

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 : 2014/10/20

Report No. : 1480253R-RFUSP15V00

Report Version : V1.0



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 : 2014/10/20

Report No. : 1480253R-RFUSP15V00

QuiTek

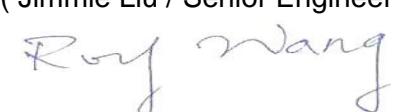
Product Name : HRM-BLE-300
Applicant : G.PULSE INTERNATIONAL CO.,LTD.
Address : 16-3 LANE 852 TU CHENG ROAD,TA LI,TAICHUNG
CITY,TAIWAN R.O.C.
Manufacturer : G.PULSE INTERNATIONAL CO.,LTD.
Model No. : HR-08
Trade Name : GPULSE
FCC ID. : RXIHRM300
EUT Voltage : DC 3V (Power by Battery)
Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.249: 2013
Test Result : Complied

The test results relate only to the samples tested.

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

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
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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No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

LinKou Testing Laboratory:

No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

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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	2457MHz / 1Channel
Type of Modulation	GFSK
Antenna Type	Printed
Antenna Gain	0dBi

Working Frequency of Each Channel	
Channel	Frequency
Channel 01	2457 MHz

Note:

1. This device is a HRM-BLE-300 included a 2.4GHz transmitting and receiving function.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.249.
3. 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.
4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
5. This device is a composite device 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

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

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

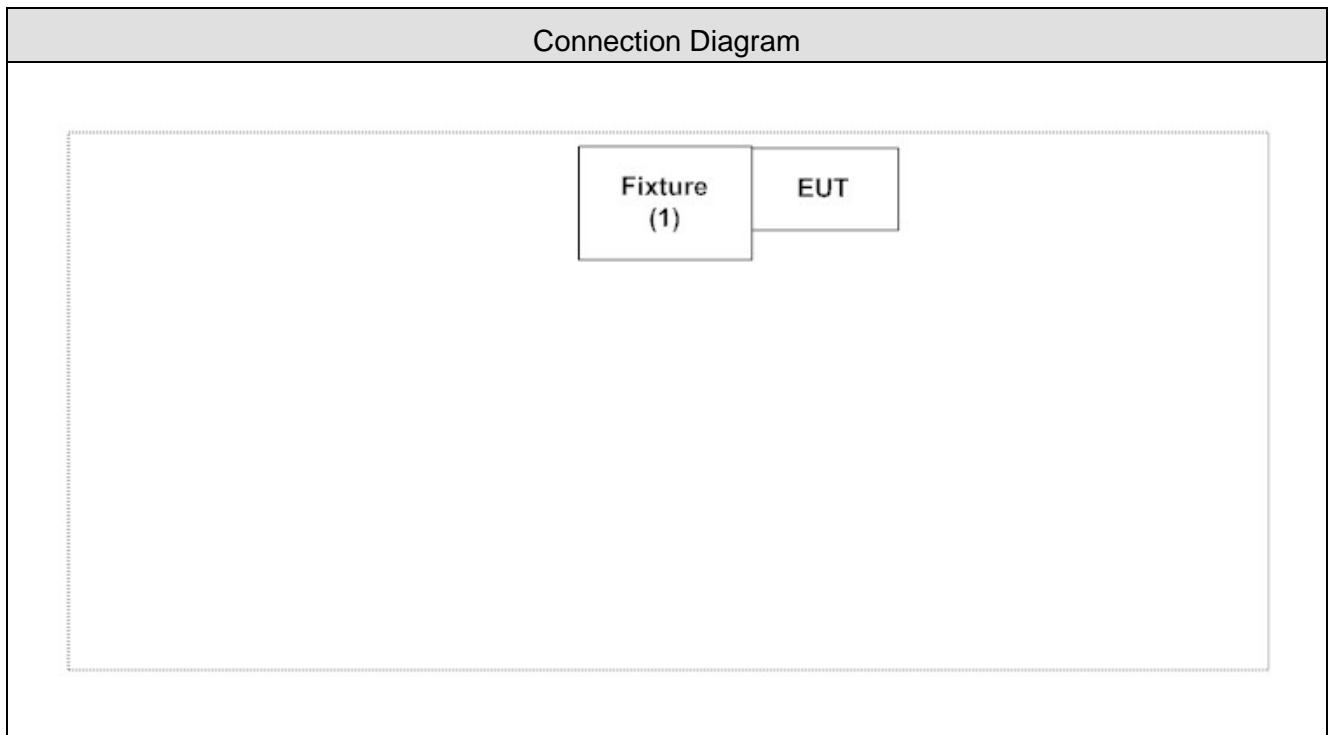
Emission	
Performed Item	Test
Conducted Emission	No
Fundamental Power	Yes
Radiated Emission	Yes
Band Edge	Yes

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 transmitting 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 15.209 Fundamental Power	15 - 35	25
Humidity (%RH)		25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.209 Radiated Emission	15 - 35	25
Humidity (%RH)		25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.249 Band Edge	15 - 35	25
Humidity (%RH)		25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000

2. Fundamental Power

2.1. Test Equipment

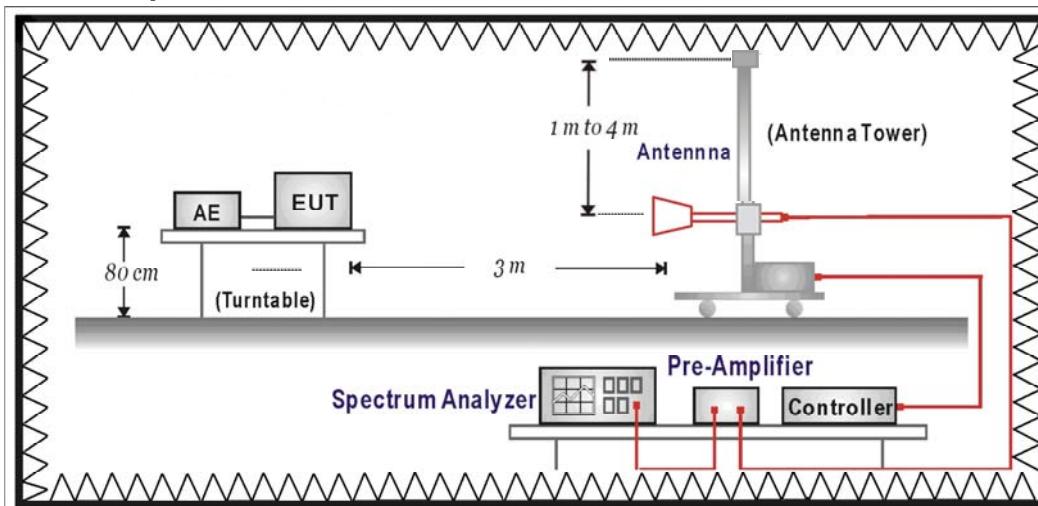
The following test equipments are used during the test:

Fundamental Power / CB1

Instrument	Manufacturer	Type No.	Serial No	Next Cal. Date
Double Ridged Guide Horn Antenna	Schwarzbeck	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.

2.2. Test Setup



2.3. Limits

➤ Fundamental and Harmonics Emission Limits

FCC Part 15 Subpart C Paragraph 15.249 Limits				
Fundamental Frequency MHz	Field Strength of Fundamental		Field Strength of Harmonics	
	mV/m	dBuV/m	uV/m	dBuV/m
902-928	50	94	500	54
2400-2483.5	50	94	500	54
5725-5875	50	94	500	54

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

2. 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. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

2.4. Test Procedure

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 C63.4: 2009 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.

2.5. Test Specification

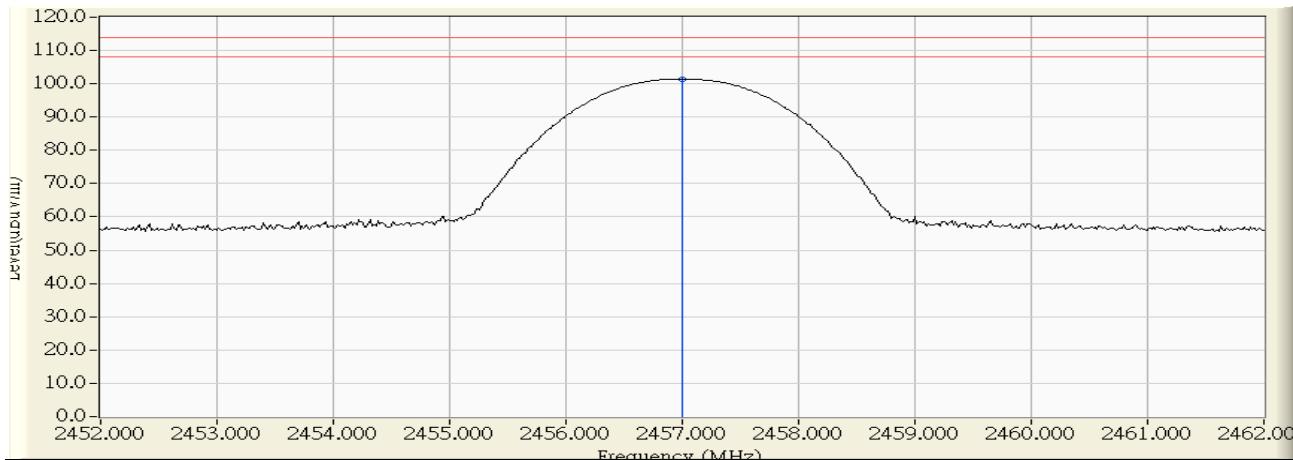
According to FCC Part 15 Subpart C Paragraph 15.249: 2013

2.6. Uncertainty

The measurement uncertainty: 1GHz~26.5GHz as $\pm 3.65\text{dB}$

2.7. Test Result

Site : CB1	Time : 2014/10/14 - 10:13
Limit : FCC_SpartC_15.249_F_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3V
EUT : HRM-BLE-300	Note : 2457MHz_X axis



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2457.000	31.936	69.455	101.391	-12.609	114.000	PEAK

Peak Measure Level=Reading Level+Correct Factor

Average Measure Level=Peak Measure Level+20log(Duty Cycle)

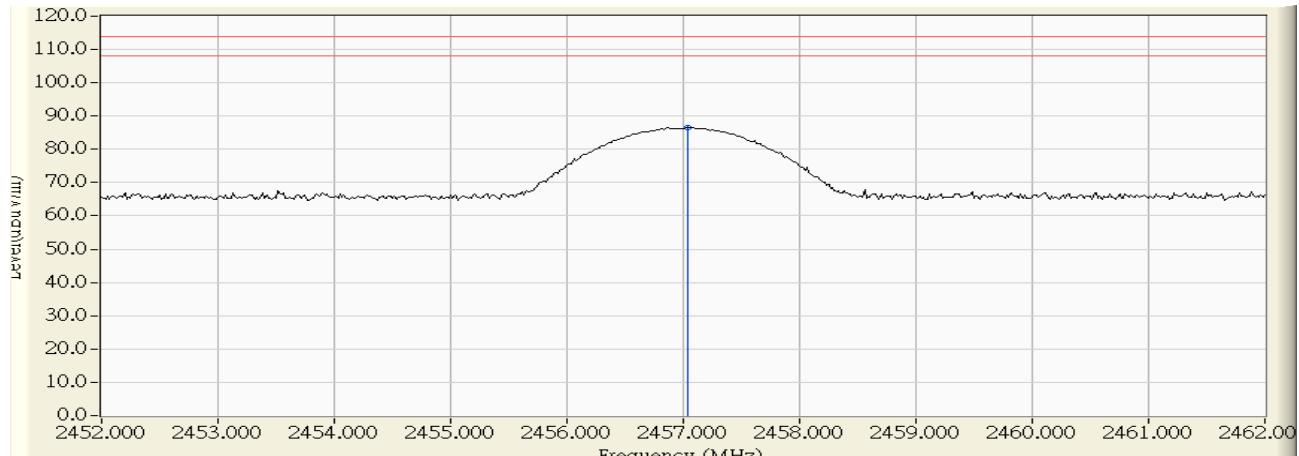
$$=101.391+20\log(0.0025)=49.3498\text{dBuV/m}$$

Duty Cycle=(Ton/(Ton+Toff))=T_{ON}/100ms=0.25/100=0.25%

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. 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 : 2014/10/14 - 09:35
Limit : FCC_SpartC_15.249_F_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3V
EUT : HRM-BLE-300	Note : 2457MHz_ X axis



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2457.033	31.937	54.641	86.577	-27.423	114.000	PEAK

Peak Measure Level=Reading Level+Correct Factor

Average Measure Level=Peak Measure Level+20log(Duty Cycle)

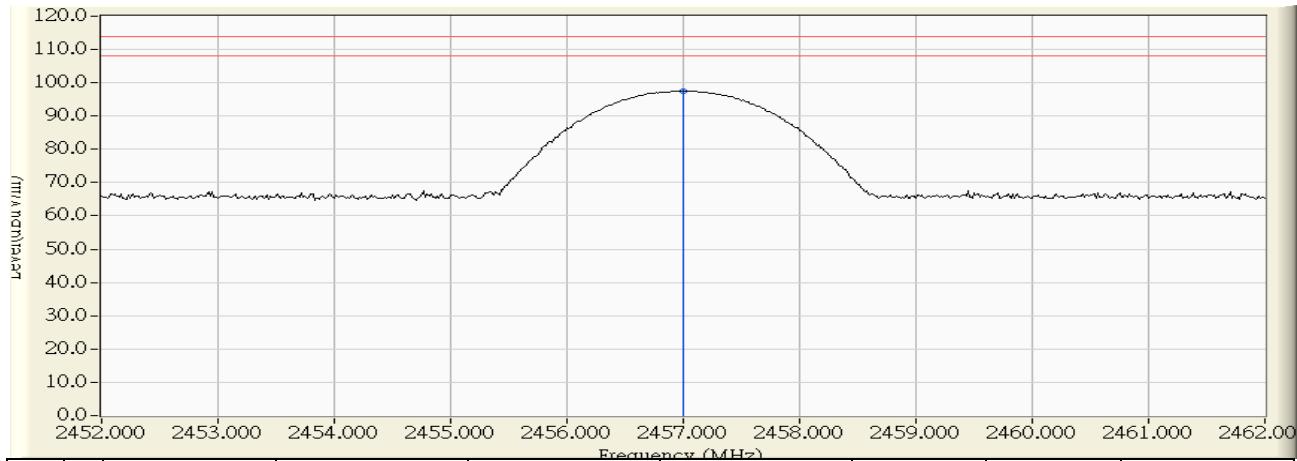
$$=86.577+20\log(0.0025)=34.5358\text{dBuV/m}$$

Duty Cycle=(Ton/(Ton+Toff))=T_{ON}/100ms=0.25/100=0.25%

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. 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 : 2014/10/14 - 09:46
Limit : FCC_SpartC_15.249_F_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3V
EUT : HRM-BLE-300	Note : 2457MHz_ Y axis



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2457.000	31.936	65.521	97.457	-16.543	114.000	PEAK

Peak Measure Level=Reading Level+Correct Factor

Average Measure Level=Peak Measure Level+20log(Duty Cycle)

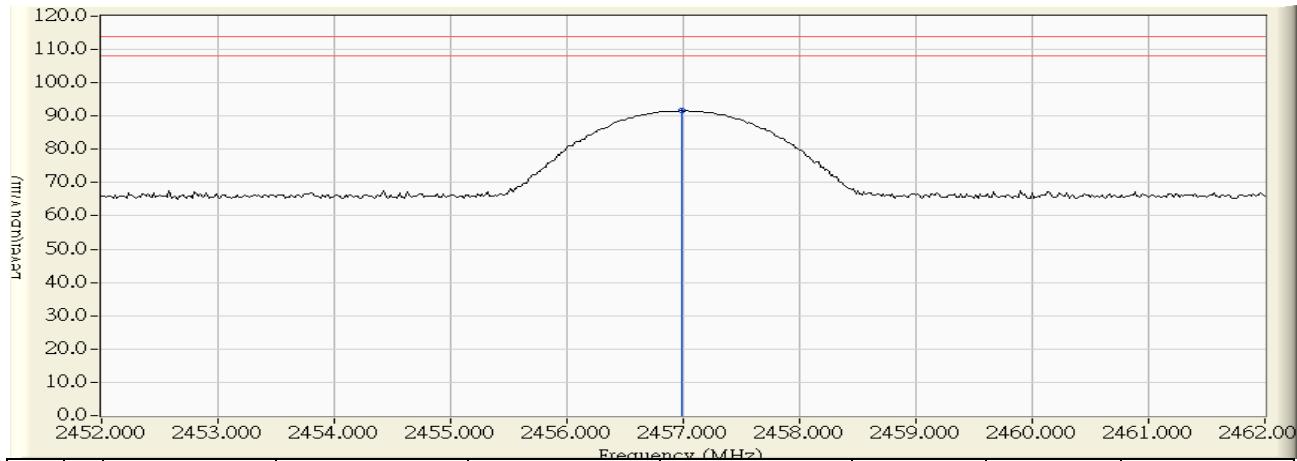
$$=97.457+20\log(0.0025)=45.4158\text{dBuV/m}$$

Duty Cycle=(Ton/(Ton+Toff))=T_{ON}/100ms=0.25/100=0.25%

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. 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 : 2014/10/14 - 09:44
Limit : FCC_SpartC_15.249_F_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3V
EUT : HRM-BLE-300	Note : 2457MHz_ Y axis



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2456.983	31.936	59.685	91.621	-22.379	114.000	PEAK

Peak Measure Level=Reading Level+Correct Factor

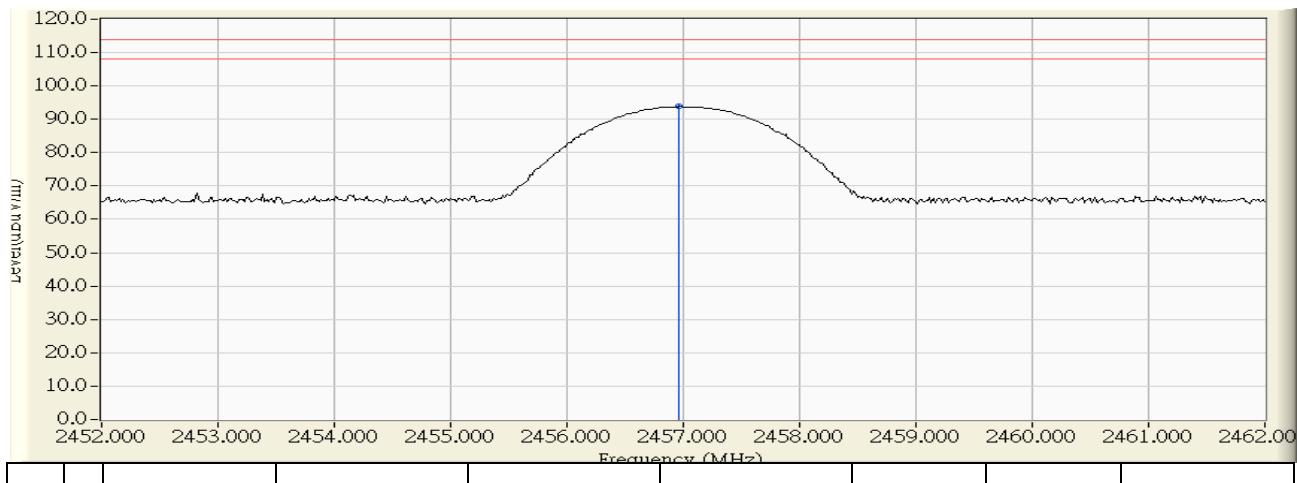
$$\begin{aligned} \text{Average Measure Level} &= \text{Peak Measure Level} + 20\log(\text{Duty Cycle}) \\ &= 91.621 + 20\log(0.0025) = 39.5798 \text{ dBuV/m} \end{aligned}$$

$$\text{Duty Cycle} = (\text{Ton}/(\text{Ton}+\text{Toff})) = \text{T}_{\text{ON}}/100\text{ms} = 0.25/100 = 0.25\%$$

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. 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 : 2014/10/14 - 09:49
Limit : FCC_SpartC_15.249_F_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3V
EUT : HRM-BLE-300	Note : 2457MHz_ Z axis



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2456.967	31.936	61.865	93.800	-20.200	114.000	PEAK

Peak Measure Level=Reading Level+Correct Factor

Average Measure Level=Peak Measure Level+20log(Duty Cycle)

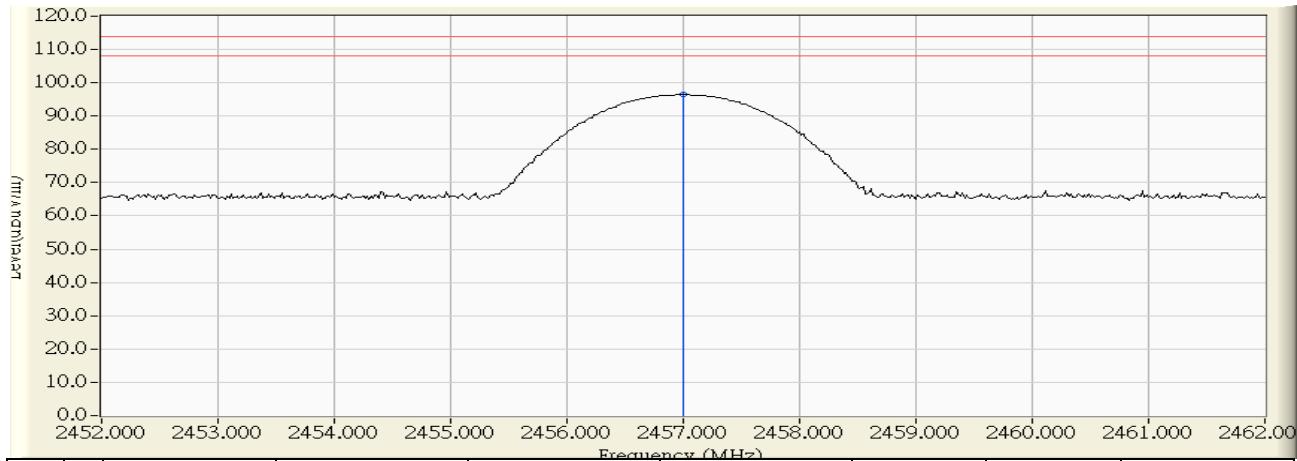
$$=93.800+20\log(0.0025)=41.7588\text{dBuV/m}$$

Duty Cycle=(Ton/(Ton+Toff))=T_{ON}/100ms=0.25/100=0.25%

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. 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 : 2014/10/14 - 09:51
Limit : FCC_SpartC_15.249_F_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3V
EUT : HRM-BLE-300	Note : 2457MHz_Z axis



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2457.000	31.936	64.486	96.422	-17.578	114.000	PEAK

Peak Measure Level=Reading Level+Correct Factor

$$\begin{aligned} \text{Average Measure Level} &= \text{Peak Measure Level} + 20\log(\text{Duty Cycle}) \\ &= 96.422 + 20\log(0.0025) = 44.3808 \text{ dBuV/m} \end{aligned}$$

$$\text{Duty Cycle} = (\text{Ton}/(\text{Ton}+\text{Toff})) = \text{T}_{\text{ON}}/100\text{ms} = 0.25/100 = 0.25\%$$

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. 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.

3. Radiated Emission

3.1. Test Equipment

The following test equipment are used during the test:

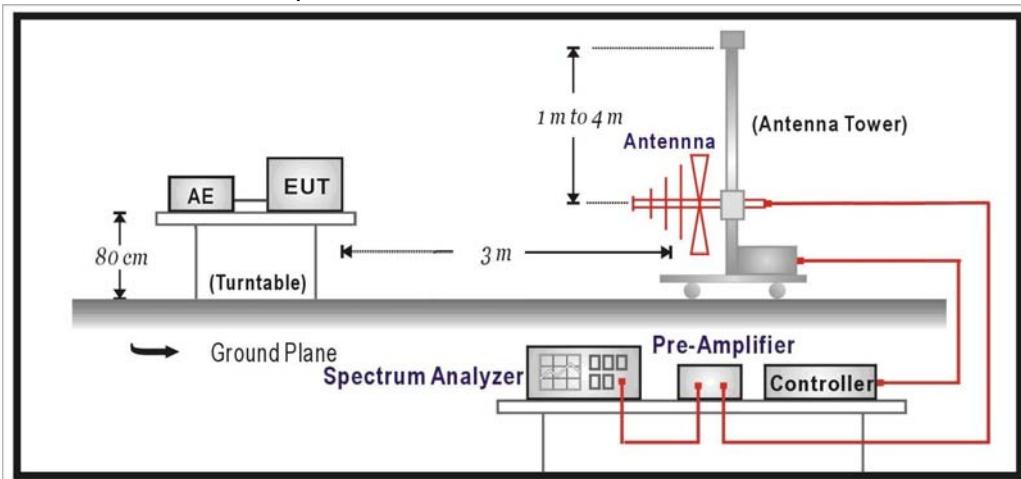
Radiated Emission / CB1

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

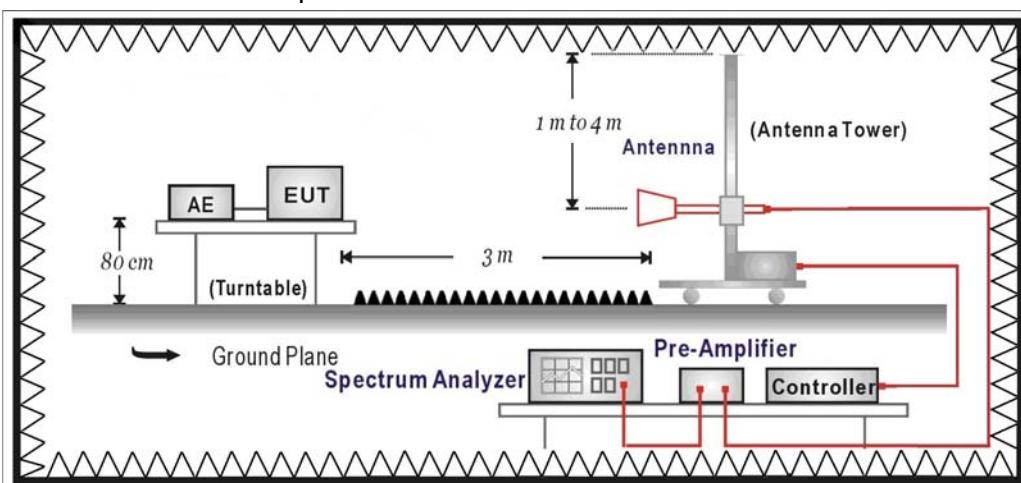
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

3.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



3.3. Limits

➤ Fundamental and Harmonics Emission Limits

FCC Part 15 Subpart C Paragraph 15.249 Limits				
Fundamental Frequency MHz	Field Strength of Fundamental		Field Strength of Harmonics	
	mV/m	dBuV/m	uV/m	dBuV/m
902-928	50	94	500	54
2400-2483.5	50	94	500	54
5725-5875	50	94	500	54

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

2. 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. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

➤ Spurious electric field strength limits

FCC Part 15 Subpart C Paragraph 15.209 Limits			
Frequency MHz	uV/m	dBuV/m	Measurement distance (meter)
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

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 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 C63.4: 2009 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 15.209 and Paragraph 15.249: 2013

3.6. Uncertainty

The measurement uncertainty

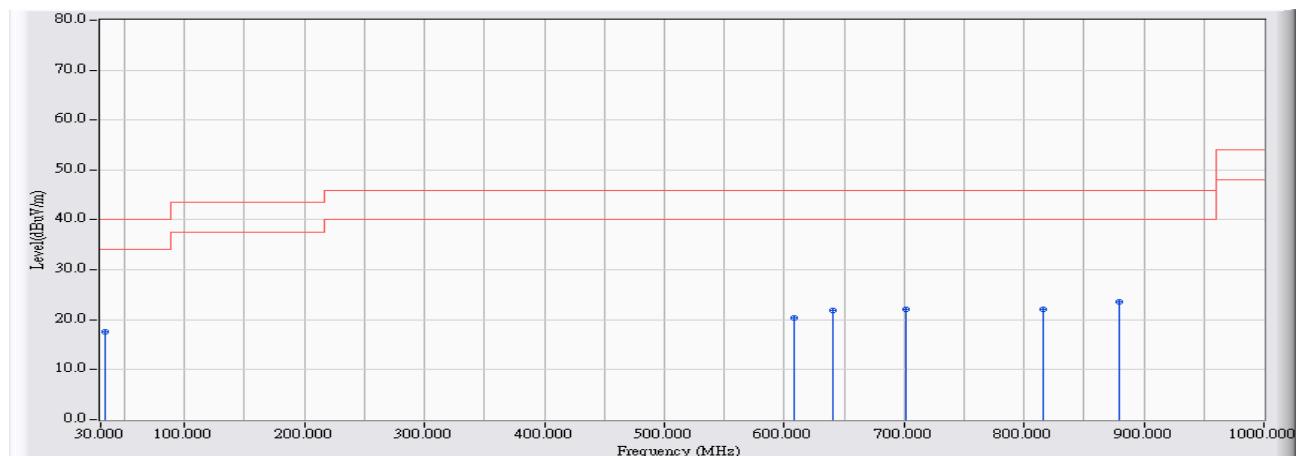
30MHz~1GHz as $\pm 3.43\text{dB}$

1GHz~26.5GHz as $\pm 3.65\text{dB}$

3.7. Test Result

30 MHz-1 GHz 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 : 2457MHz_X axis

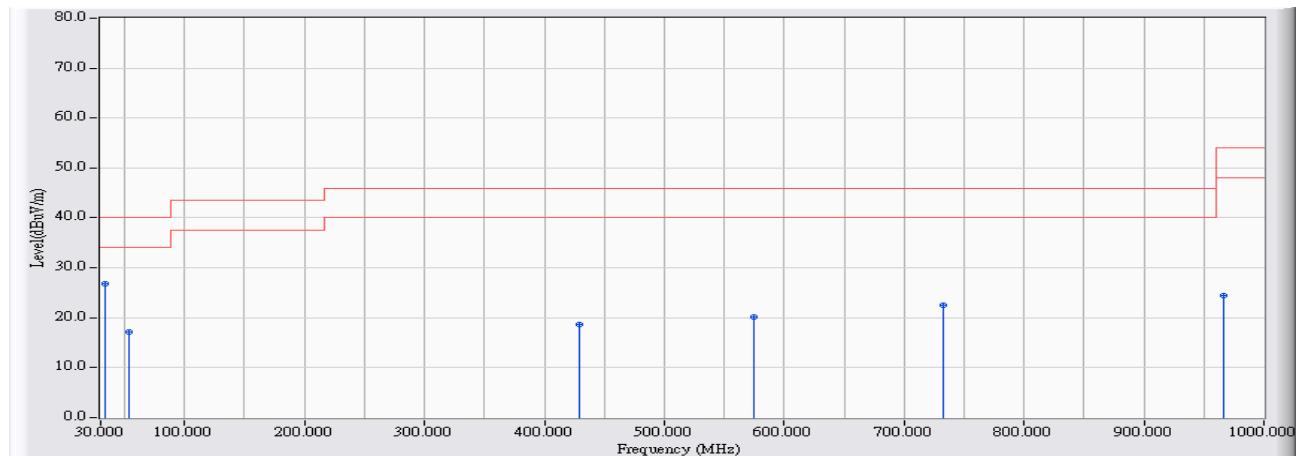


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	33.880	-19.810	37.494	17.683	-22.317	40.000	QUASIPEAK
2		608.120	-14.392	34.686	20.294	-25.706	46.000	QUASIPEAK
3		641.100	-14.081	36.003	21.922	-24.078	46.000	QUASIPEAK
4		701.240	-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 : 2457MHz_X axis



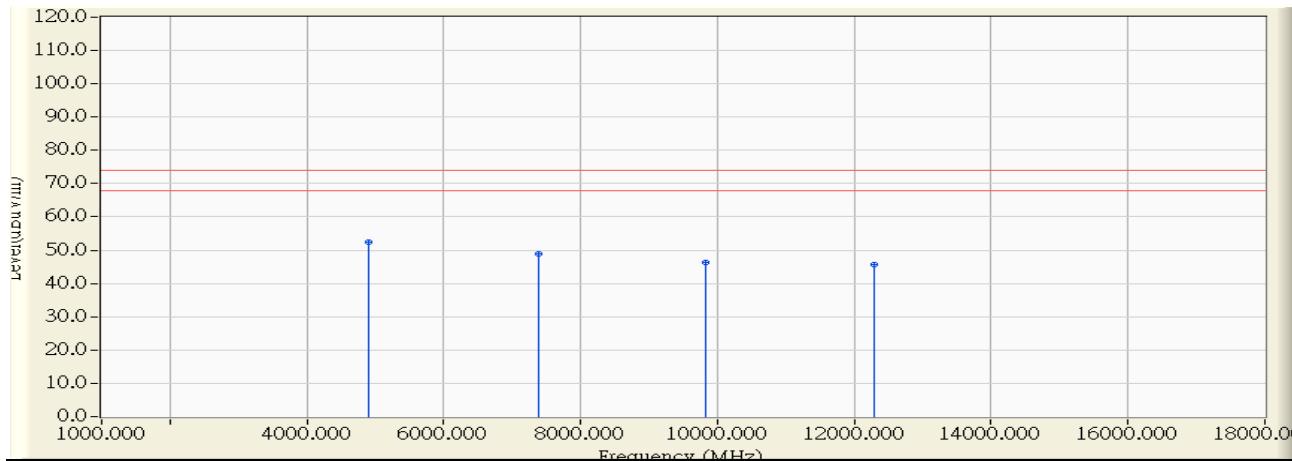
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	33.880	-19.810	46.520	26.709	-13.291	40.000	QUASIPEAK
2		53.280	-26.716	43.942	17.225	-22.775	40.000	QUASIPEAK
3		429.640	-16.659	35.423	18.764	-27.236	46.000	QUASIPEAK
4		575.140	-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

Above 1GHz Spurious :

Site : CB1	Time : 2014/10/14 - 10:40
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3V
EUT : HRM-BLE-300	Note : 2457MHz_X axis

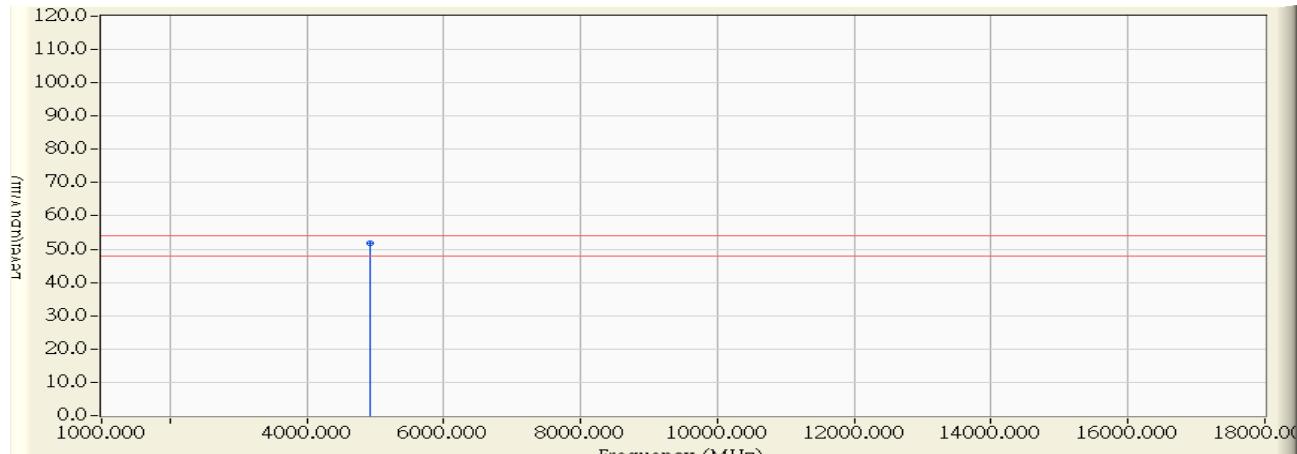


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4914.000	-0.324	52.673	52.349	-21.621	73.970	PEAK
2		7371.000	5.819	42.998	48.818	-25.152	73.970	PEAK
3		9828.000	10.612	35.833	46.444	-27.526	73.970	PEAK
4		12285.000	10.997	34.776	45.773	-28.197	73.970	PEAK

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. 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 : 2014/10/14 - 10:43
Limit : FCC_SpartC_15.249_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3V
EUT : HRM-BLE-300	Note : 2457MHz_ X axis

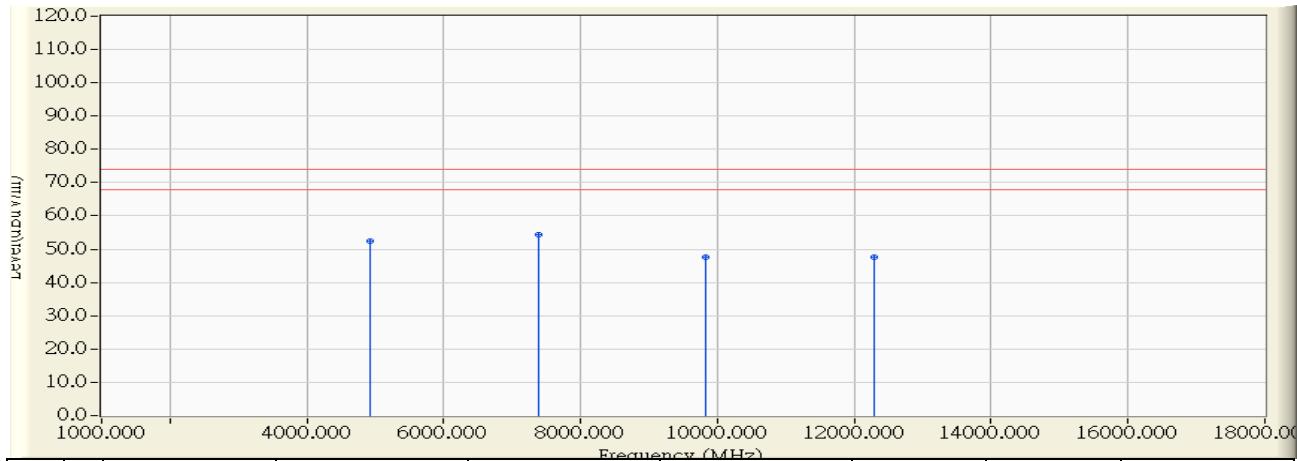


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4914.000	-0.314	52.230	51.916	-2.054	53.970	AVERAGE

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. 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 : 2014/10/14 - 10:28
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3V
EUT : HRM-BLE-300	Note : 2457MHz_ X axis

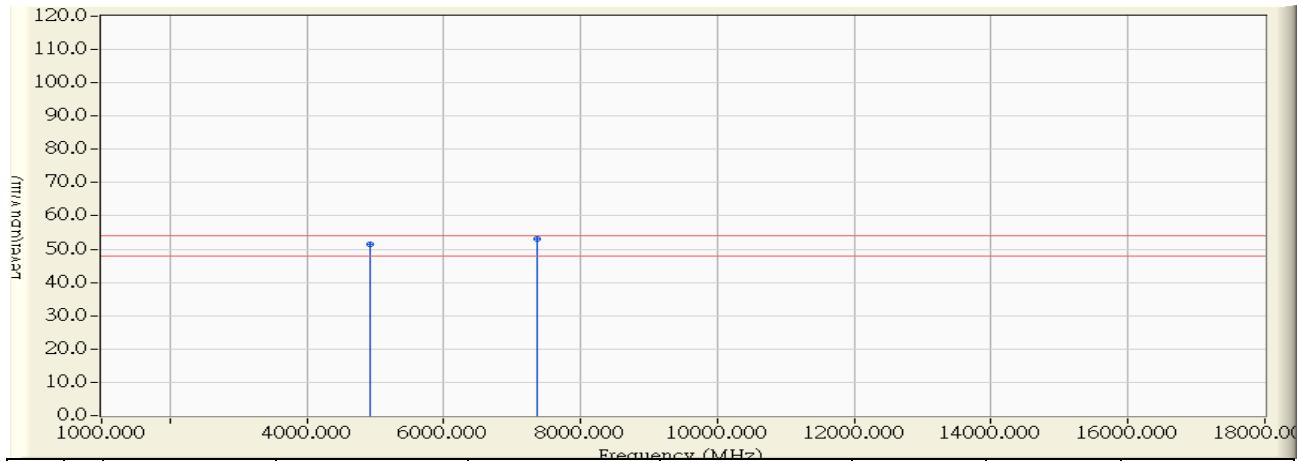


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4914.000	-0.304	52.617	52.314	-21.656	73.970	PEAK
2	*	7371.000	5.819	48.394	54.214	-19.756	73.970	PEAK
3		9828.000	10.612	36.912	47.523	-26.447	73.970	PEAK
4		12285.000	10.997	36.675	47.672	-26.298	73.970	PEAK

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. 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 : 2014/10/14 - 10:35
Limit : FCC_SpartC_15.249_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3V
EUT : HRM-BLE-300	Note : 2457MHz_X axis



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4914.000	-0.314	51.780	51.466	-2.504	53.970	AVERAGE
2	*	7371.000	5.811	47.170	52.981	-0.989	53.970	AVERAGE

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. 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.

4. Band Edge

4.1. Test Equipment

The following test equipment are used during the test:

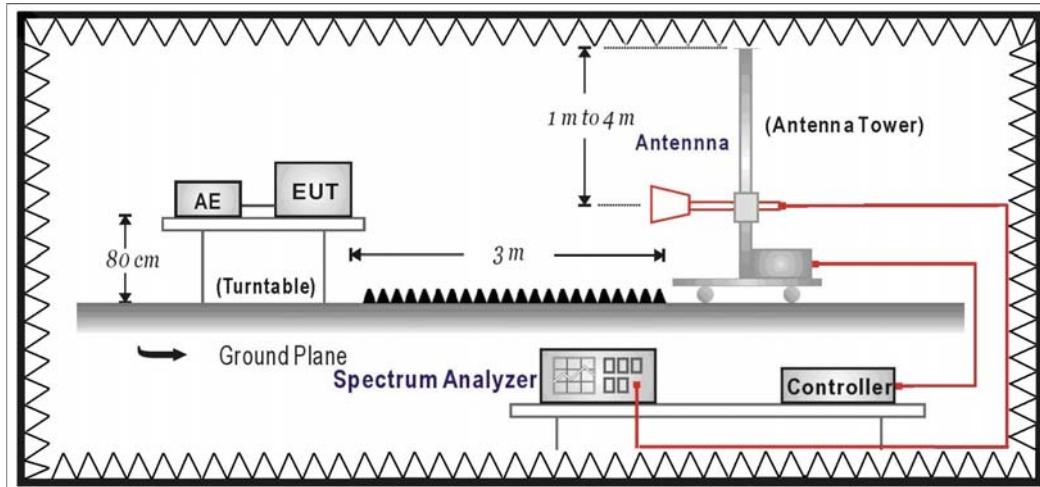
Band Edge / CB1

Instrument	Manufacturer	Type No.	Serial No	Next Cal. Date
Double Ridged Guide Horn Antenna	Schwarzbeck	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.

4.2. Test Setup

RF Radiated 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 50 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a 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 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 C63.4: 2009 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz.

4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.249: 2013

4.6. Uncertainty

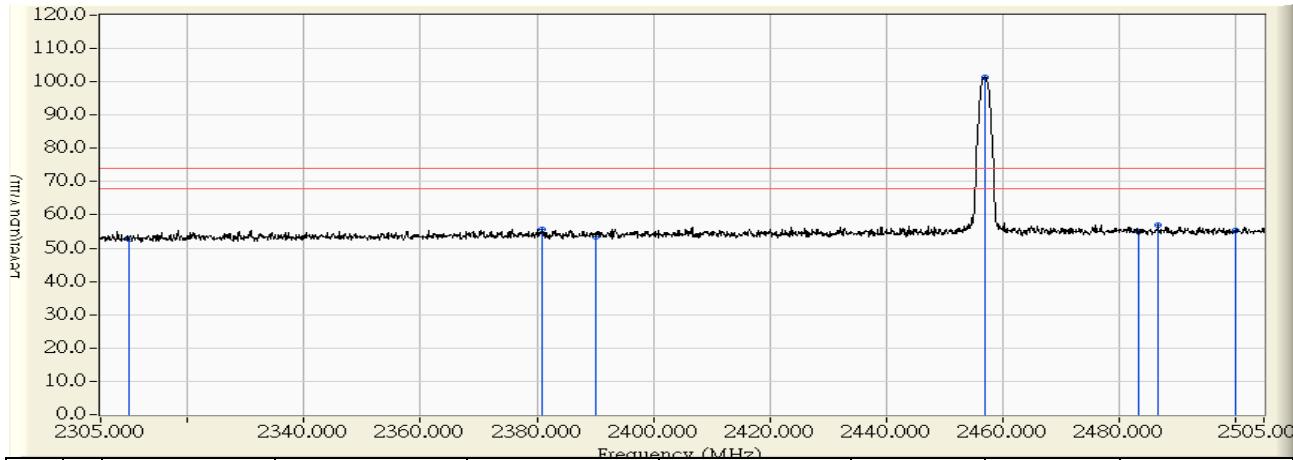
The measurement uncertainty

Conducted is defined as \pm 1.27dB

Radiated is defined as \pm 3.9dB

4.7. Test Result

Site : CB1	Time : 2014/10/14 - 10:09
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3V
EUT : HRM-BLE-300	Note : 2457MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.411	22.470	52.881	-21.089	73.970	PEAK
2		2380.900	31.146	24.612	55.759	-18.211	73.970	PEAK
3		2390.000	31.241	22.199	53.440	-20.530	73.970	PEAK
4	*	2457.000	31.936	69.421	101.357	27.387	73.970	PEAK
5		2483.500	31.980	23.025	55.004	-18.966	73.970	PEAK
6		2486.800	31.970	24.918	56.889	-17.081	73.970	PEAK
7		2500.000	31.934	23.530	55.465	-18.505	73.970	PEAK

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. 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 : 2014/10/14 - 10:07
Limit : FCC_SpartC_15.249_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3V
EUT : HRM-BLE-300	Note : 2457MHz

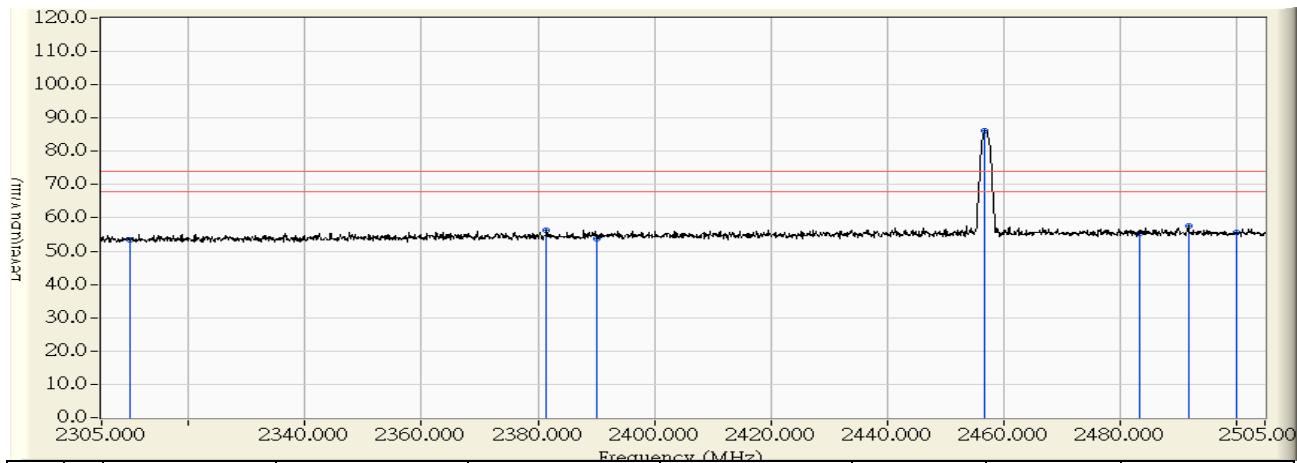


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.411	11.936	42.347	-11.623	53.970	AVERAGE
2		2390.000	31.241	12.122	43.363	-10.607	53.970	AVERAGE
3	*	2457.000	31.936	69.370	101.306	47.336	53.970	AVERAGE
4		2483.500	31.980	12.351	44.330	-9.640	53.970	AVERAGE
5		2500.000	31.934	12.317	44.252	-9.718	53.970	AVERAGE

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. 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 : 2014/10/14 - 09:55
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3V
EUT : HRM-BLE-300	Note : 2457MHz



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2310.000	30.411	22.997	53.408	-20.562	73.970	PEAK
2	2381.500	31.153	25.095	56.248	-17.722	73.970	PEAK
3	2390.000	31.241	22.457	53.698	-20.272	73.970	PEAK
4	* 2456.900	31.934	54.335	86.270	12.300	73.970	PEAK
5	2483.500	31.980	23.469	55.448	-18.522	73.970	PEAK
6	2491.800	31.957	25.602	57.559	-16.411	73.970	PEAK
7	2500.000	31.934	23.831	55.766	-18.204	73.970	PEAK

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “*”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. 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 : 2014/10/14 - 10:03
Limit : FCC_SpartC_15.249_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3V
EUT : HRM-BLE-300	Note : 2457MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.411	11.930	42.341	-11.629	53.970	AVERAGE
2		2390.000	31.241	12.162	43.403	-10.567	53.970	AVERAGE
3	*	2457.000	31.936	53.985	85.921	31.951	53.970	AVERAGE
4		2483.500	31.980	12.350	44.329	-9.641	53.970	AVERAGE
5		2500.000	31.934	12.341	44.276	-9.694	53.970	AVERAGE

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. 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.