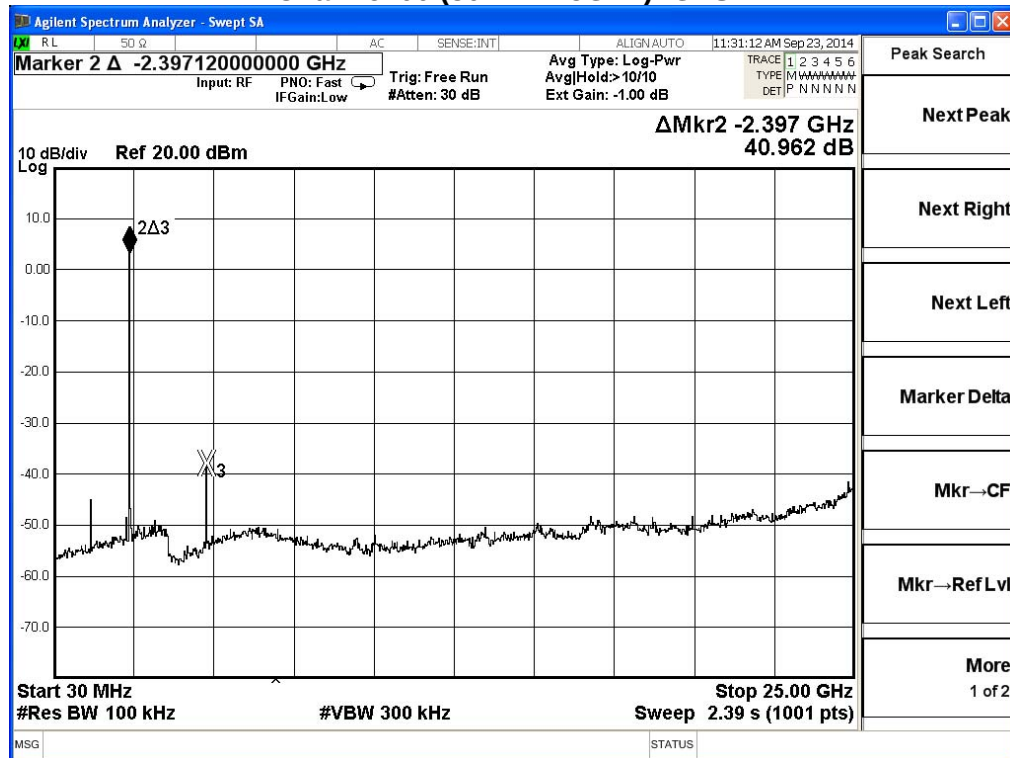


Channel 39

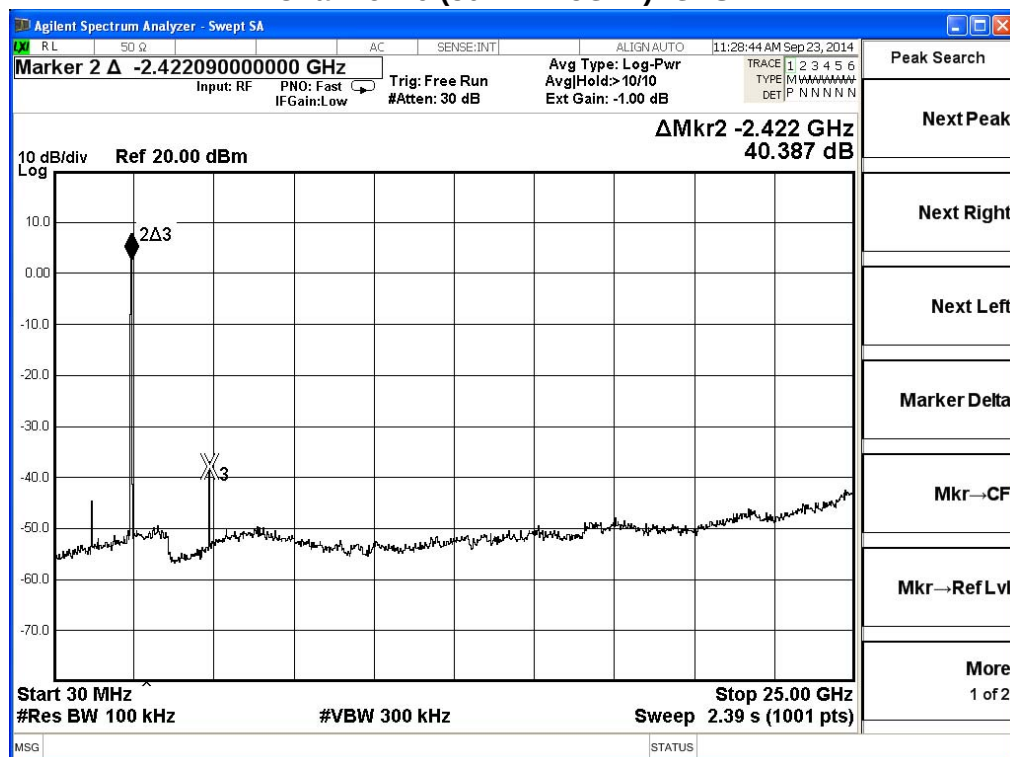


Product	HRM-BLE-300		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2014/09/23	Test Site	SR7

Channel 00 (30MHz-25GHz)- GFSK



Channel 19 (30MHz-25GHz)- GFSK



Product	HRM-BLE-300		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2014/09/23	Test Site	SR7

Channel 39 (30MHz-25GHz)- GFSK



5. Band Edge

5.1. Test Equipment

The following test equipments are used during the test:

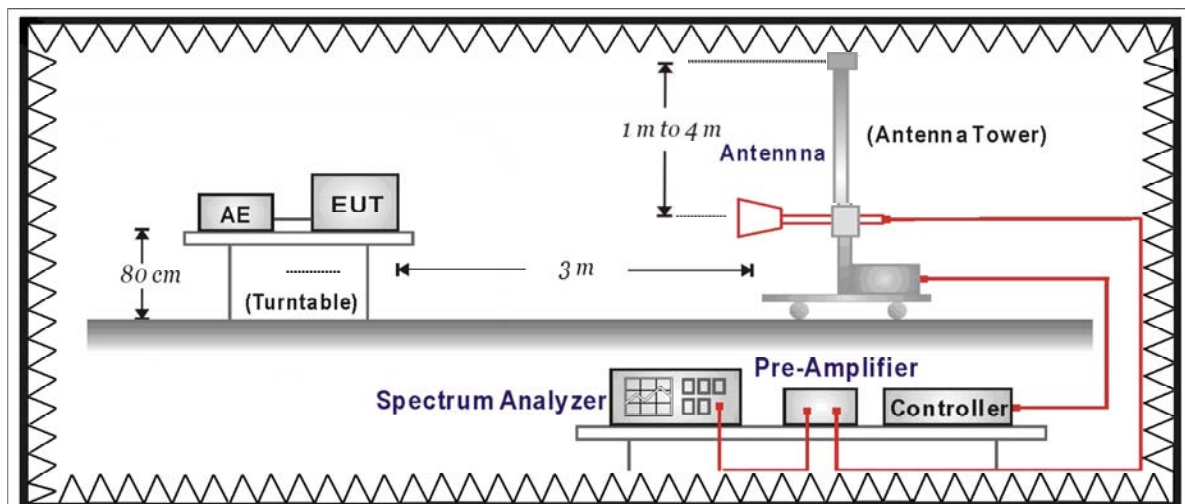
Band Edge / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120	D743	2015/02/12
Spectrum Analyzer	Agilent	E4440A	MY46187335	2015/01/12
k Type Cable	Huber Suhner	Sucoflex 102	25623/2	2015/02/10

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

5.2. Test Setup

RF Radiated Measurement:



5.3. 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.

5.4. Test Procedure

The EUT was setup according to ANSI C63.10 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.

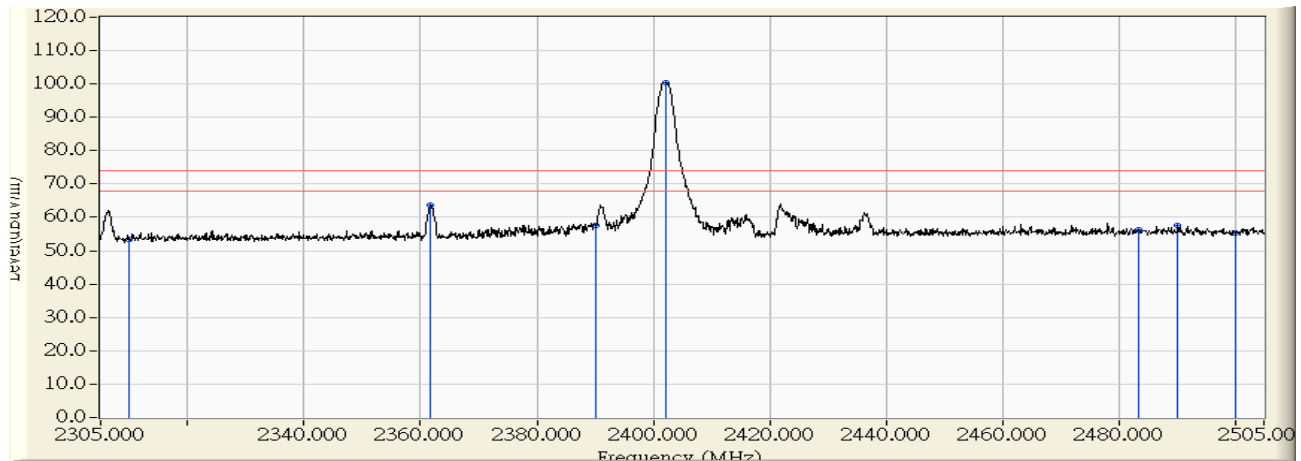
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10 on radiated measurement.

5.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

5.6. Test Result

Site : CB1	Time : 2014/08/22 - 10:38
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power :
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2402MHz

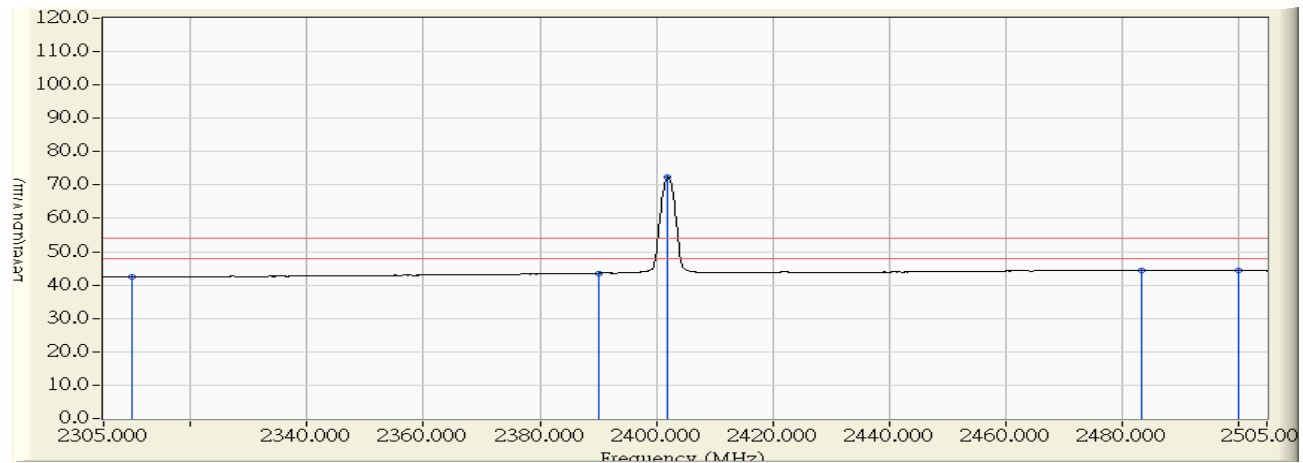


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2310.000	30.411	22.839	53.250	-20.750	74.000	PEAK
2	2361.700	30.947	32.820	63.767	-10.233	74.000	PEAK
3	2390.000	31.241	26.503	57.744	-16.256	74.000	PEAK
4 *	2402.200	31.367	69.114	100.481	26.481	74.000	PEAK
5	2483.500	31.980	24.238	56.217	-17.783	74.000	PEAK
6	2490.200	31.962	25.741	57.702	-16.298	74.000	PEAK
7	2500.000	31.934	23.422	55.357	-18.643	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 : CB1	Time : 2014/08/22 - 10:40
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power :
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2402MHz

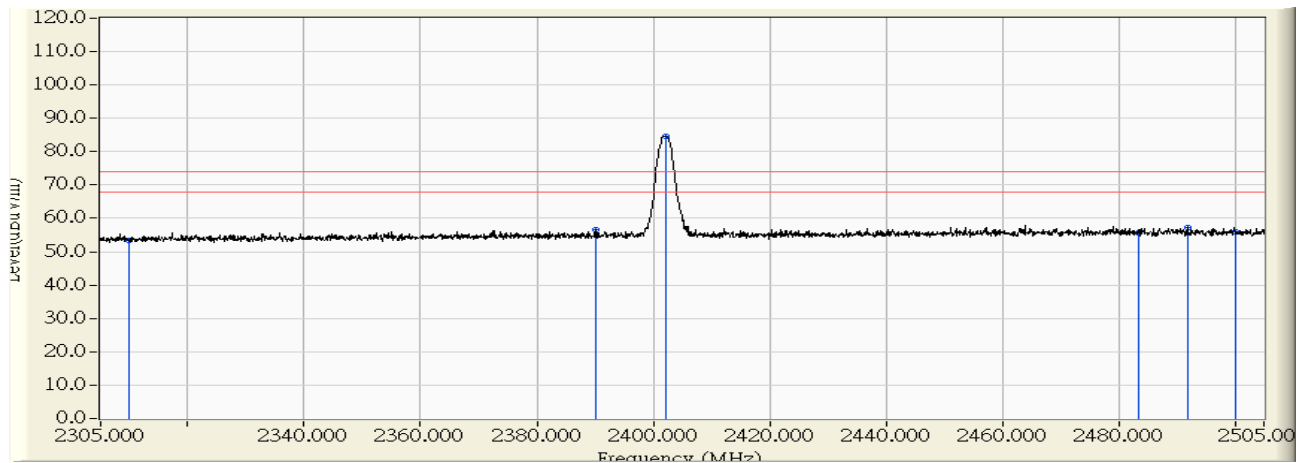


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.411	11.956	42.367	-11.633	54.000	AVERAGE
2		2390.000	31.241	12.292	43.533	-10.467	54.000	AVERAGE
3	*	2402.000	31.365	40.874	72.239	18.239	54.000	AVERAGE
4		2483.500	31.980	12.345	44.324	-9.676	54.000	AVERAGE
5		2500.000	31.934	12.328	44.263	-9.737	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 : CB1	Time : 2014/08/22 - 11:02
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power :
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2402MHz

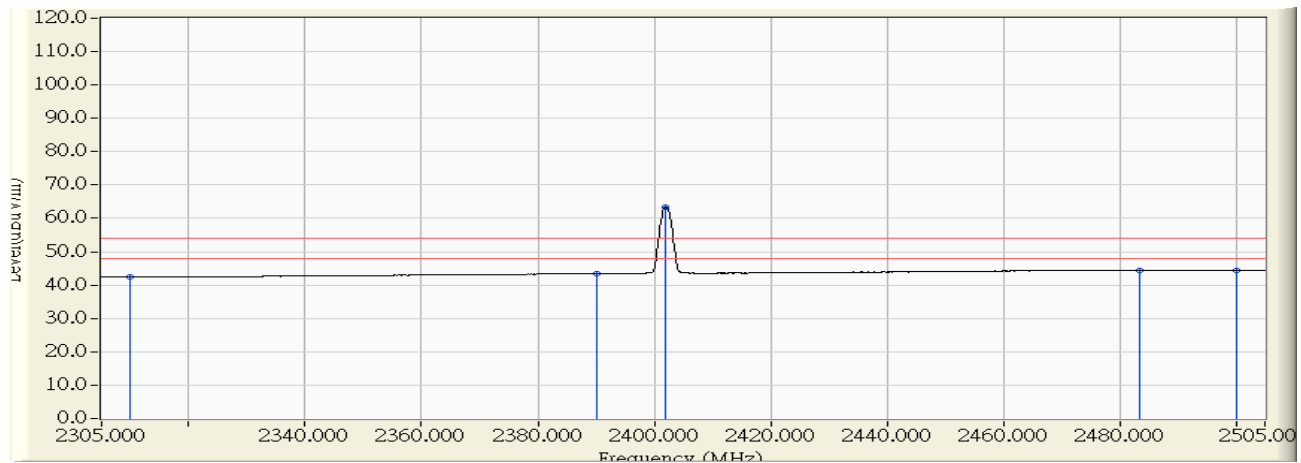


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.411	22.911	53.322	-20.678	74.000	PEAK
2		2390.000	31.241	25.304	56.545	-17.455	74.000	PEAK
3	*	2402.100	31.366	53.403	84.769	10.769	74.000	PEAK
4		2483.500	31.980	23.537	55.516	-18.484	74.000	PEAK
5		2491.800	31.957	25.321	57.278	-16.722	74.000	PEAK
6		2500.000	31.934	23.887	55.822	-18.178	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 : CB1	Time : 2014/08/22 - 11:01
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power :
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2402MHz

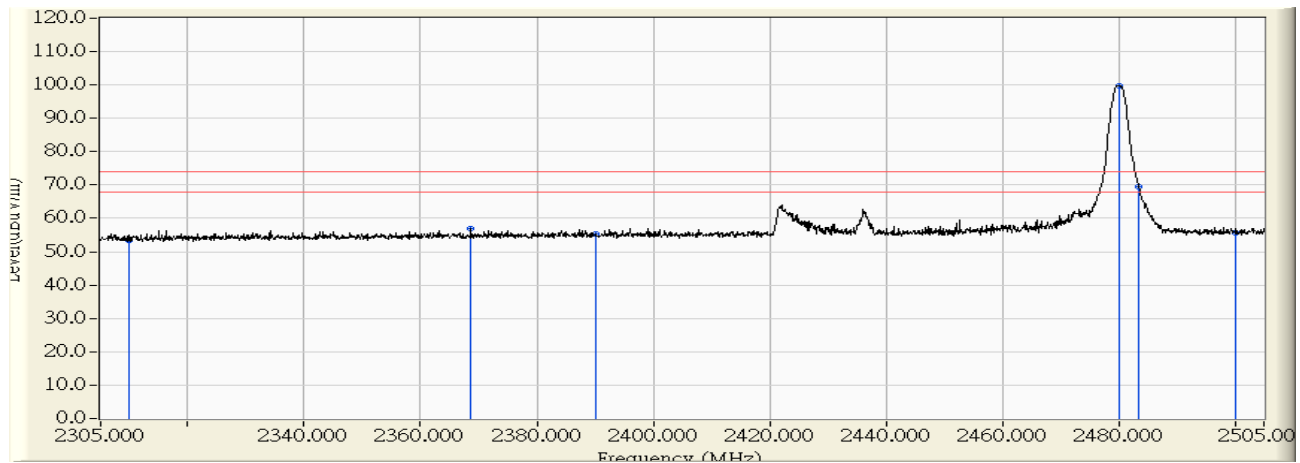


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.411	11.972	42.383	-11.617	54.000	AVERAGE
2		2390.000	31.241	12.208	43.449	-10.551	54.000	AVERAGE
3	*	2402.000	31.365	32.166	63.531	9.531	54.000	AVERAGE
4		2483.500	31.980	12.358	44.337	-9.663	54.000	AVERAGE
5		2500.000	31.934	12.337	44.272	-9.728	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 : CB1	Time : 2014/08/22 - 10:45
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power :
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2480MHz

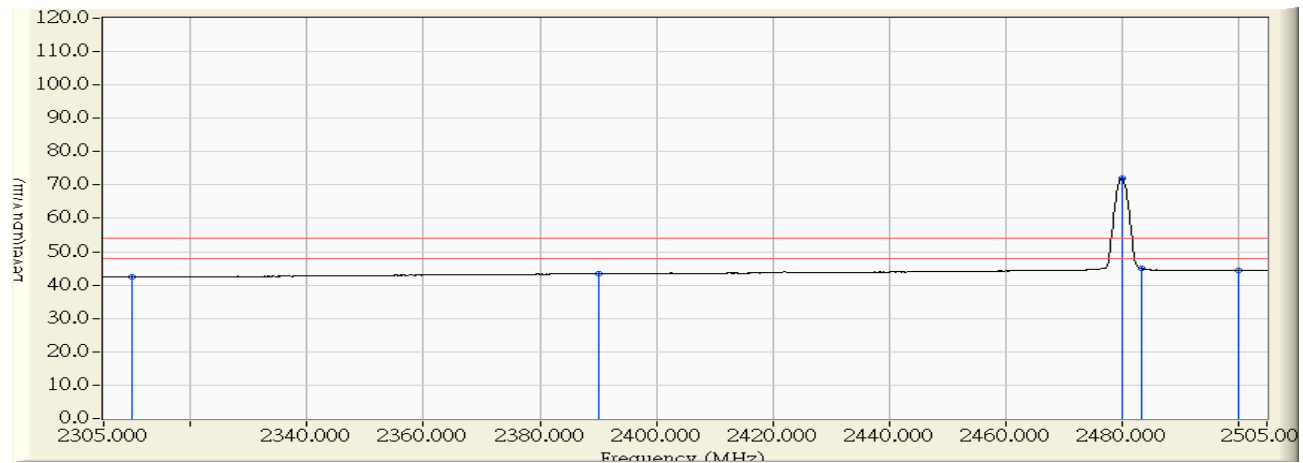


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.411	22.942	53.353	-20.647	74.000	PEAK
2		2368.600	31.019	25.781	56.800	-17.200	74.000	PEAK
3		2390.000	31.241	23.988	55.229	-18.771	74.000	PEAK
4	*	2480.200	31.989	67.851	99.839	25.839	74.000	PEAK
5		2483.500	31.980	37.592	69.571	-4.429	74.000	PEAK
6		2500.000	31.934	23.881	55.816	-18.184	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 : CB1	Time : 2014/08/22 - 10:43
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power :
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2480MHz

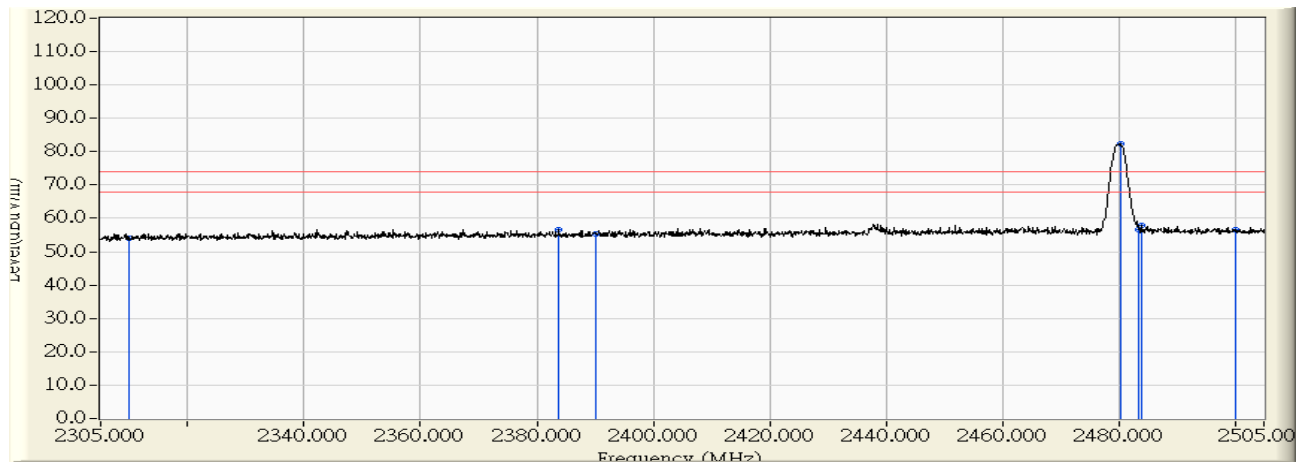


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2310.000	30.411	11.936	42.347	-11.653	54.000	AVERAGE
2	2390.000	31.241	12.172	43.413	-10.587	54.000	AVERAGE
3	* 2480.000	31.989	40.098	72.087	18.087	54.000	AVERAGE
4	2483.500	31.980	12.976	44.955	-9.045	54.000	AVERAGE
5	2500.000	31.934	12.374	44.309	-9.691	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 : CB1	Time : 2014/08/22 - 10:54
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power :
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2480MHz

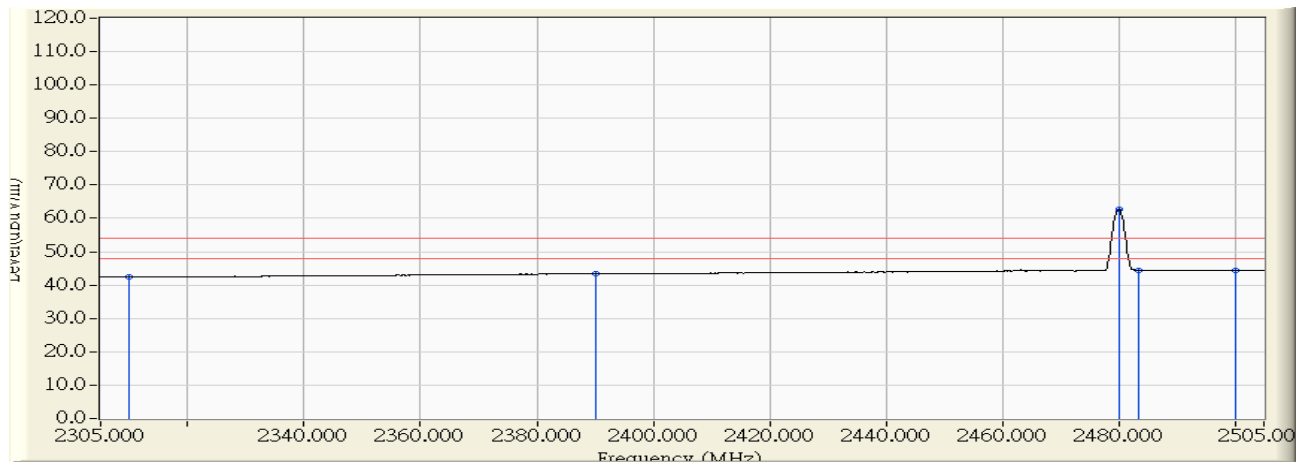


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2310.000	30.411	23.798	54.209	-19.791	74.000	PEAK
2	2383.700	31.176	25.429	56.605	-17.395	74.000	PEAK
3	2390.000	31.241	23.957	55.198	-18.802	74.000	PEAK
4	* 2480.300	31.988	50.355	82.343	8.343	74.000	PEAK
5	2483.500	31.980	24.563	56.542	-17.458	74.000	PEAK
6	2483.900	31.978	25.858	57.836	-16.164	74.000	PEAK
7	2500.000	31.934	24.654	56.589	-17.411	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 : CB1	Time : 2014/08/22 - 10:59
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power :
EUT : HRM-BLE-300	Note : Mode 1: Transmit_2480MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.411	11.959	42.370	-11.630	54.000	AVERAGE
2		2390.000	31.241	12.195	43.436	-10.564	54.000	AVERAGE
3	*	2480.000	31.989	30.605	62.594	8.594	54.000	AVERAGE
4		2483.500	31.980	12.465	44.444	-9.556	54.000	AVERAGE
5		2500.000	31.934	12.360	44.295	-9.705	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.

6. Occupied Bandwidth

6.1. Test Equipment

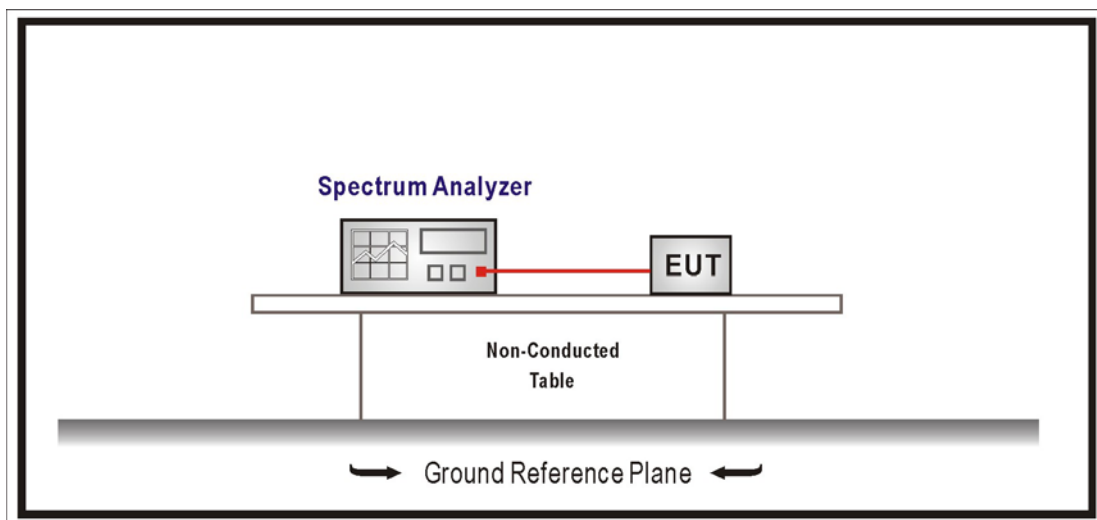
The following test equipment is used during the test:

Occupied Bandwidth / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2015/07/14

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

6.2. Test Setup



6.3. Limits

The 6 dB bandwidth must be greater than 500 kHz.

6.4. Test Procedures

The EUT was setup according to ANSI C63.10; 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.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

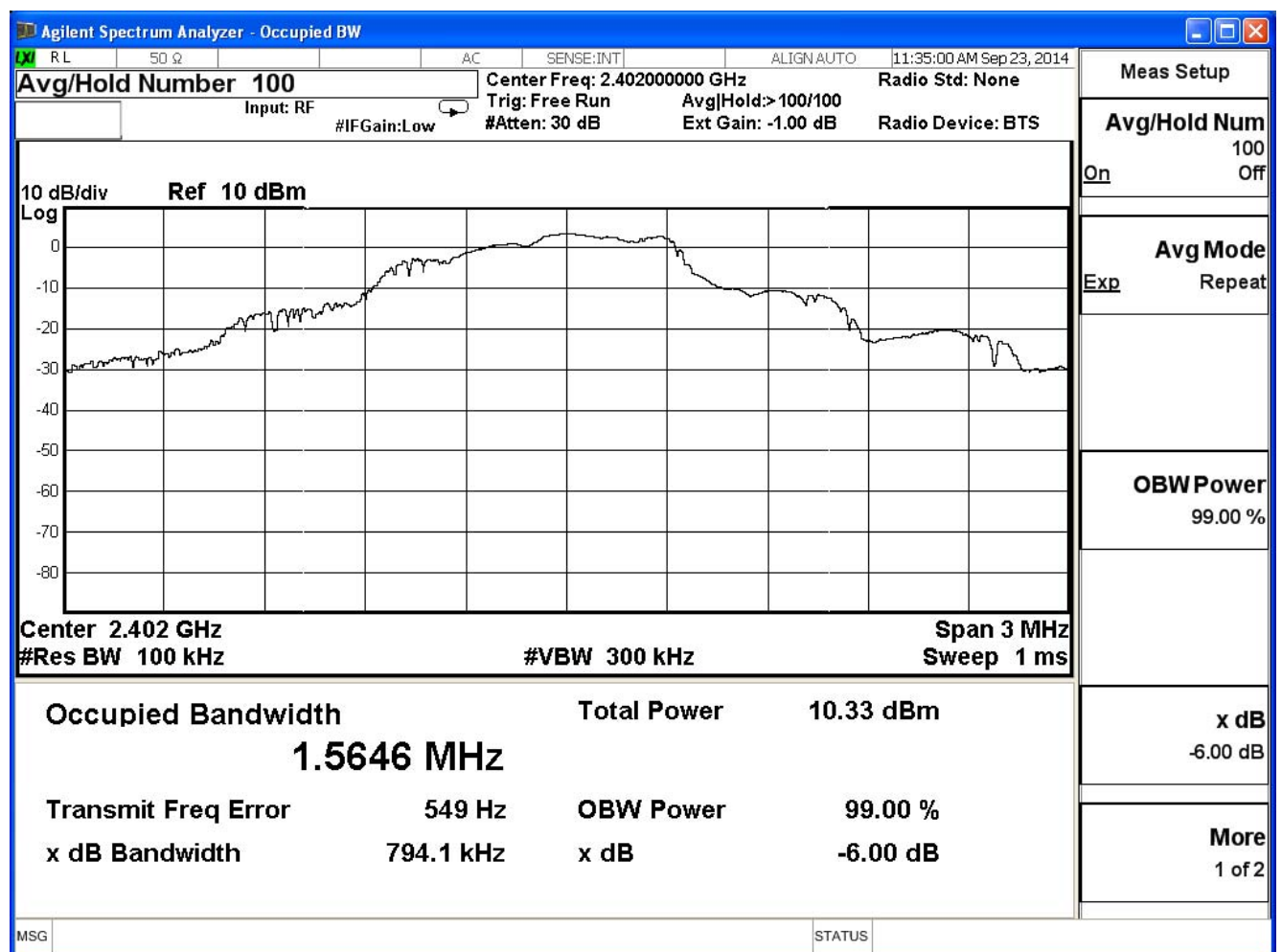
6.6. Test Result

Product	HRM-BLE-300		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2014/09/23	Test Site	SR7

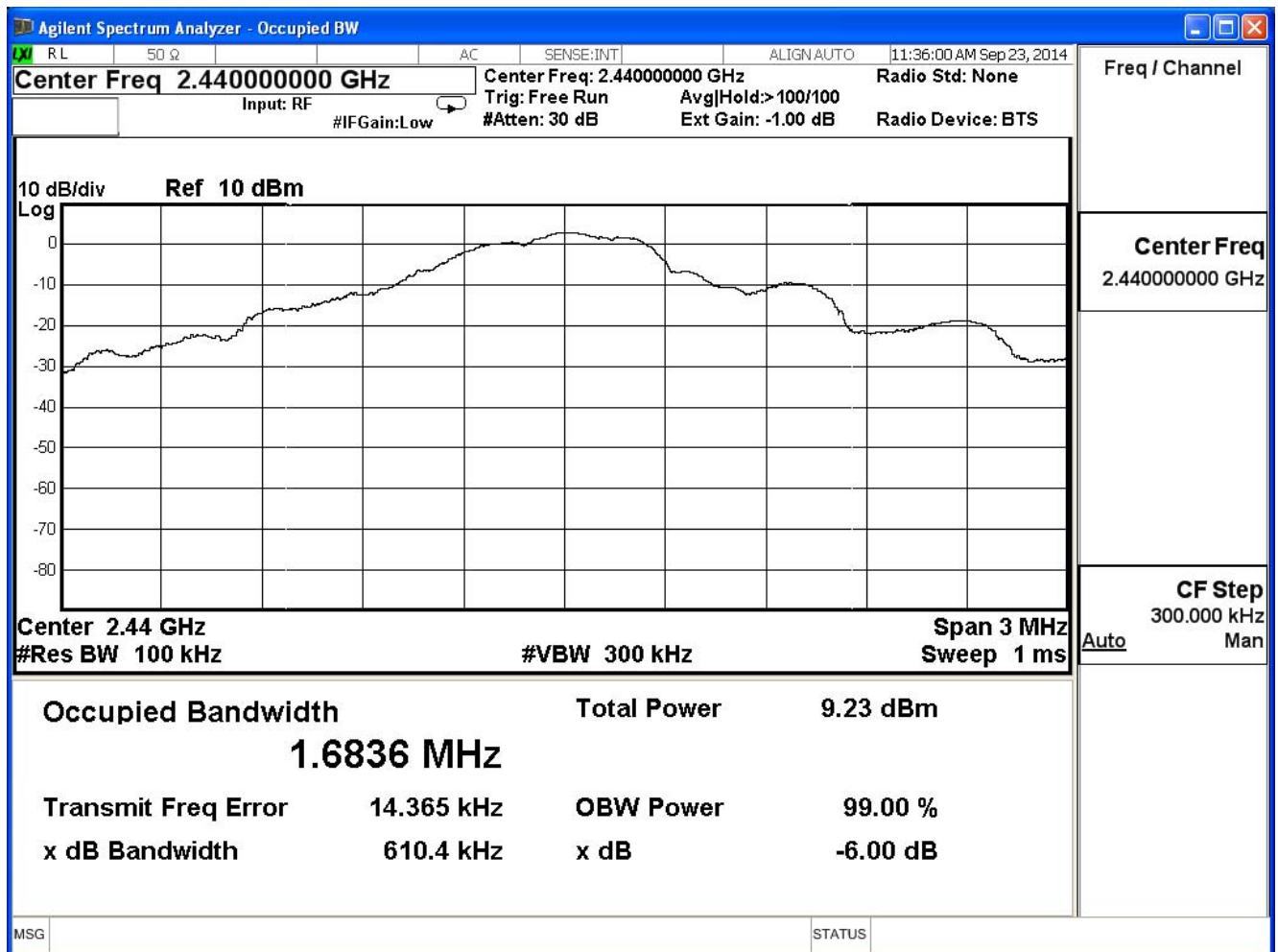
GFSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
00	2402	0.7941	0.5	Pass
19	2440	0.6104	0.5	Pass
39	2480	0.6124	0.5	Pass

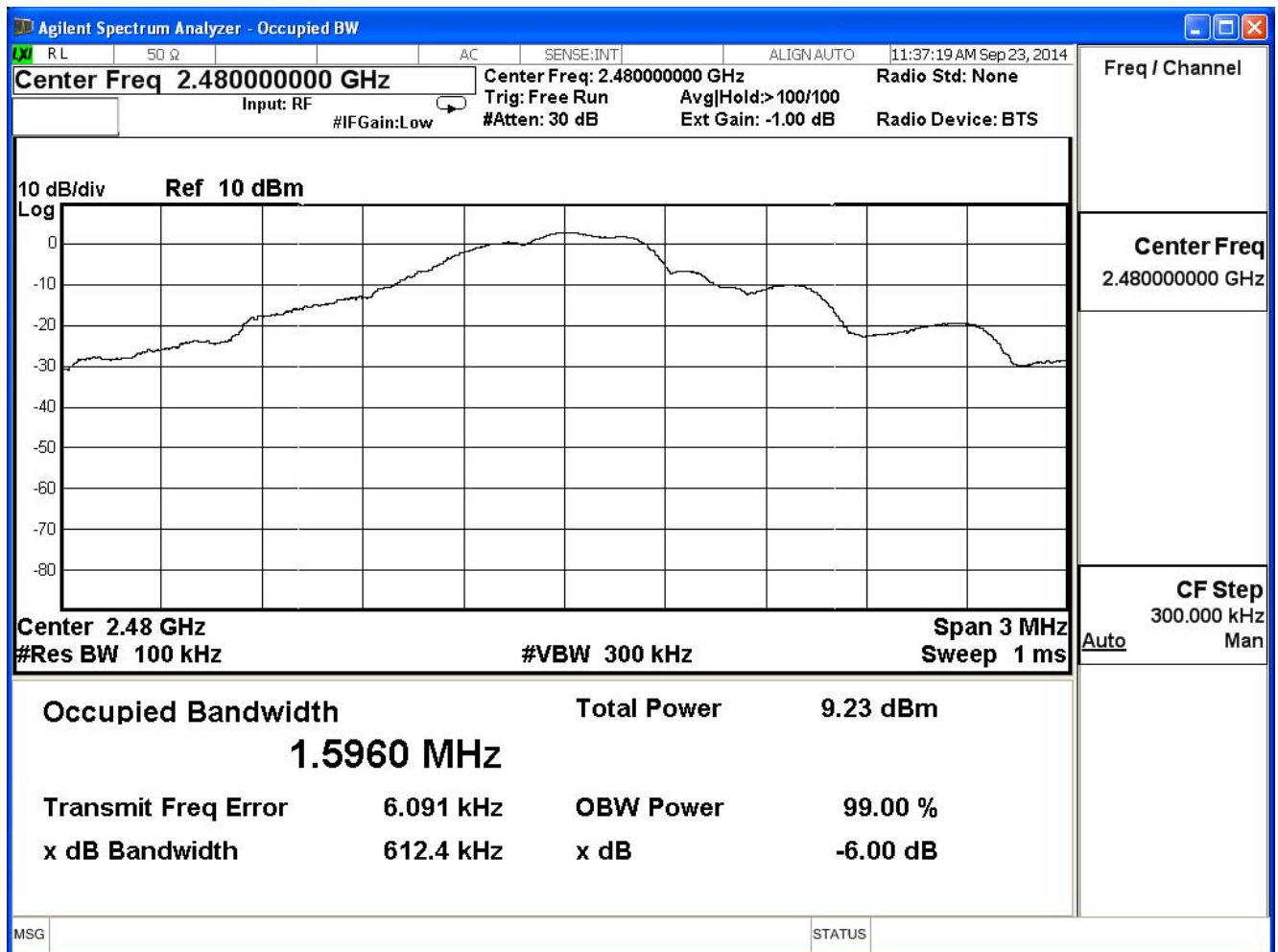
Channel 00



Channel 19



Channel 39



7. Power Density

7.1. Test Equipment

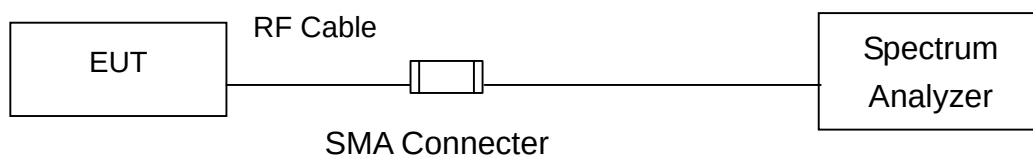
The following test equipment is used during the test:

Power Density / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2015/07/14

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

7.2. Test Setup



7.3. 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.

7.4. Test Procedures

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

7.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

7.6. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB.

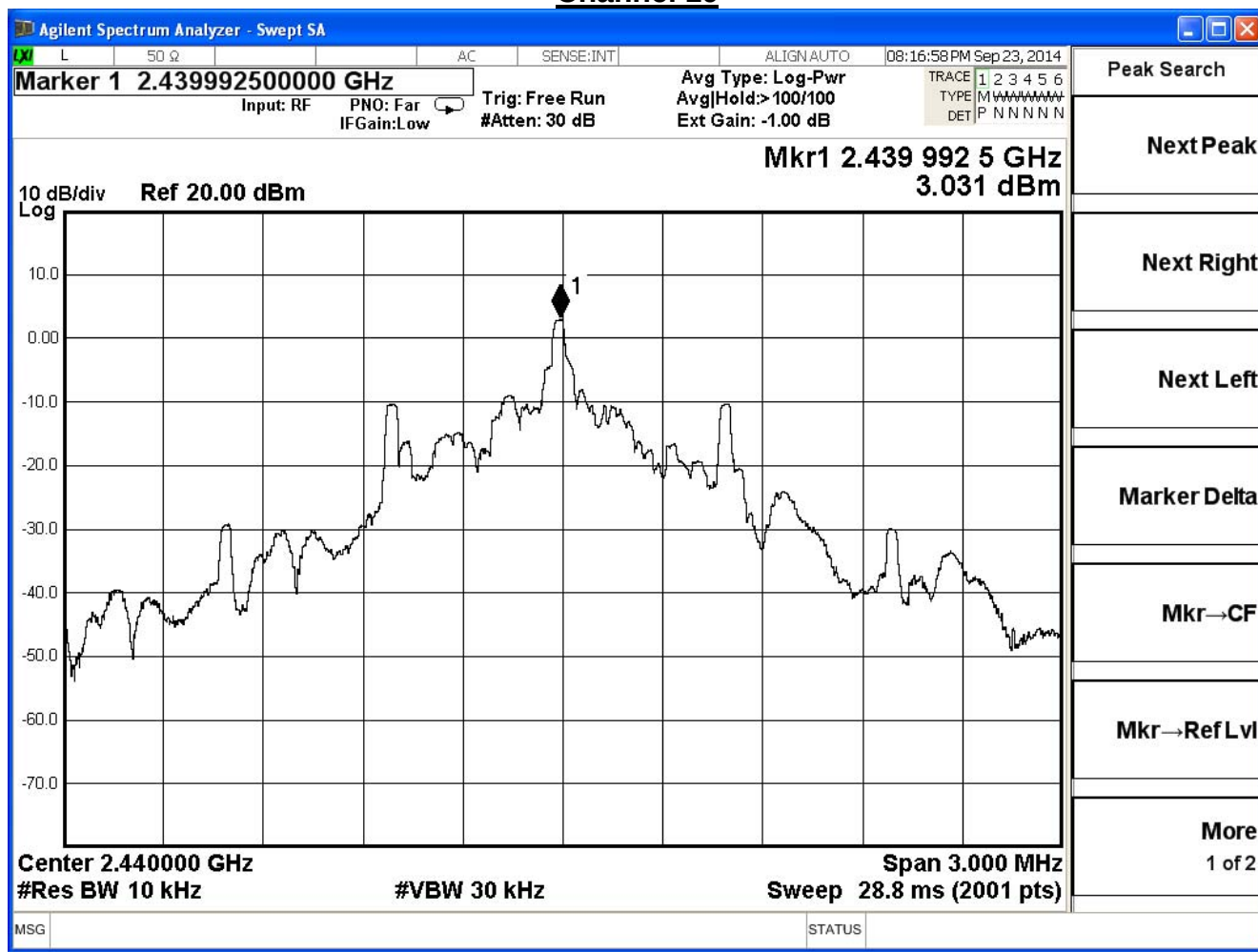
Product	HRM-BLE-300		
Test Item	Power Density		
Test Mode	Mode 1: Transmit		
Date of Test	2014/09/23	Test Site	SR7

Channel No.	Frequency (MHz)	Measurement (dBm)	Limit (dBm)	Result
00	2402	3.203	≤ 8	Pass
19	2440	3.031	≤ 8	Pass
39	2480	2.526	≤ 8	Pass

Channel 00



Channel 19



Channel 39

