

FCC Test Report

Product Name : Analog GPS Speedometer

Trade Name : Omata

Model No. : one

FCC ID. : 2AOIMOMATA1

Applicant : Haltian Products Oy

Address : Yrttpellontie 1D, 90230 Oulu, Finland

Date of Receipt : Nov. 15, 2017

Issued Date : Feb. 12, 2018

Report No. : 17B0248R-RFUSP01V00

Report Version : V2.0



The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of DEKRA Testing and Certification Co., Ltd.

Test Report Certification

Issued Date : Feb. 12, 2018

Report No. : 17B0248R-RFUSP01V00



Product Name : Analog GPS Speedometer
Applicant : Haltian Products Oy
Address : Yrttipellontie 1D, 90230 Oulu, Finland
Manufacturer : Haltian Products Oy
Model No. : one
FCC ID. : 2AOIMOMATA1
EUT Voltage : DC 3.7V(power by battery)
DC 5V(power by PC)
Testing Voltage : DC 3.7V(power by battery)
DC 5V(power by PC)
Trade Name : Omata
Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2016
KDB 558074 D01 v04
Laboratory Name : Hsin Chu Laboratory
Address : No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu
County 310, Taiwan, R.O.C.
TEL: +886-3-582-8001 / FAX: +886-3-582-8958
Test Result : Complied

Documented By :



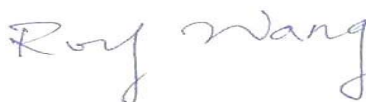
(Demi Chang / Senior Engineering Adm. Specialist)

Tested By :



(Clemens Fang / Engineer)

Approved By :



(Roy Wang / Director)

Revision History

Report No.	Version	Description	Issued Date
17B0248R-RFUSP01V00	V2.0	Initial issue of report	Feb. 12, 2018

TABLE OF CONTENTS

Description	Page
1. General Information.....	6
1.1. EUT Description	6
1.2. Test Mode	7
1.3. Tested System Details	8
1.4. Configuration of tested System	8
1.5. EUT Exercise Software	8
1.6. Test Facility.....	9
2. Conducted Emission	10
2.1. Test Equipment.....	10
2.2. Test Setup	10
2.3. Limits	10
2.4. Test Procedure	11
2.5. Test Specification.....	11
2.6. Uncertainty	11
2.7. Test Result.....	11
3. Peak Power Output	12
3.1. Test Equipment.....	12
3.2. Test Setup	12
3.3. Test procedures	12
3.4. Limits	12
3.5. Test Specification.....	12
3.6. Test Result.....	13
4. Radiated Emission	14
4.1. Test Equipment.....	14
4.2. Test Setup	14
4.3. Limits	15
4.4. Test Procedure	15
4.5. Test Specification.....	15
4.6. Test Result.....	16
5. RF antenna conducted test	34
5.1. Test Equipment.....	34
5.2. Test Setup	34
5.3. Limits	35
5.4. Test Procedure	35
5.5. Test Specification.....	35
5.6. Test Result.....	36
6. Band Edge.....	41
6.1. Test Equipment.....	41
6.2. Test Setup	41

6.3.	Limits	41
6.4.	Test Procedure	42
6.5.	Test Specification.....	42
6.6.	Test Result.....	43
7.	DTS Bandwidth	55
7.1.	Test Equipment.....	55
7.2.	Test Setup	55
7.3.	Test Procedures	55
7.4.	Limits	55
7.5.	Test Specification.....	55
7.6.	Uncertainty	55
7.7.	Test Result.....	56
8.	Occupied Bandwidth	59
8.1.	Test Equipment.....	59
8.2.	Test Setup	59
8.3.	Limits	59
8.4.	Test Procedures	59
8.5.	Test Specification.....	59
8.6.	Test Result.....	60
9.	Power Density	63
9.1.	Test Equipment.....	63
9.2.	Test Setup	63
9.3.	Limits	63
9.4.	Test Procedures	63
9.5.	Test Specification.....	63
9.6.	Uncertainty	63
9.7.	Test Result.....	64
Attachment 1.....		67
	Test Setup Photograph	67
Attachment 2.....		70
	EUT External Photograph.....	70
Attachment 3.....		75
	EUT Internal Photograph.....	75

1. General Information

1.1. EUT Description

Product Name	Analog GPS Speedometer
Trade Name	Omata
Model No.	one
Frequency Range/ Channel Number	2402~2480MHz / 40 Channels
Type of Modulation	Bluetooth 4.0 (GFSK)

Antenna Information	
Antenna Type	PIFA Antenna
Antenna Gain	0.8dBi

Accessories Information	
USB Cable	Shielded, 0.23m

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 Analog GPS Speedometer supports BT4.0 and ANT+ transmitting and BT4.0, ANT+ and GPS 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.

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:

Tx	Mode 1: Transmitter_Power by PC Mode 2: Transmitter_Power by Battery
----	---

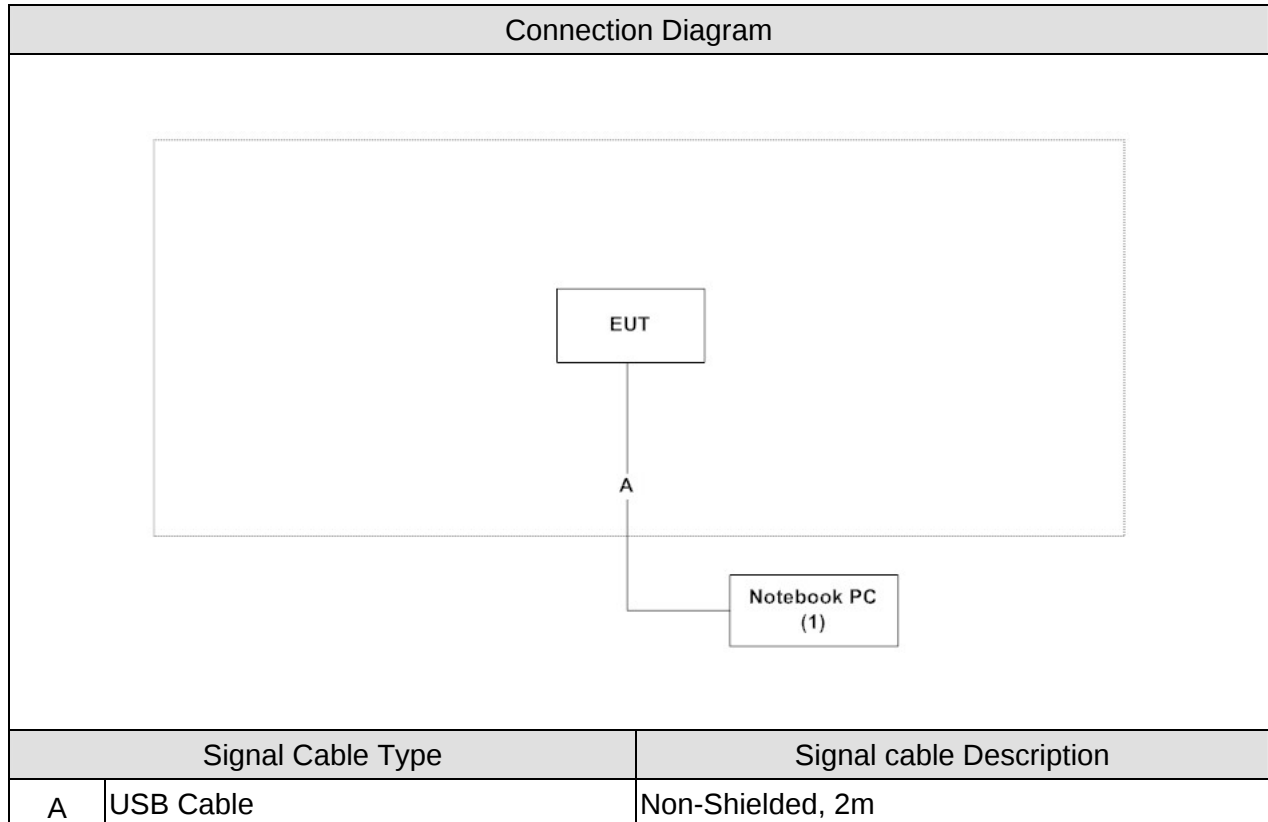
Test Items	Modulation	Channel	Result
Conducted Emission	GFSK	19	N/A
Peak Power Output	GFSK	00/19/39	Complies
Radiated Emission	GFSK	00/19/39	Complies
RF antenna conducted test	GFSK	00/19/39	Complies
Radiated Emission Band Edge	GFSK	00/19/39	Complies
DTS Bandwidth	GFSK	00/19/39	Complies
Occupied Bandwidth	GFSK	00/19/39	Complies
Power Density	GFSK	00/19/39	Complies

1.3. Tested System Details

The types for all equipment, 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	HP	NX6320	CNU62D1F6F	DoC	Non-Shielded, 1.8m

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 "HEAT.exe".
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	Test Site
Temperature (°C)	FCC PART 15 C 15.247 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	3
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	2
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	2
Humidity (%RH)		25 - 75	50	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 C 15.247 DTS Bandwidth	15 - 35	24	3
Humidity (%RH)		25 - 75	45	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth	15 - 35	24	3
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	3
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	3
Humidity (%RH)		25 - 75	45	
Barometric pressure (mbar)		860 - 1060	950-1000	

Note: Test Site information refers to Laboratory Information.

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

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

- 1 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 : info.tw@dekra.com
- 2 No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan, R.O.C.
TEL: +886-3-582-8001 / FAX: +886-3-582-8958 E-Mail : info.tw@dekra.com
- 3 No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan, R.O.C.
TEL: +886-3-582-8001 / FAX: +886-3-582-8958 E-Mail : info.tw@dekra.com

2. Conducted Emission

2.1. Test Equipment

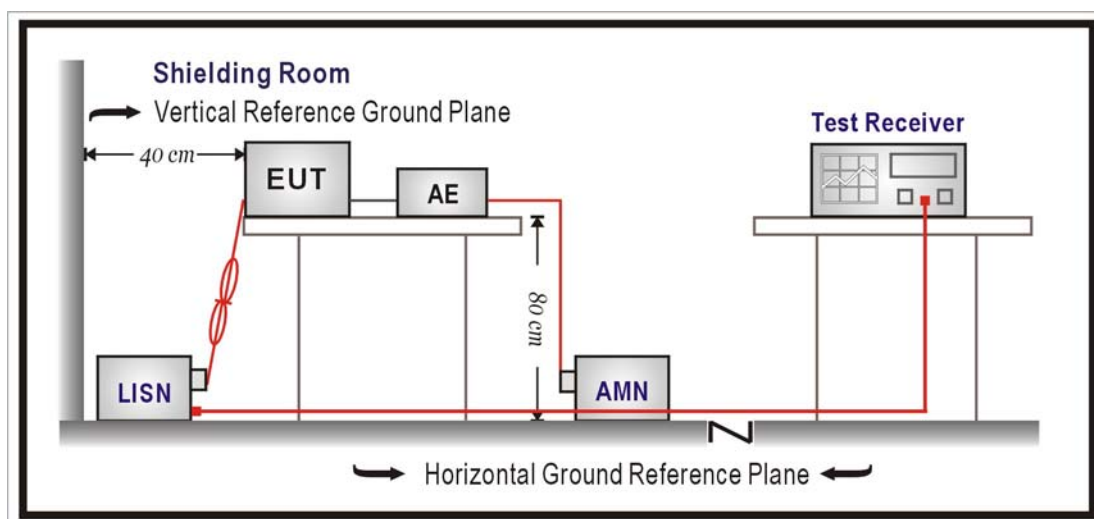
The following test equipment are used during the test:

Conducted Emission / SR2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Artificial Mains Network	R&S	ENV4200	848411/010	2017/02/06	2018/02/05
Test Receiver	R&S	ESCS 30	836858/022	2017/04/12	2018/04/11
LISN	R&S	ENV216	100092	2017/07/31	2018/07/30

Note: All equipment 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 D01 V04 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: 2016

2.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

2.7. Test Result

EUT using DC input voltage, so the project does not have to test for this Item.

3. Peak Power Output

3.1. Test Equipment

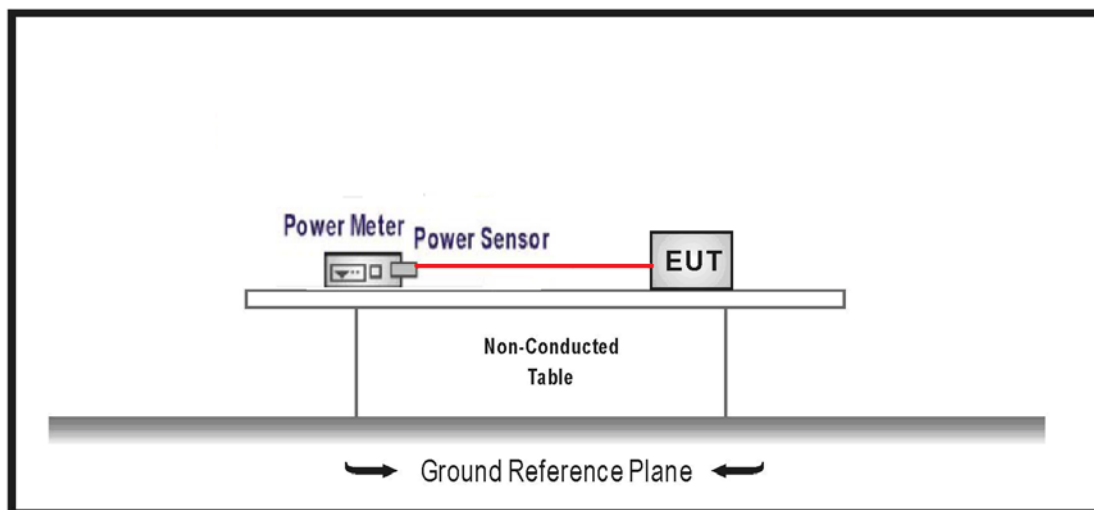
The following test equipment is used during the test:

Peak Power Output / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2017/01/23	2018/01/22
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2017/03/13	2018/03/12
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2017/01/20	2018/01/19
Pulse Power Sensor	Anritsu	MA2411B	1531043	2017/01/20	2018/01/19
Pulse Power Sensor	Anritsu	MA2411B	1531044	2017/01/20	2018/01/19

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 D01 V04 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	Analog GPS Speedometer		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmitter_Power by PC		
Date of Test	2017/12/06	Test Site	SR10-H

GFSK

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	4.780	≤ 30.000	Pass
19	2440	4.760	≤ 30.000	Pass
39	2480	4.750	≤ 30.000	Pass

4. Radiated Emission

4.1. Test Equipment

The following test equipment are used during the test:

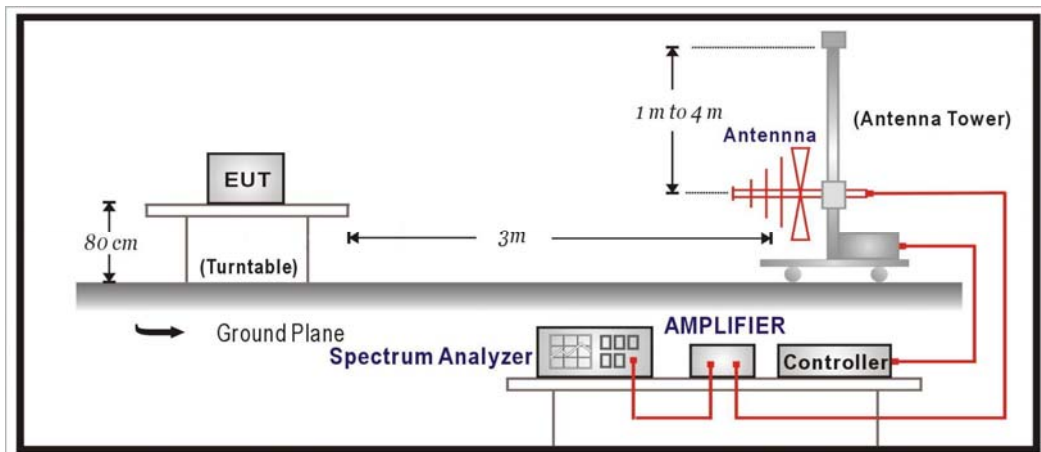
Radiated Emission / CB4-H, CB2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Signal & Spectrum Analyzer	R&S	FSV40	101049	2017/01/23	2018/01/22
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2017/03/13	2018/03/12
Bilog Antenna	Teseq	CBL6112D	23191	2017/06/28	2018/06/27
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2017/06/14	2018/06/13
Horn Antenna	Schwarzbeck	BBHA 9170	202	2017/02/15	2018/02/14
Pre-Amplifier	RF Bay Inc.	LNA-1330	12162511	2017/03/09	2018/03/08
Pre-Amplifier	EMCI	EMCI 1830I	980366	2017/01/23	2018/01/22
Pre-Amplifier	MITEQ	JS44-45-8P	2014754	2016/12/26	2017/12/25

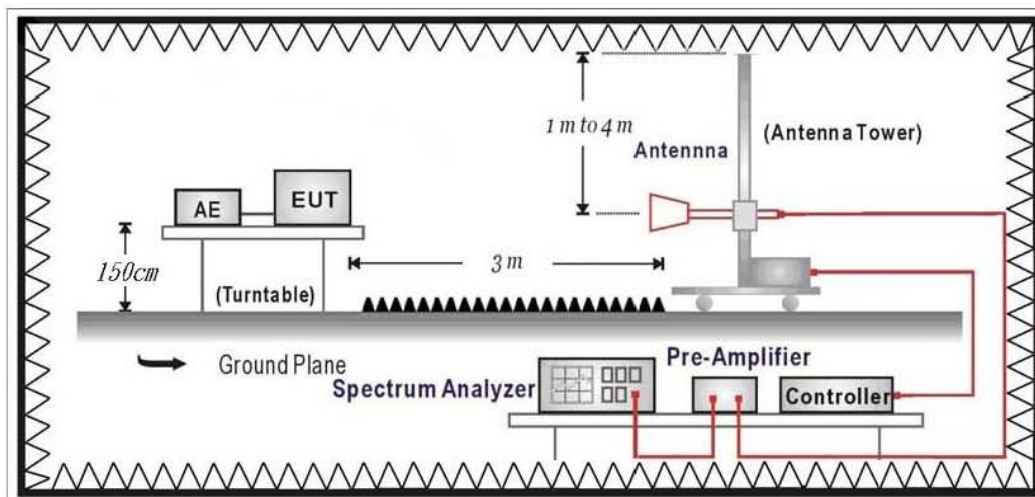
Note: All equipment that need to calibrate are with calibration period of 1 year.

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 D01 V04 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.

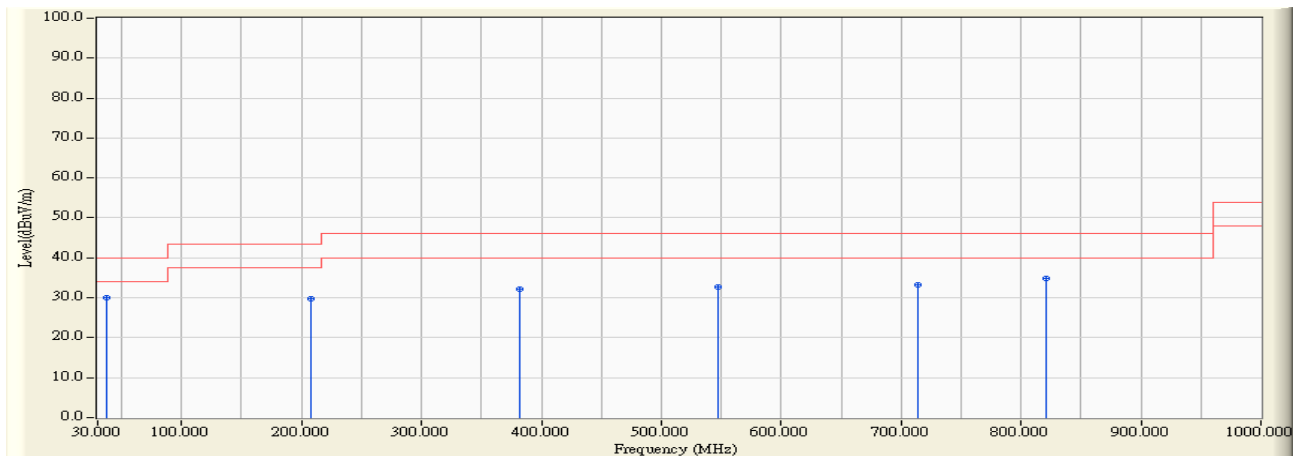
4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

4.6. Test Result

30MHz-1GHz Spurious

Site : CB4-H	Time : 2018/02/12 - 10:06
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_2402MHz

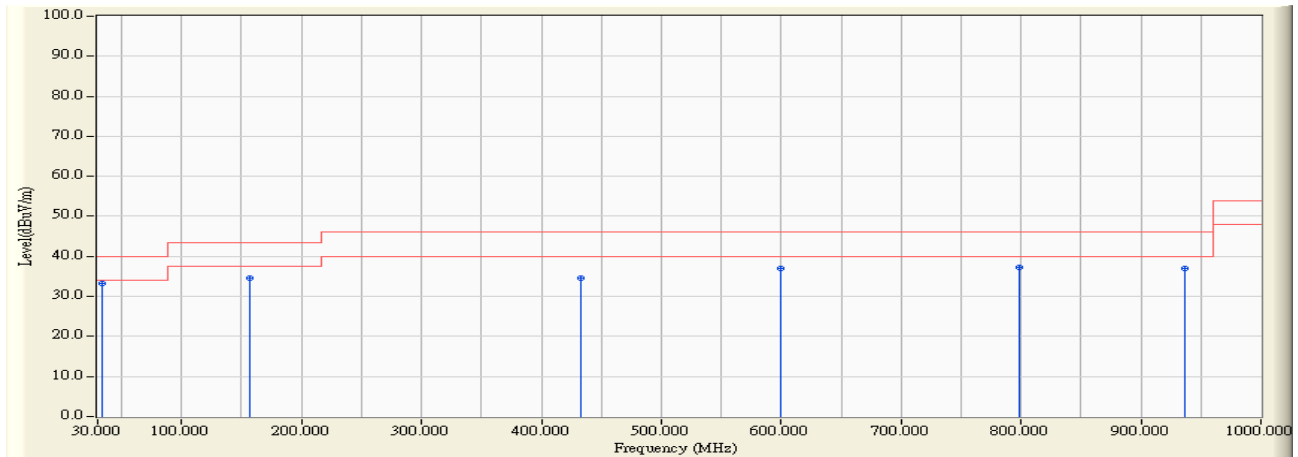


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	37.081	-12.786	42.836	30.051	-9.949	40.000	QUASIPeAK
2		207.413	-22.857	52.620	29.763	-13.737	43.500	QUASIPeAK
3		382.498	-16.714	48.911	32.196	-13.804	46.000	QUASIPeAK
4		547.689	-14.073	46.883	32.810	-13.190	46.000	QUASIPeAK
5		713.462	-12.340	45.554	33.214	-12.786	46.000	QUASIPeAK
6		820.550	-10.930	45.881	34.951	-11.049	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 : 2018/02/12 - 10:07
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_2402MHz

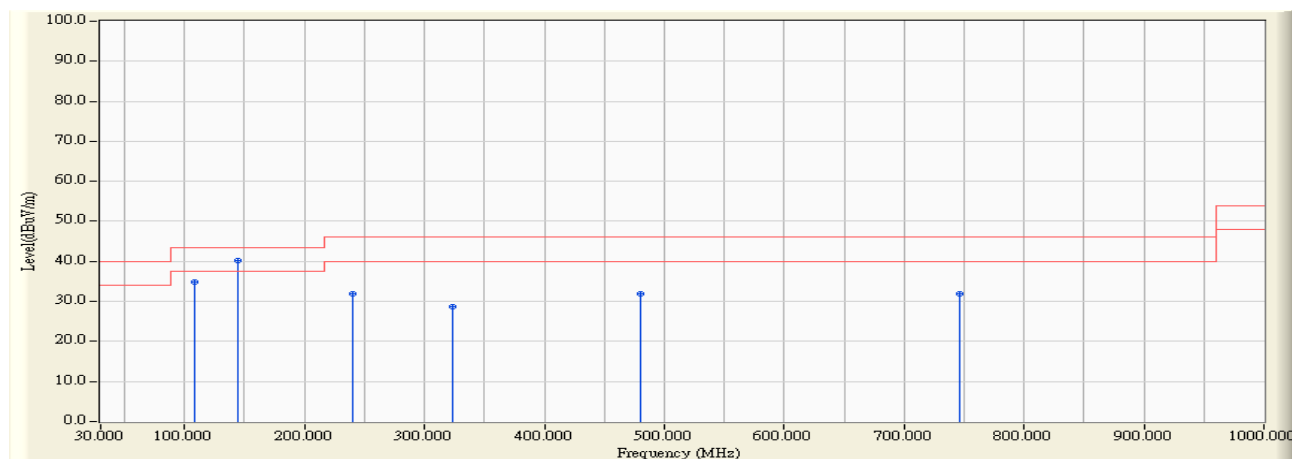


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	33.492	-14.043	47.379	33.336	-6.664	40.000	QUASIPeAK
2		157.458	-22.739	57.273	34.535	-8.965	43.500	QUASIPeAK
3		433.132	-15.672	50.146	34.474	-11.526	46.000	QUASIPeAK
4		599.390	-13.405	50.494	37.090	-8.910	46.000	QUASIPeAK
5		798.240	-11.259	48.588	37.329	-8.671	46.000	QUASIPeAK
6		935.980	-9.308	46.252	36.944	-9.056	48.000	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 : 2017/11/30 - 15:14
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_2440MHz

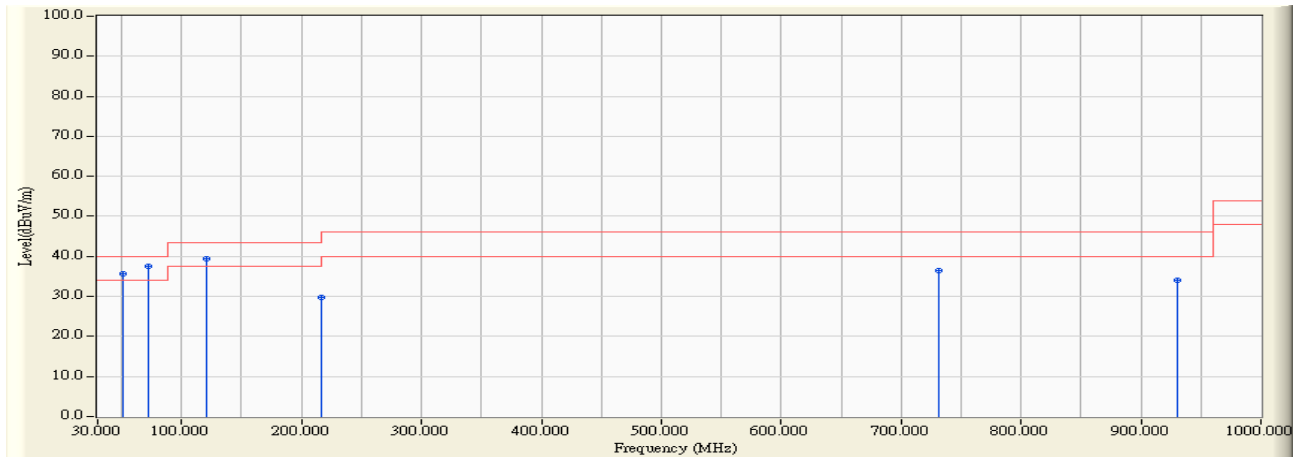


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		108.085	-21.967	56.686	34.719	-8.781	43.500	QUASIPeAK
2	*	143.975	-21.910	62.111	40.201	-3.299	43.500	QUASIPeAK
3		240.005	-21.058	52.949	31.892	-14.108	46.000	QUASIPeAK
4		323.910	-18.837	47.416	28.579	-17.421	46.000	QUASIPeAK
5		480.080	-14.639	46.576	31.937	-14.063	46.000	QUASIPeAK
6		746.345	-11.554	43.362	31.808	-14.192	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 : 2017/11/30 - 15:17
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_2440MHz

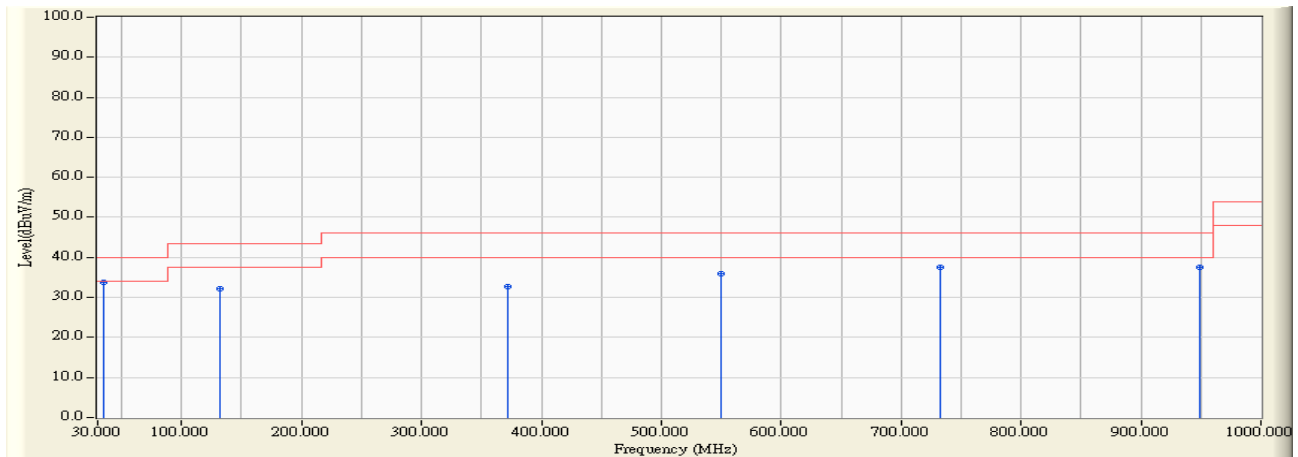


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		51.340	-26.098	61.695	35.597	-4.403	40.000	QUASIPeAK
2	*	72.195	-27.949	65.535	37.587	-2.413	40.000	QUASIPeAK
3		120.210	-20.943	60.388	39.444	-4.056	43.500	QUASIPeAK
4		216.240	-22.300	52.115	29.814	-16.186	46.000	QUASIPeAK
5		730.825	-11.705	48.037	36.332	-9.668	46.000	QUASIPeAK
6		930.645	-9.311	43.339	34.028	-11.972	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 : 2018/02/12 - 10:08
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_2480MHz

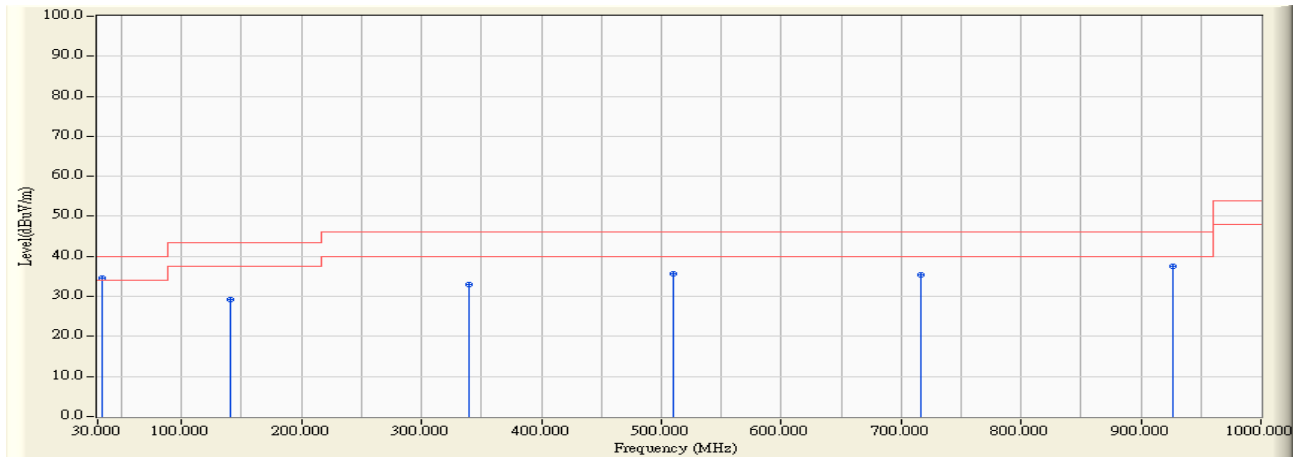


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	35.529	-14.836	48.592	33.755	-6.245	40.000	QUASIPeAK
2		132.432	-20.903	52.957	32.054	-11.446	43.500	QUASIPeAK
3		371.731	-17.261	49.849	32.588	-13.412	46.000	QUASIPeAK
4		549.532	-14.037	49.832	35.794	-10.206	46.000	QUASIPeAK
5		732.377	-12.038	49.610	37.573	-8.427	46.000	QUASIPeAK
6		948.396	-9.276	46.918	37.642	-8.358	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 : 2018/02/12 - 10:09
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_2480MHz

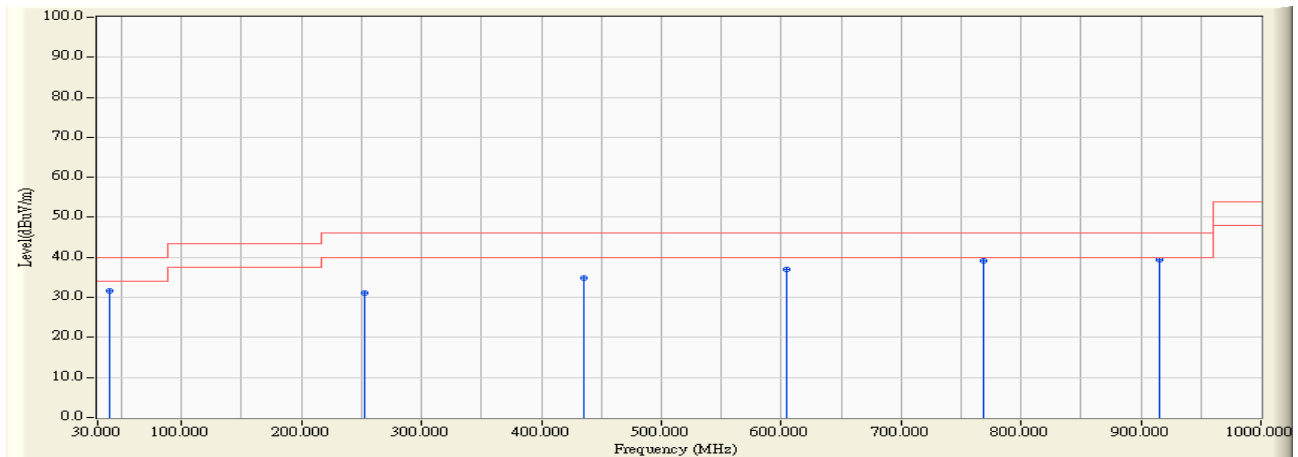


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	34.074	-14.675	49.135	34.460	-5.540	40.000	QUASIPeAK
2		140.192	-21.044	50.227	29.183	-14.317	43.500	QUASIPeAK
3		339.527	-18.243	51.167	32.924	-13.076	46.000	QUASIPeAK
4		510.344	-14.454	50.204	35.751	-10.249	46.000	QUASIPeAK
5		715.984	-12.166	47.479	35.312	-10.688	46.000	QUASIPeAK
6		926.183	-9.582	47.089	37.506	-8.494	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 : 2018/02/12 - 10:13
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	Power : DC 3.7V(Battery)
EUT : Analog GPS Speedometer	Note : Mode 2: Transmitter_Power by Battery_2402MHz

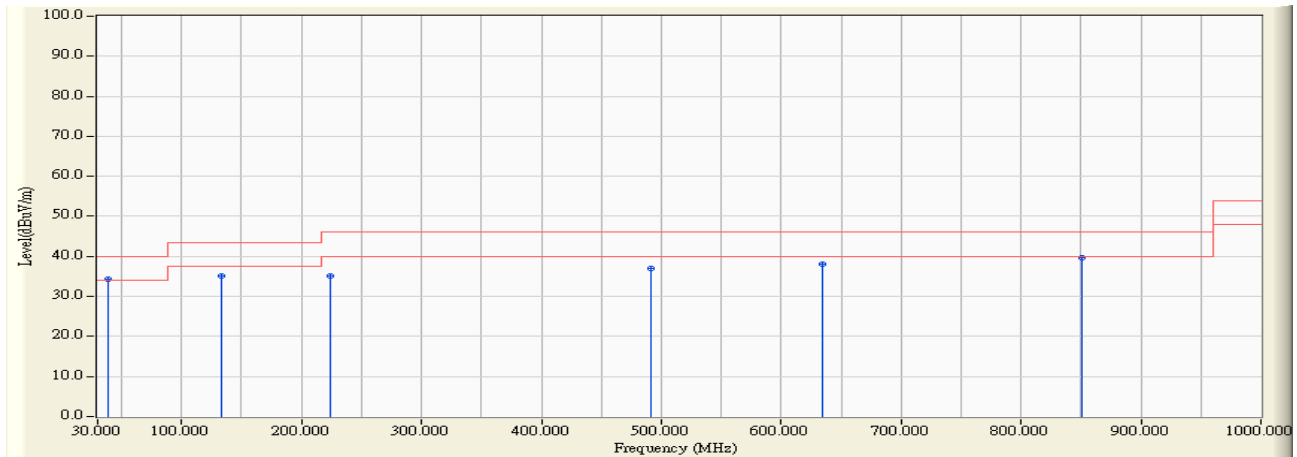


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		39.409	-15.624	47.378	31.754	-8.246	40.000	QUASIPeAK
2		252.518	-20.505	51.480	30.975	-15.025	46.000	QUASIPeAK
3		435.363	-15.567	50.369	34.803	-11.197	46.000	QUASIPeAK
4		604.628	-13.312	50.276	36.963	-9.037	46.000	QUASIPeAK
5		768.849	-11.632	50.769	39.137	-6.863	46.000	QUASIPeAK
6	*	915.804	-9.686	49.163	39.476	-6.524	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 : 2018/02/12 - 10:14
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	Power : DC 3.7V(Battery)
EUT : Analog GPS Speedometer	Note : Mode 2: Transmitter_Power by Battery_2402MHz

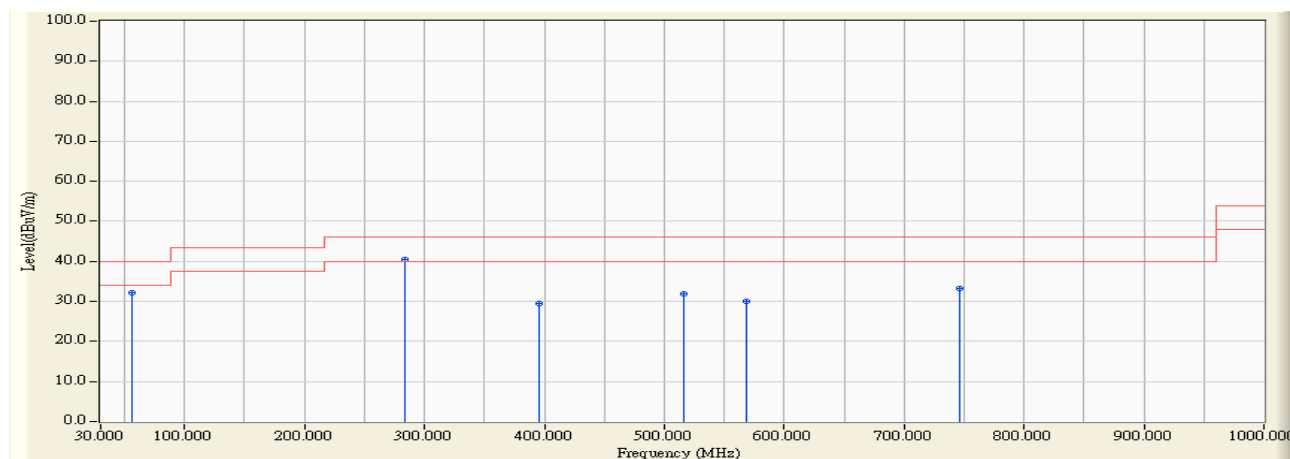


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	38.245	-13.717	47.940	34.223	-5.777	40.000	QUASIPeAK
2		132.626	-20.853	55.947	35.094	-8.406	43.500	QUASIPeAK
3		224.485	-21.684	56.779	35.095	-10.905	46.000	QUASIPeAK
4		491.332	-14.710	51.667	36.957	-9.043	46.000	QUASIPeAK
5		634.795	-12.954	51.087	38.134	-7.866	46.000	QUASIPeAK
6		851.202	-10.496	50.108	39.611	-6.389	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 : 2017/12/14 - 14:58
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	Power : DC 3.7V(Battery)
EUT : Analog GPS Speedometer	Note : Mode 2: Transmitter_Power by Battery_2440MHz

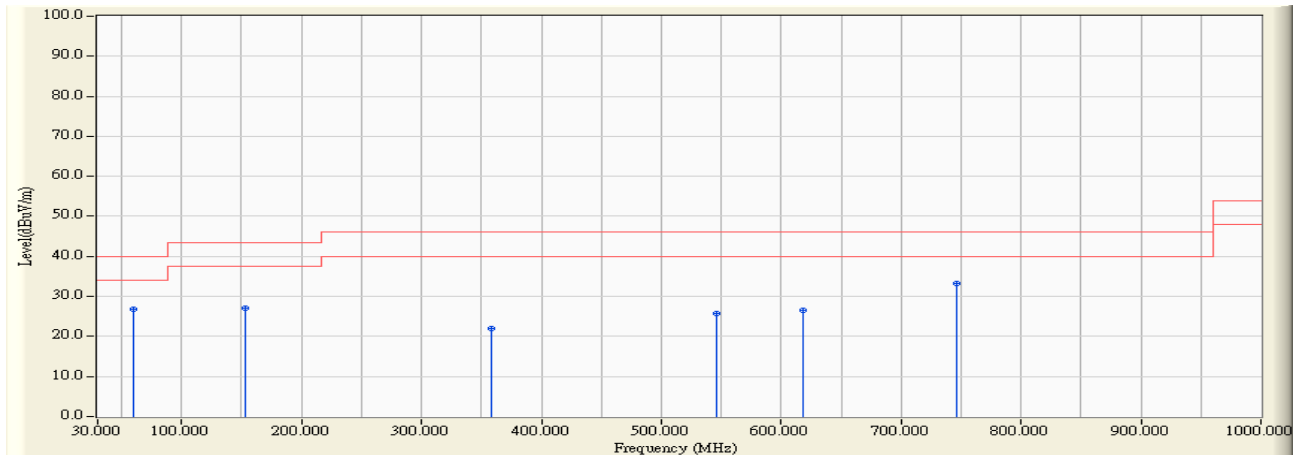


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		56.190	-26.279	58.413	32.134	-7.866	40.000	QUASIPeAK
2	*	283.655	-19.783	60.395	40.612	-5.388	46.000	QUASIPeAK
3		396.175	-16.511	46.042	29.531	-16.469	46.000	QUASIPeAK
4		515.970	-14.269	46.254	31.985	-14.015	46.000	QUASIPeAK
5		568.835	-13.671	43.718	30.046	-15.954	46.000	QUASIPeAK
6		746.345	-11.788	45.045	33.257	-12.743	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 : 2017/12/14 - 14:59
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	Power : DC 3.7V(Battery)
EUT : Analog GPS Speedometer	Note : Mode 2: Transmitter_Power by Battery_2440MHz

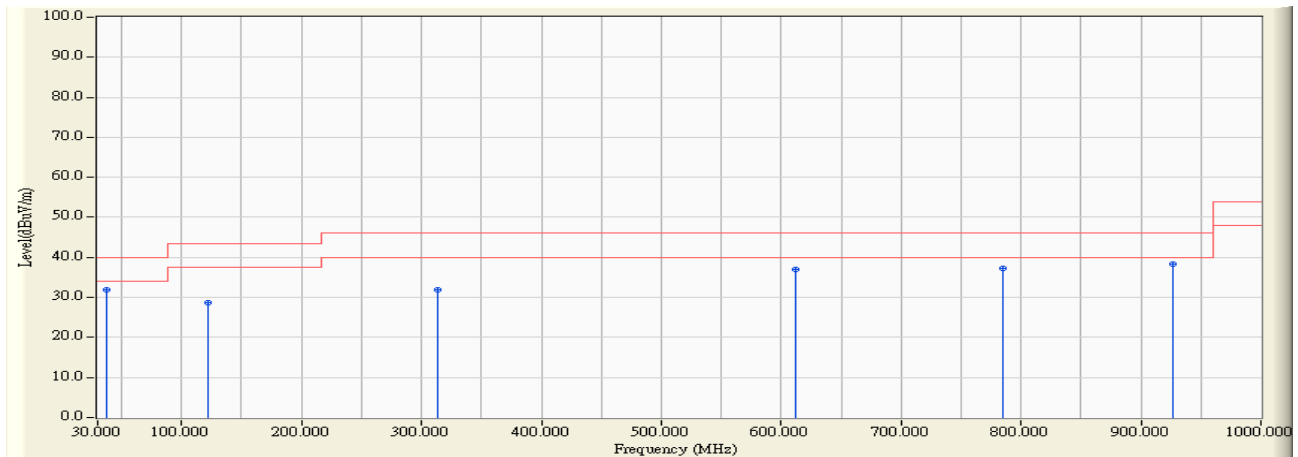


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		60.070	-28.454	55.206	26.751	-13.249	40.000	QUASIPeAK
2		153.675	-22.518	49.552	27.035	-16.465	43.500	QUASIPeAK
3		357.860	-17.624	39.582	21.958	-24.042	46.000	QUASIPeAK
4		546.525	-14.082	39.742	25.660	-20.340	46.000	QUASIPeAK
5		618.790	-13.000	39.508	26.507	-19.493	46.000	QUASIPeAK
6	*	746.345	-11.788	45.045	33.257	-12.743	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 : 2018/02/12 - 10:15
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	Power : DC 3.7V(Battery)
EUT : Analog GPS Speedometer	Note : Mode 2: Transmitter_Power by Battery_2480MHz

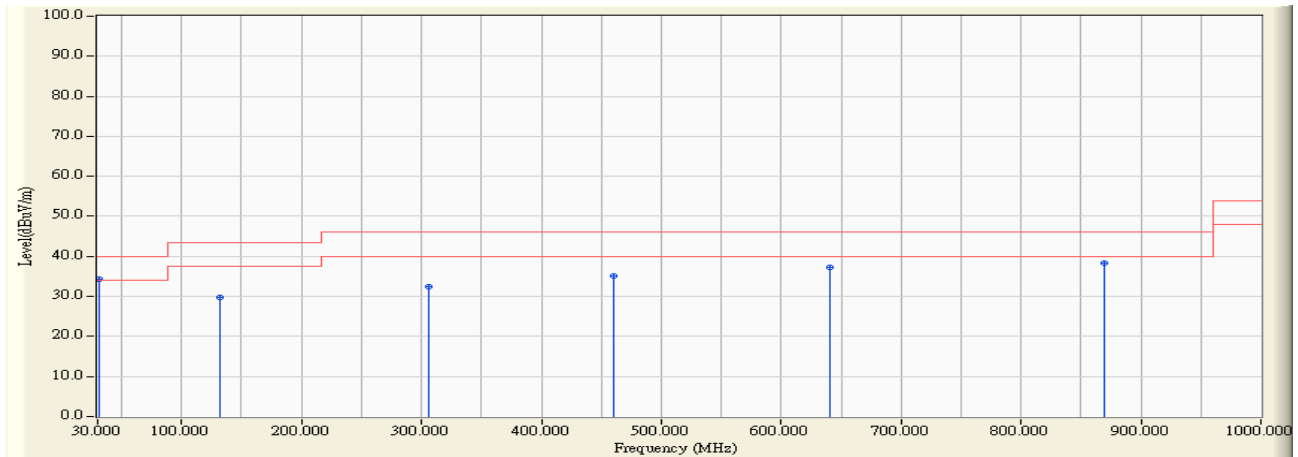


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		37.275	-12.528	44.408	31.880	-8.120	40.000	QUASIPeAK
2		121.471	-20.664	49.316	28.652	-14.848	43.500	QUASIPeAK
3		314.113	-18.779	50.704	31.925	-14.075	46.000	QUASIPeAK
4		612.582	-13.224	50.104	36.881	-9.119	46.000	QUASIPeAK
5		784.369	-11.251	48.607	37.356	-8.644	46.000	QUASIPeAK
6	*	926.959	-9.569	47.908	38.339	-7.661	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 : 2018/02/12 - 10:16
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	Power : DC 3.7V(Battery)
EUT : Analog GPS Speedometer	Note : Mode 2: Transmitter_Power by Battery_2480MHz



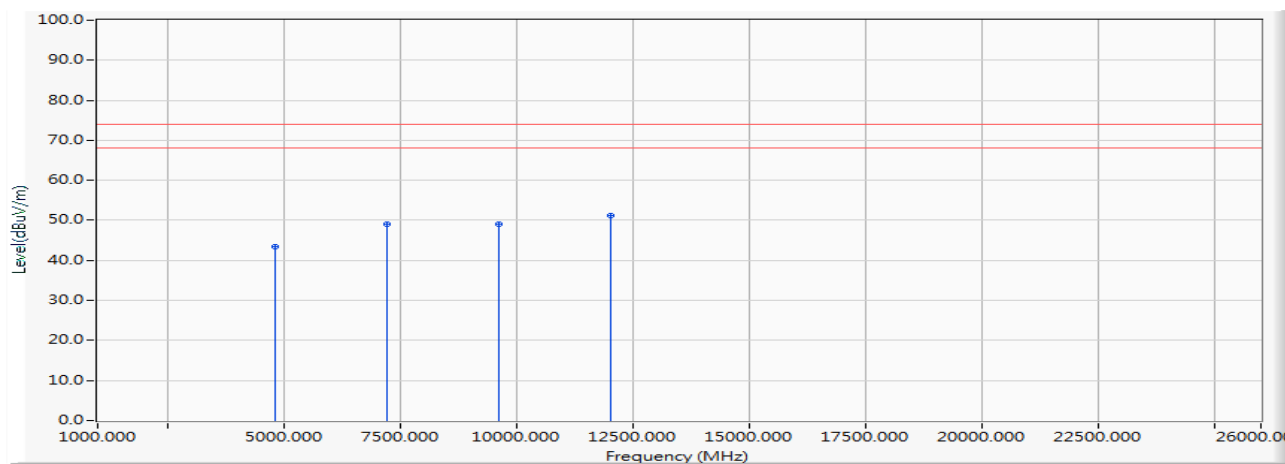
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	31.649	-13.816	48.264	34.448	-5.552	40.000	QUASIPeAK
2		132.432	-20.903	50.754	29.851	-13.649	43.500	QUASIPeAK
3		306.256	-19.479	51.931	32.452	-13.548	46.000	QUASIPeAK
4		460.001	-15.204	50.316	35.112	-10.888	46.000	QUASIPeAK
5		640.421	-12.887	50.258	37.371	-8.629	46.000	QUASIPeAK
6		868.856	-10.307	48.629	38.322	-7.678	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 : DEKRA Taiwan CB2-H	Time : 2017/11/30
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - HORIZONTAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2402MHz

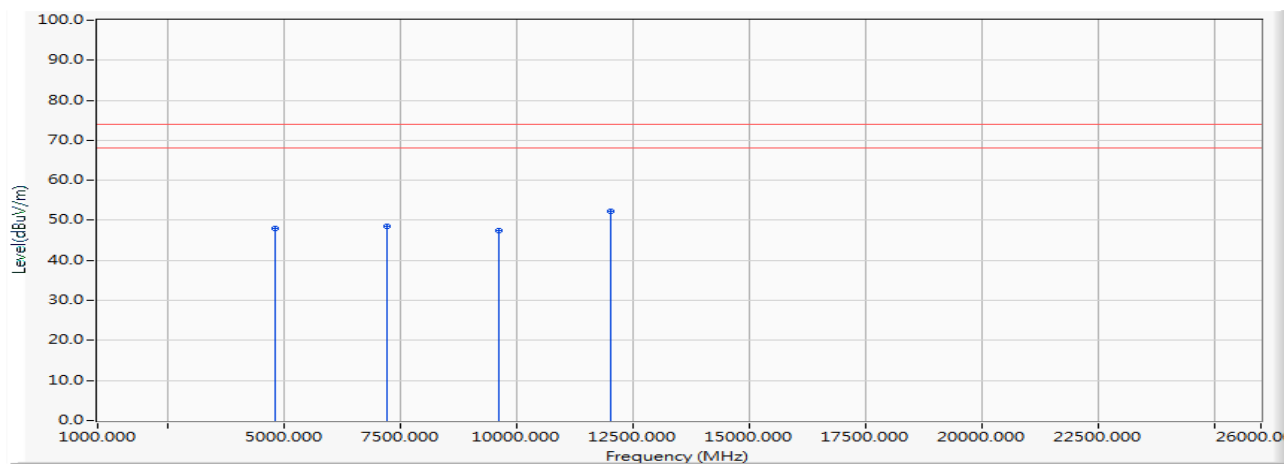


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4804.000	-0.209	43.730	43.522	-30.478	74.000	PEAK
2		7206.000	6.970	42.040	49.009	-24.991	74.000	PEAK
3		9608.000	12.540	36.510	49.051	-24.949	74.000	PEAK
4	*	12010.000	15.516	35.800	51.316	-22.684	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 : DEKRA Taiwan CB2-H	Time : 2017/11/30
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - VERTICAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2402MHz

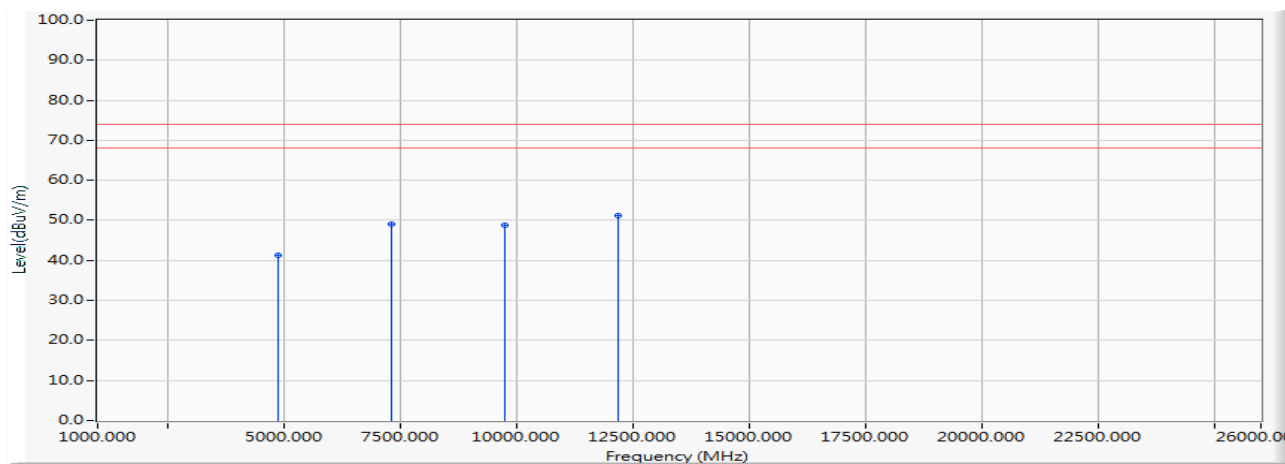


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4804.000	-0.209	48.330	48.122	-25.878	74.000	PEAK
2		7206.000	6.970	41.640	48.609	-25.391	74.000	PEAK
3		9608.000	12.540	34.920	47.461	-26.539	74.000	PEAK
4	*	12010.000	15.516	36.780	52.296	-21.704	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 : DEKRA Taiwan CB2-H	Time : 2017/11/30
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - HORIZONTAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2440MHz

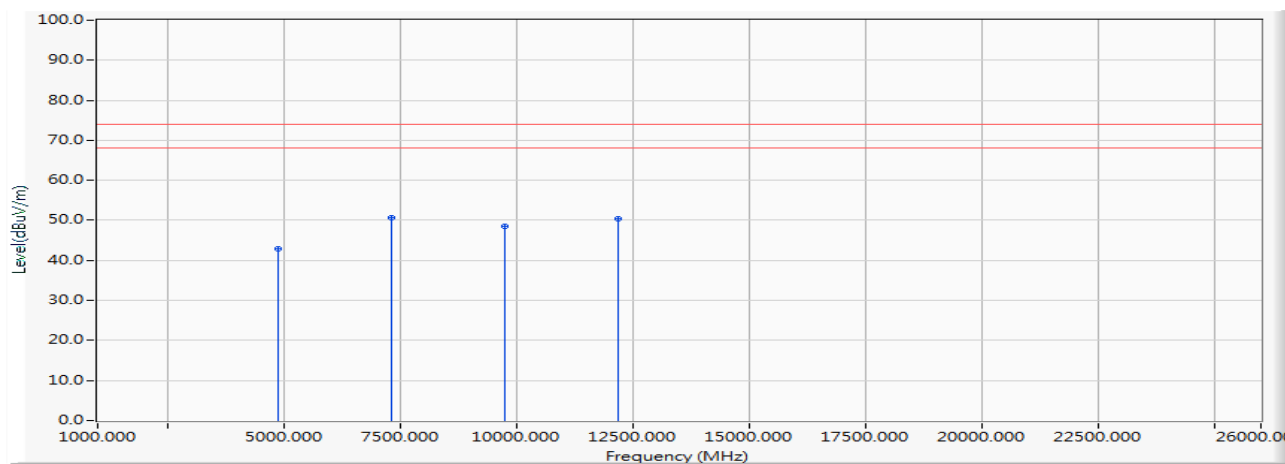


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4880.000	-0.126	41.470	41.344	-32.656	74.000	PEAK
2		7320.000	7.437	41.580	49.017	-24.983	74.000	PEAK
3		9760.000	12.866	35.890	48.755	-25.245	74.000	PEAK
4	*	12200.000	14.851	36.270	51.122	-22.878	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 : DEKRA Taiwan CB2-H	Time : 2017/11/30
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - VERTICAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2440MHz

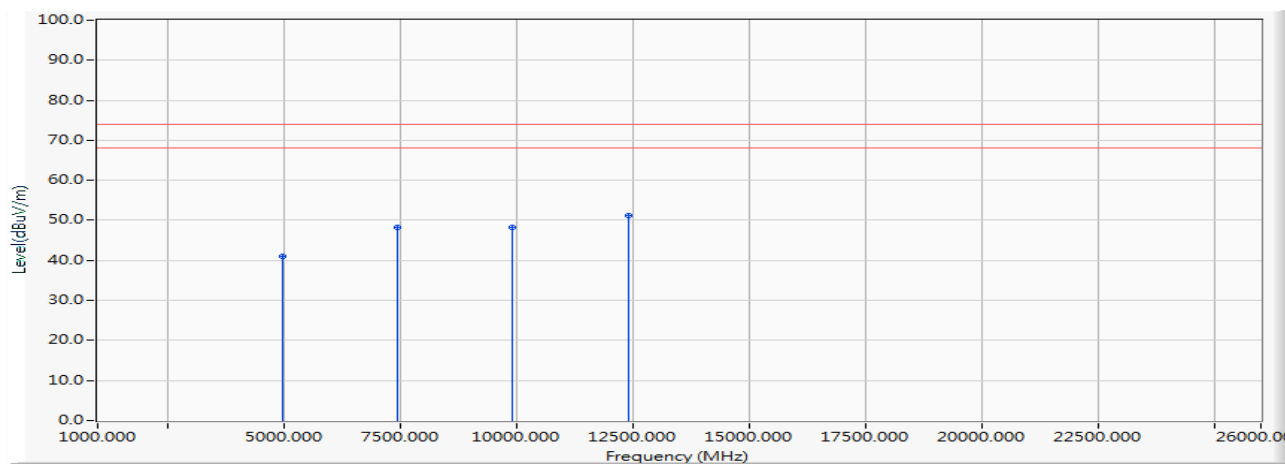


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4880.000	-0.126	43.030	42.904	-31.096	74.000	PEAK
2	*	7320.000	7.437	43.200	50.637	-23.363	74.000	PEAK
3		9760.000	12.866	35.640	48.505	-25.495	74.000	PEAK
4		12200.000	14.851	35.660	50.512	-23.488	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 : DEKRA Taiwan CB2-H	Time : 2017/11/30
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - HORIZONTAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2480MHz

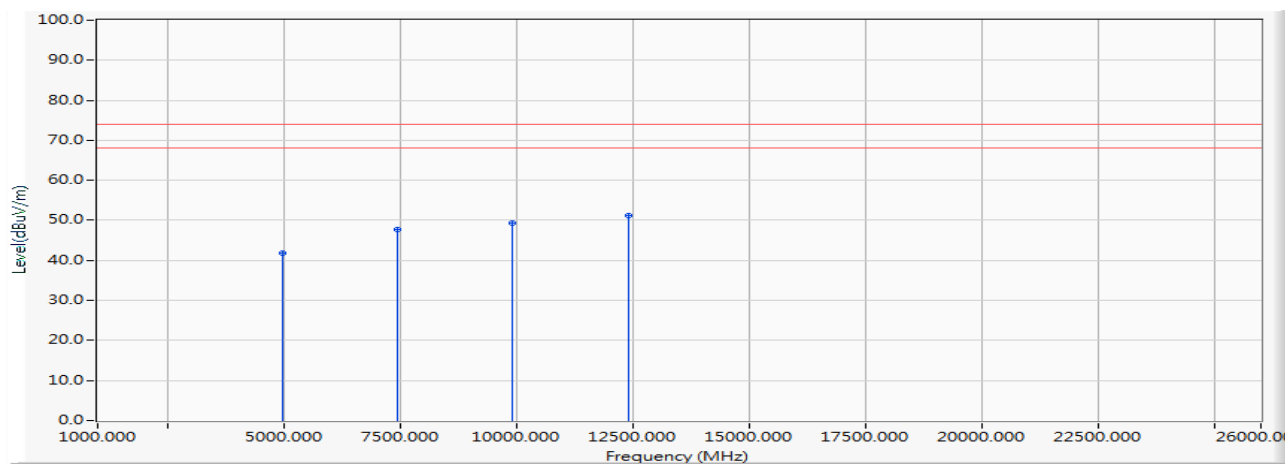


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4960.000	-0.034	41.150	41.116	-32.884	74.000	PEAK
2		7440.000	7.868	40.420	48.288	-25.712	74.000	PEAK
3		9920.000	13.091	35.290	48.381	-25.619	74.000	PEAK
4	*	12400.000	15.733	35.370	51.103	-22.897	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 : DEKRA Taiwan CB2-H	Time : 2017/11/30
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - VERTICAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2480MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4960.000	-0.034	41.930	41.896	-32.104	74.000	PEAK
2		7440.000	7.868	39.970	47.838	-26.162	74.000	PEAK
3		9920.000	13.091	36.200	49.291	-24.709	74.000	PEAK
4	*	12400.000	15.733	35.440	51.173	-22.827	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:

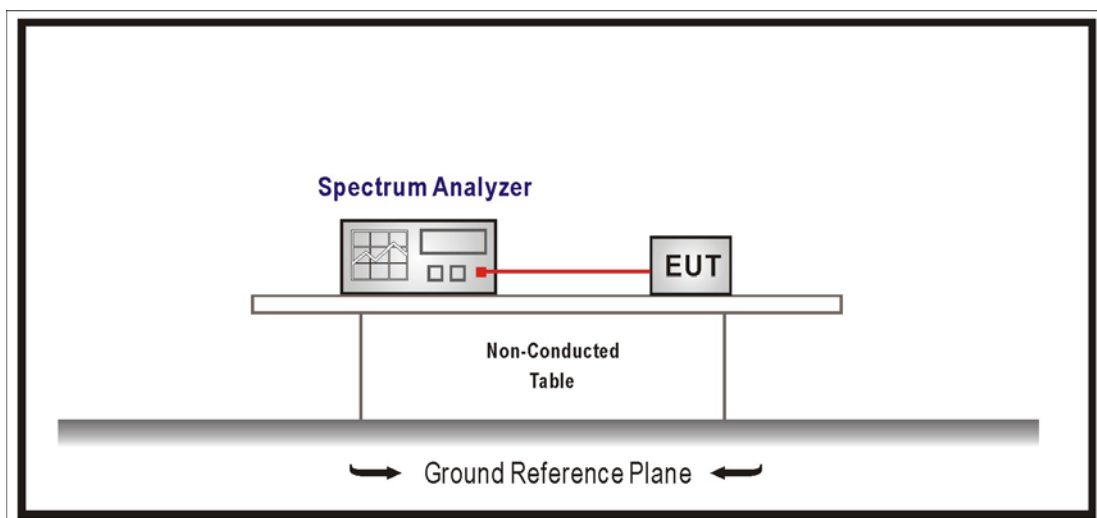
RF antenna conducted test / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2017/01/23	2018/01/22
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2017/03/13	2018/03/12
Spectrum Analyzer	Agilent	N9010A	US47140172	2017/07/26	2018/07/25

Note: All equipment 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 D01 V04 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

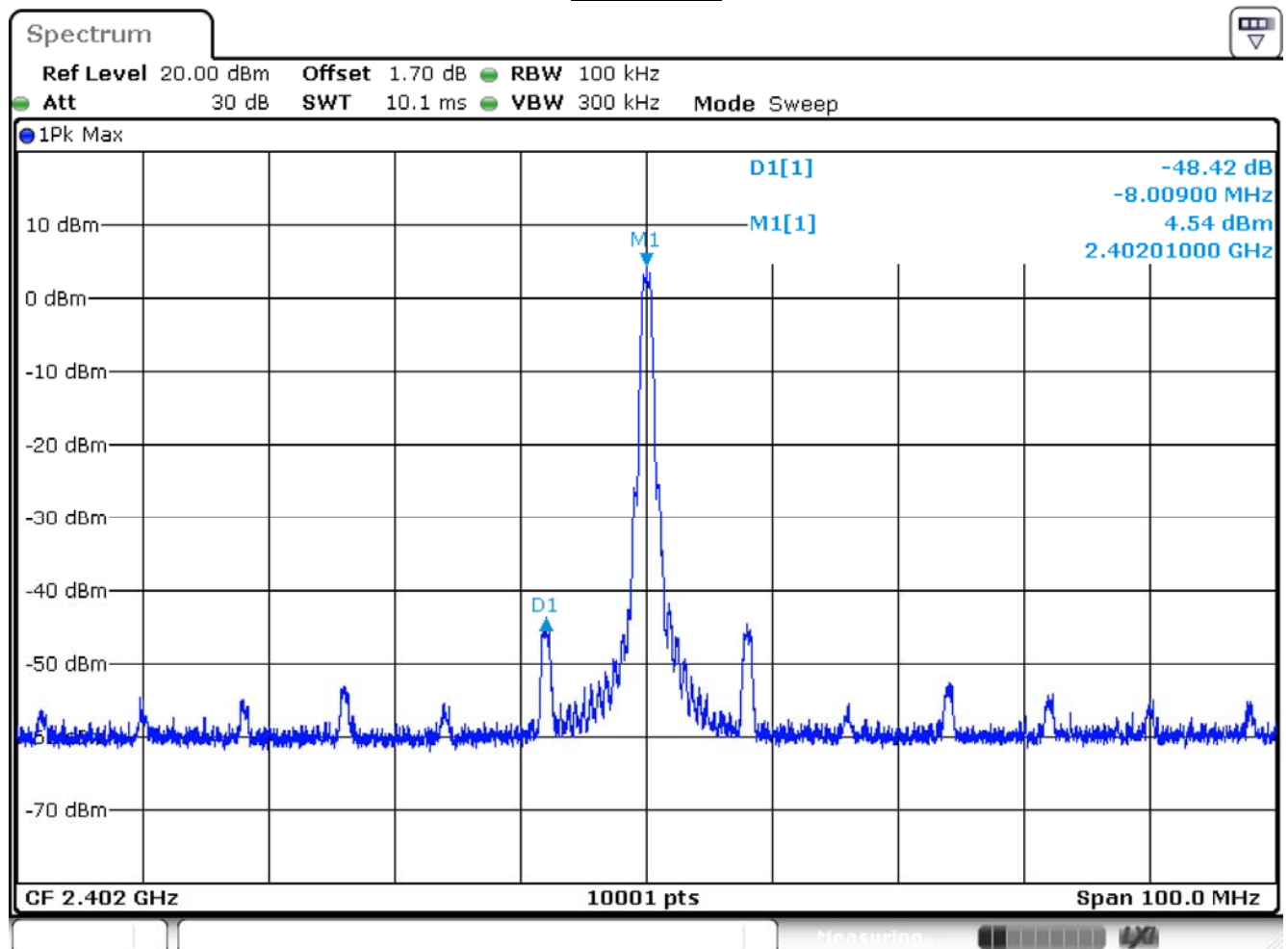
5.6. Test Result

Product	Analog GPS Speedometer		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmitter_Power by PC		
Date of Test	2017/12/02	Test Site	SR10-H

GFSK

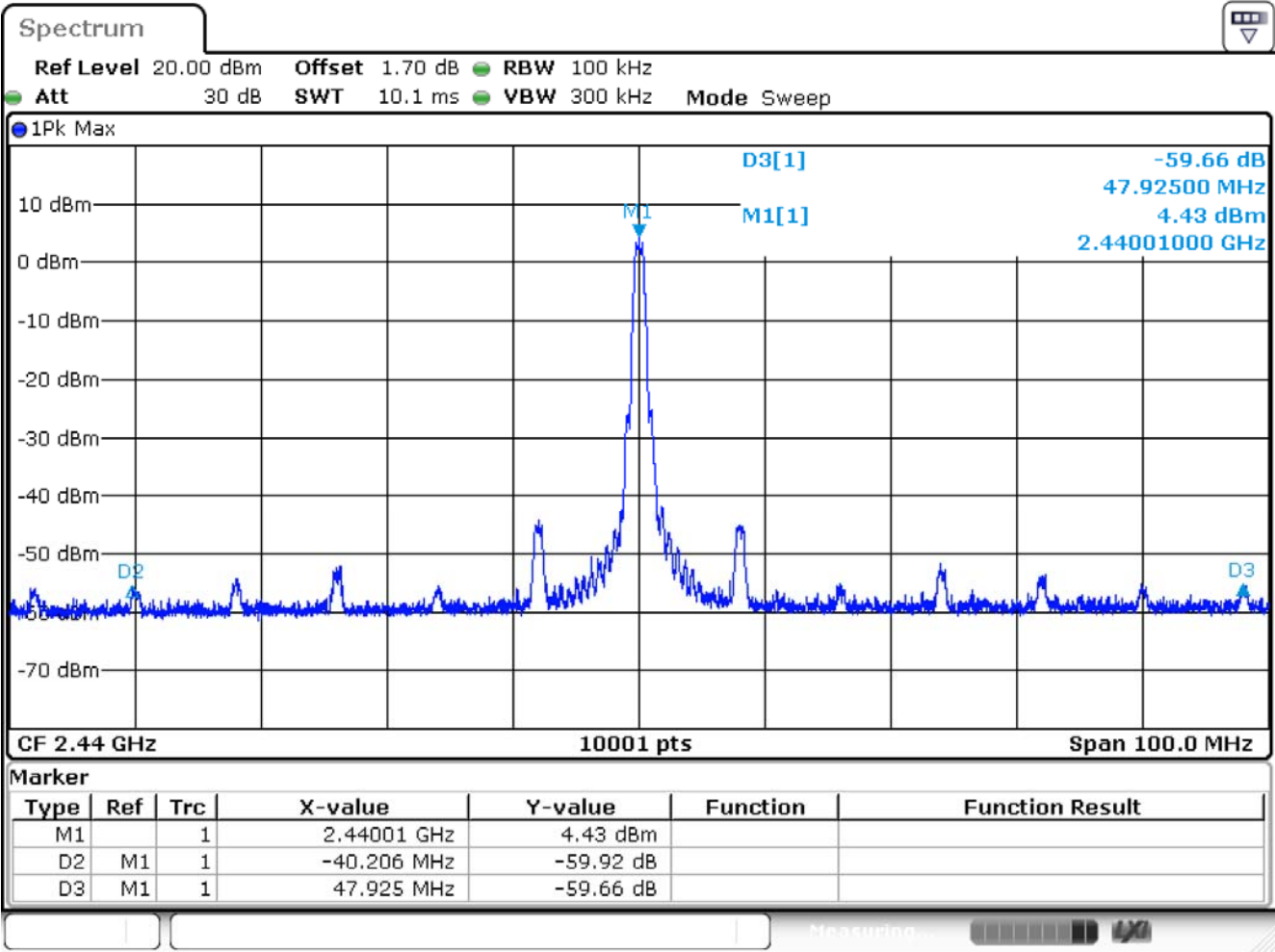
Channel	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
00	2402	48.420	≥ 20.000	Pass
19	2440	59.920	≥ 20.000	Pass
39	2480	48.530	≥ 20.000	Pass

Channel 00



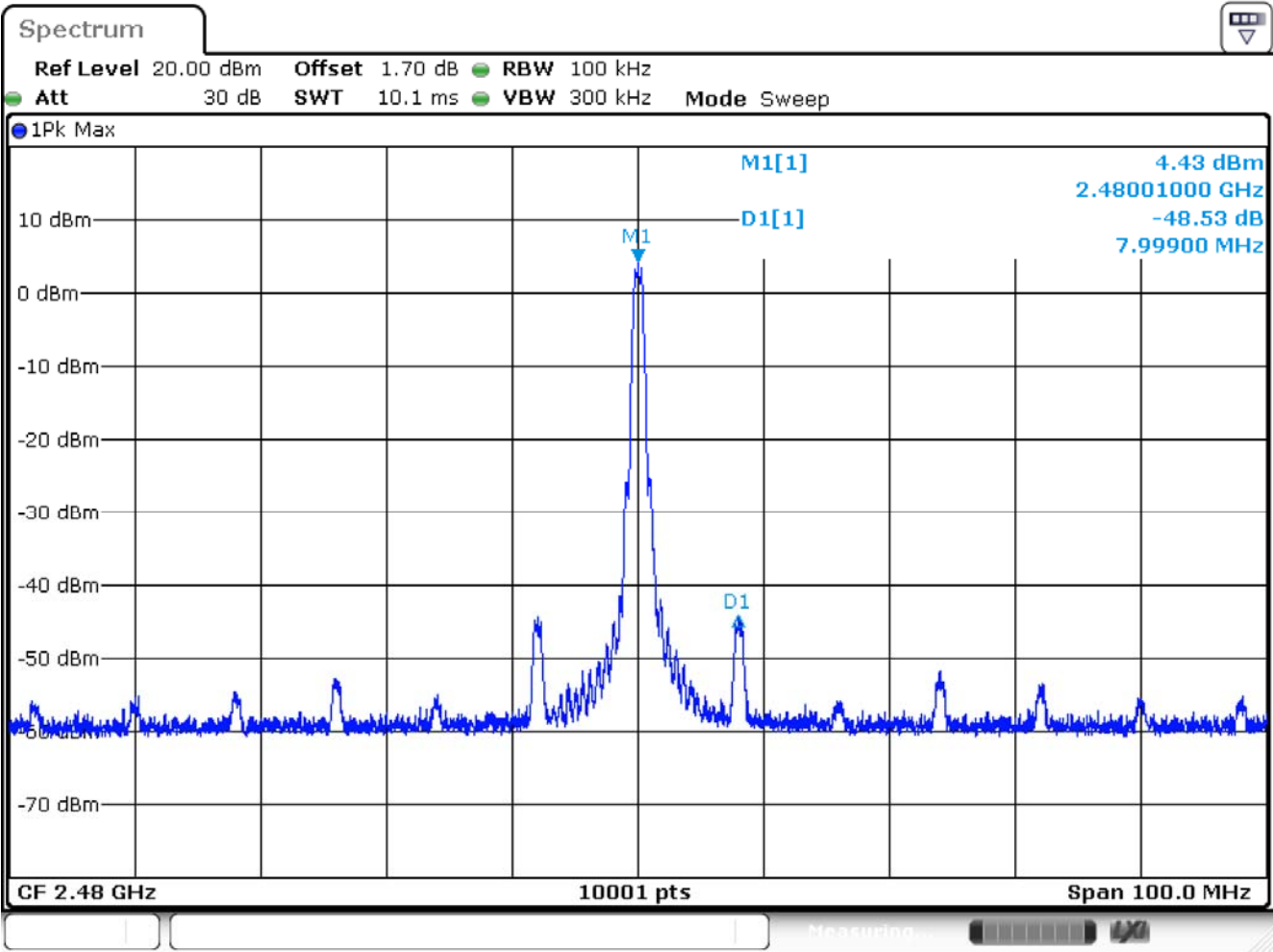
Date: 2.DEC.2017 17:59:32

Channel 19



Date: 2.DEC.2017 18:09:02

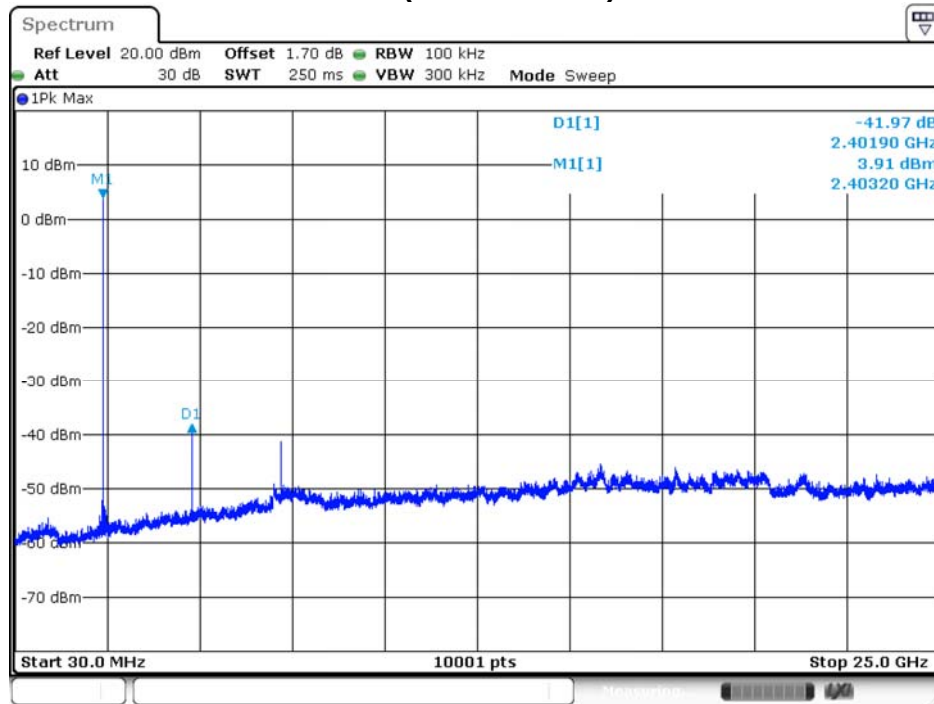
Channel 39



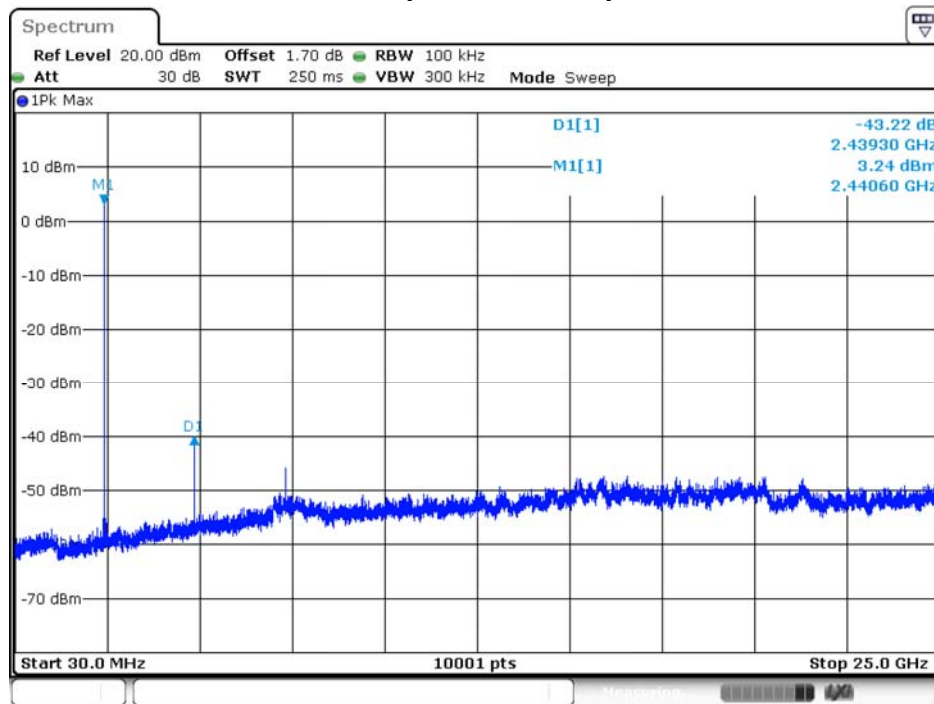
Date: 2.DEC.2017 18:10:01

Product	Analog GPS Speedometer		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmitter_Power by PC		
Date of Test	2017/12/02	Test Site	SR10-H

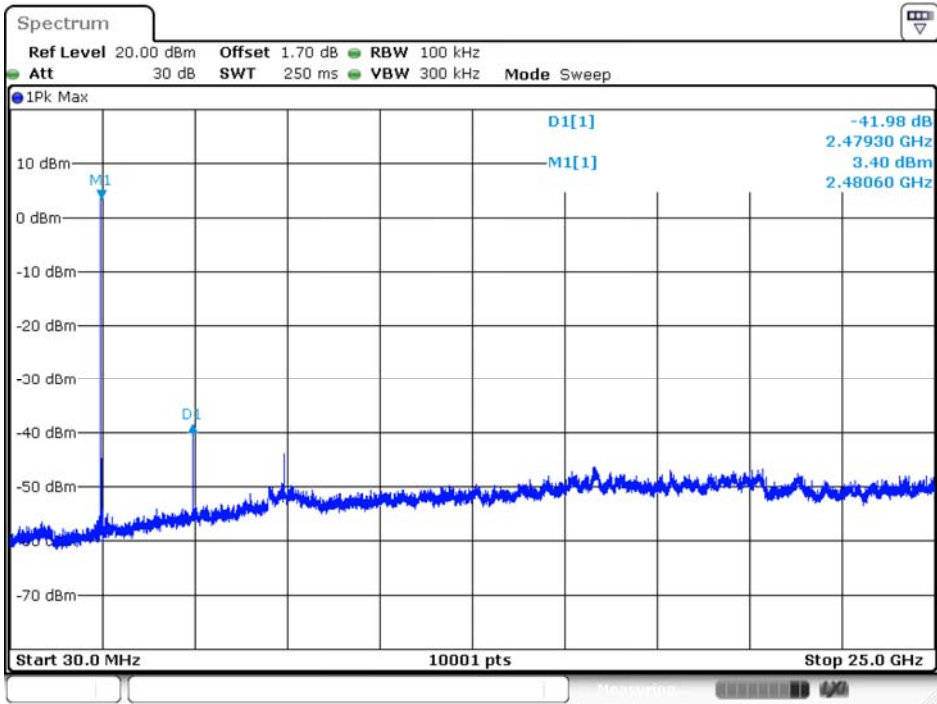
Channel 00 (30MHz-25GHz)- GFSK



Channel 19 (30MHz-25GHz)- GFSK



Channel 39 (30MHz-25GHz)- GFSK



Date: 2.DEC.2017 17:44:45

6. Band Edge

6.1. Test Equipment

The following test equipment are used during the test:

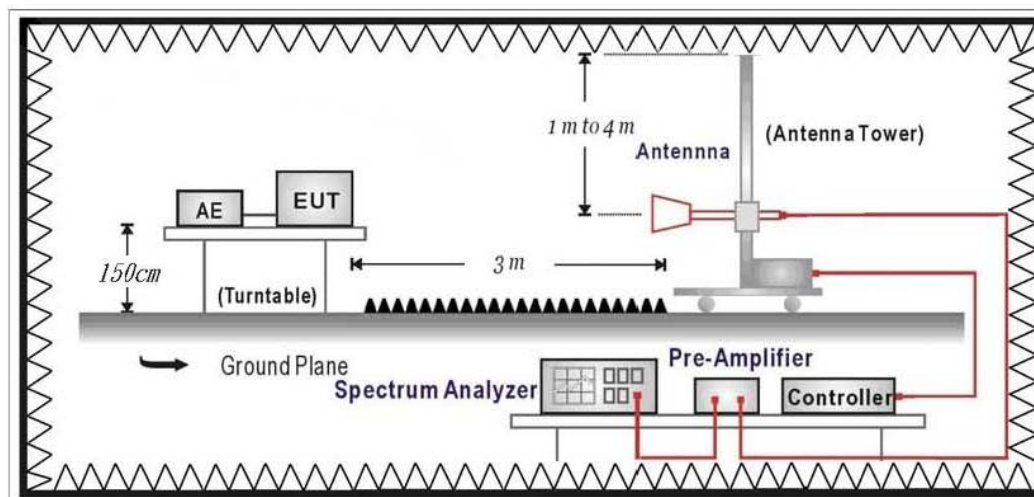
Band Edge / CB2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Signal & Spectrum Analyzer	R&S	FSV40	101049	2017/01/23	2018/01/22
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2017/03/13	2018/03/12
Bilog Antenna	Teseq	CBL6112D	23191	2017/06/28	2018/06/27
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2017/06/14	2018/06/13
Horn Antenna	Schwarzbeck	BBHA 9170	202	2017/02/15	2018/02/14
Pre-Amplifier	RF Bay Inc.	LNA-1330	12162511	2017/03/09	2018/03/08
Pre-Amplifier	EMCI	EMCI 1830I	980366	2017/01/23	2018/01/22
Pre-Amplifier	MITEQ	JS44-45-8P	2014754	2016/12/26	2017/12/25

Note: All equipment 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 D01 V04 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.

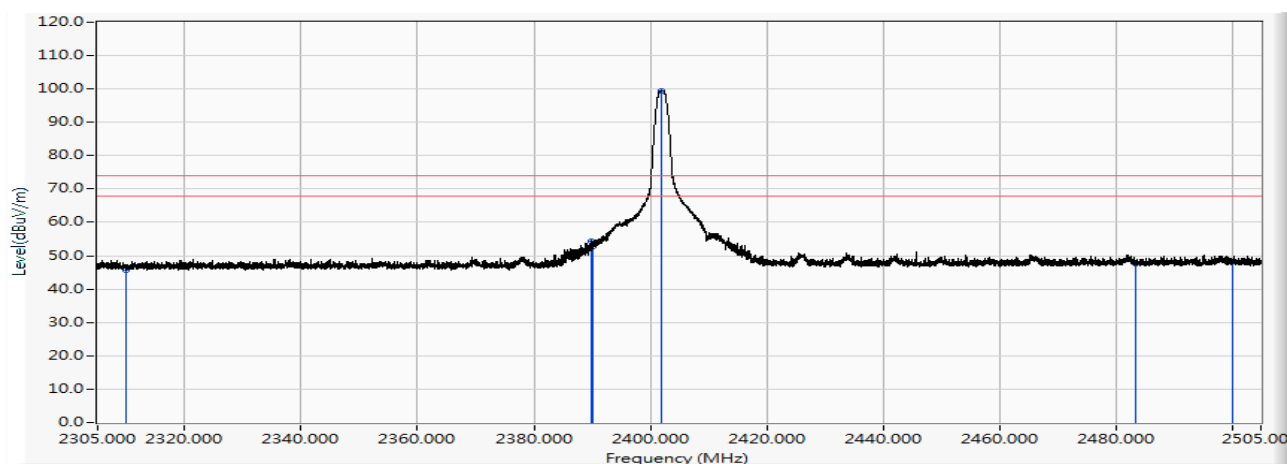
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2013 on radiated measurement.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

6.6. Test Result

Site : DEKRA Taiwan CB2-H	Time : 2017/11/29
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - HORIZONTAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2402MHz

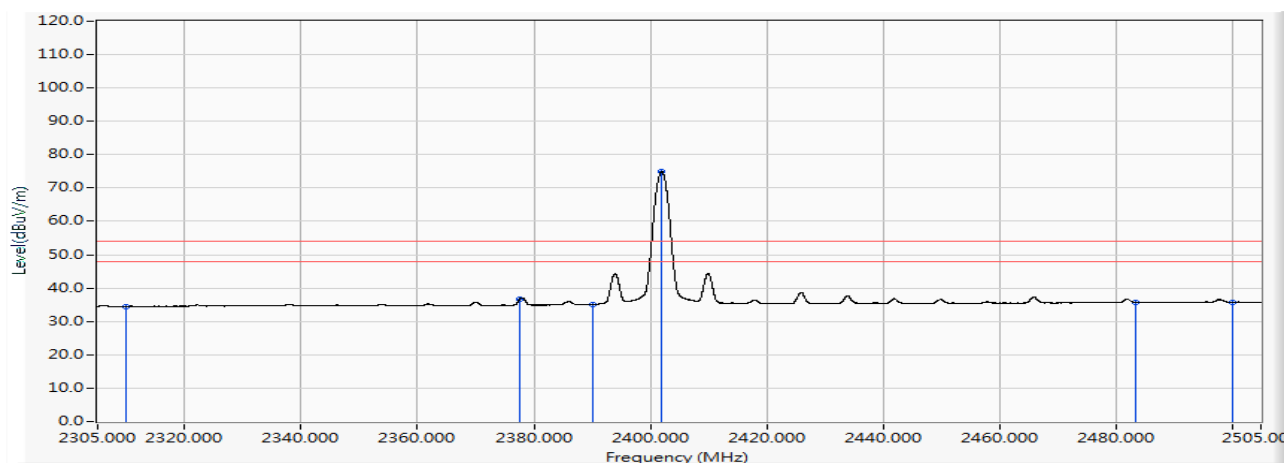


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	12.384	33.413	45.797	-28.203	74.000	PEAK
2		2389.760	12.910	41.468	54.378	-19.622	74.000	PEAK
3		2390.000	12.911	39.929	52.840	-21.160	74.000	PEAK
4	*	2402.000	12.991	86.475	99.465	25.465	74.000	PEAK
5		2483.500	13.527	33.949	47.476	-26.524	74.000	PEAK
6		2500.000	13.629	34.756	48.385	-25.615	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 : DEKRA Taiwan CB2-H	Time : 2017/11/29
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - HORIZONTAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2402MHz

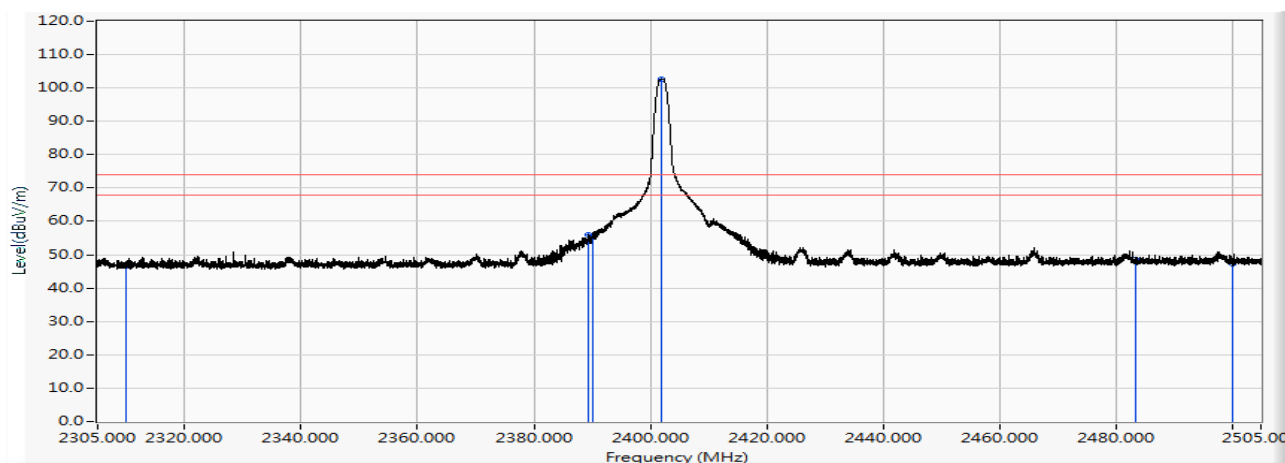


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	12.384	22.109	34.493	-19.507	54.000	AVERAGE
2		2377.620	12.830	23.950	36.780	-17.220	54.000	AVERAGE
3		2390.000	12.911	22.217	35.128	-18.872	54.000	AVERAGE
4	*	2401.960	12.990	62.014	75.004	21.004	54.000	AVERAGE
5		2483.500	13.527	22.178	35.705	-18.295	54.000	AVERAGE
6		2500.000	13.629	22.196	35.825	-18.175	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 : DEKRA Taiwan CB2-H	Time : 2017/11/29
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - VERTICAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2402MHz

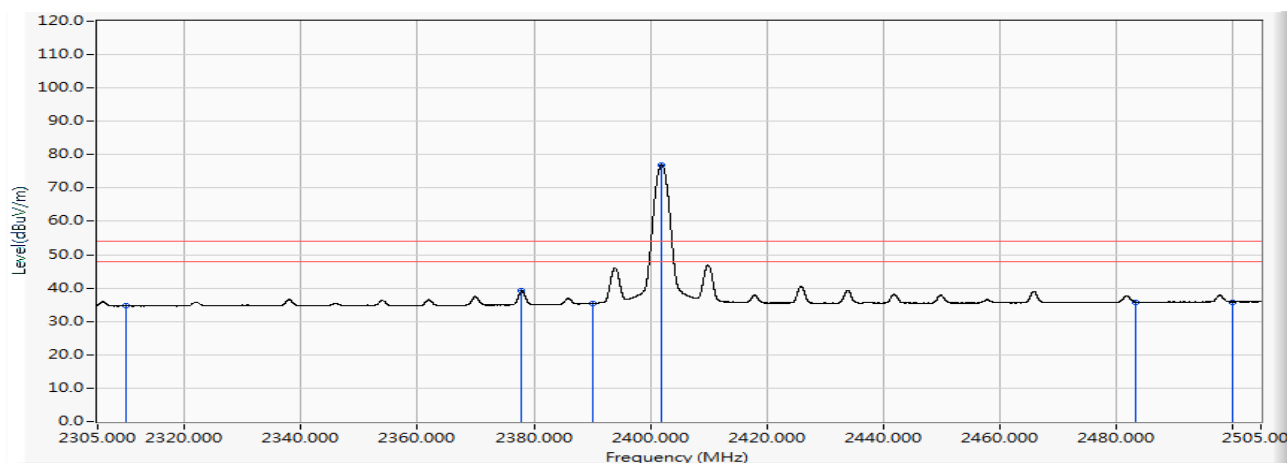


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	12.384	34.146	46.530	-27.470	74.000	PEAK
2		2389.300	12.906	42.935	55.842	-18.158	74.000	PEAK
3		2390.000	12.911	42.795	55.706	-18.294	74.000	PEAK
4	*	2402.000	12.991	89.578	102.568	28.568	74.000	PEAK
5		2483.500	13.527	35.008	48.535	-25.465	74.000	PEAK
6		2500.000	13.629	33.777	47.406	-26.594	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 : DEKRA Taiwan CB2-H	Time : 2017/11/29
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - VERTICAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2402MHz

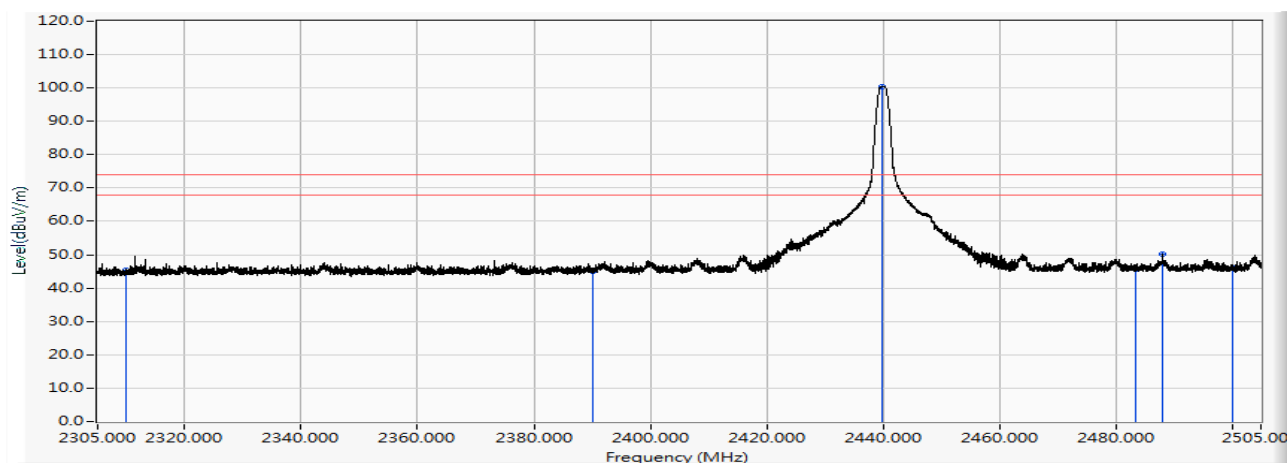


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	12.384	22.273	34.657	-19.343	54.000	AVERAGE
2		2377.900	12.831	26.333	39.165	-14.835	54.000	AVERAGE
3		2390.000	12.911	22.541	35.452	-18.548	54.000	AVERAGE
4	*	2401.960	12.990	63.973	76.963	22.963	54.000	AVERAGE
5		2483.500	13.527	22.253	35.780	-18.220	54.000	AVERAGE
6		2500.000	13.629	22.212	35.841	-18.159	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 : DEKRA Taiwan CB2-H	Time : 2017/11/29
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - HORIZONTAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2440MHz

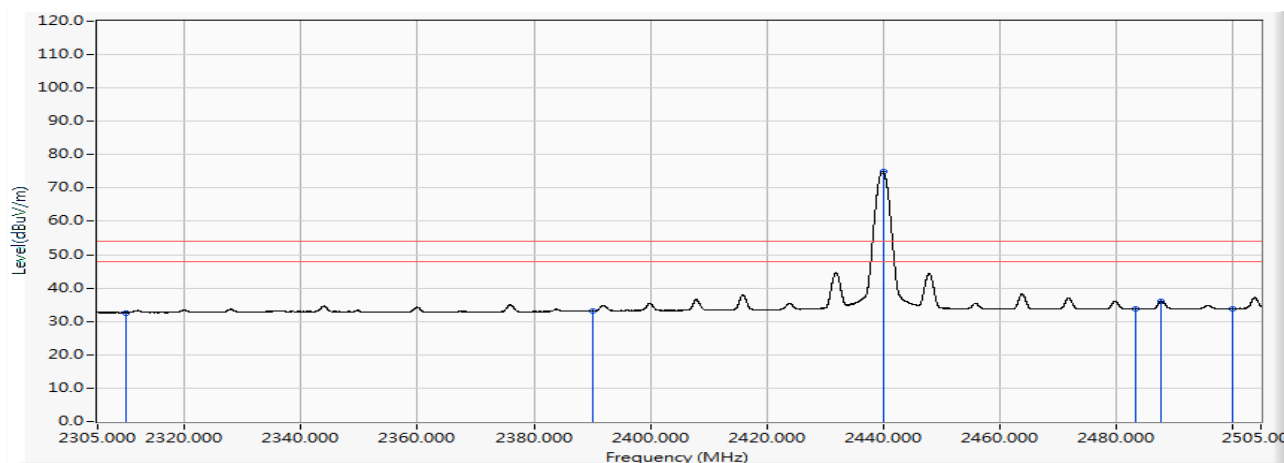


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	12.384	32.847	45.231	-28.769	74.000	PEAK
2		2390.000	12.911	32.188	45.099	-28.901	74.000	PEAK
3	*	2439.980	13.241	87.275	100.516	26.516	74.000	PEAK
4		2483.500	13.527	32.006	45.533	-28.467	74.000	PEAK
5		2488.120	13.558	36.481	50.039	-23.961	74.000	PEAK
6		2500.000	13.629	32.291	45.920	-28.080	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 : DEKRA Taiwan CB2-H	Time : 2017/11/29
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - HORIZONTAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2440MHz

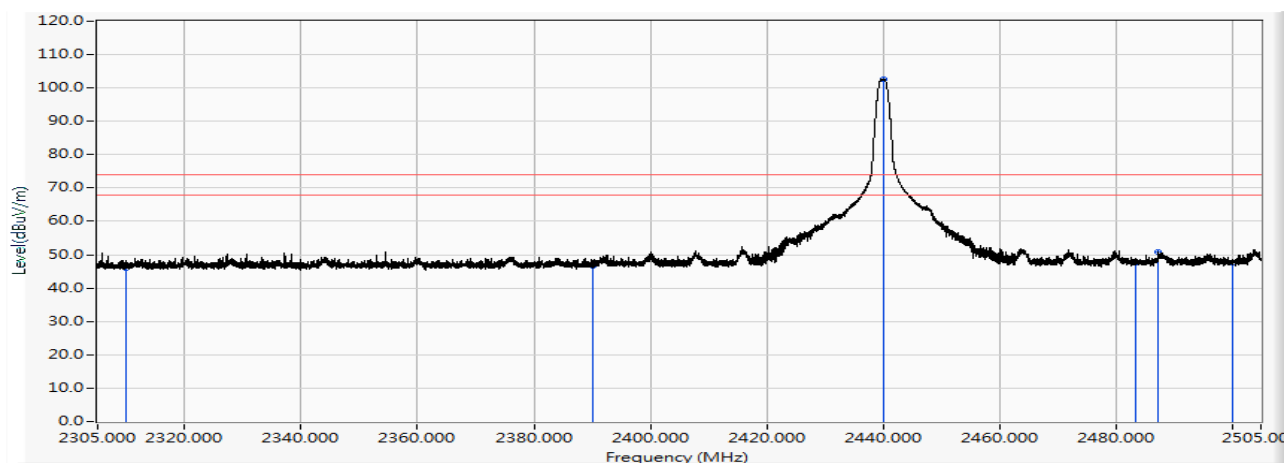


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	12.384	20.270	32.654	-21.346	54.000	AVERAGE
2		2390.000	12.911	20.300	33.211	-20.789	54.000	AVERAGE
3	*	2440.020	13.241	61.836	75.077	21.077	54.000	AVERAGE
4		2483.500	13.527	20.244	33.771	-20.229	54.000	AVERAGE
5		2487.900	13.556	22.608	36.164	-17.836	54.000	AVERAGE
6		2500.000	13.629	20.261	33.890	-20.110	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 : DEKRA Taiwan CB2-H	Time : 2017/11/29
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - VERTICAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2440MHz

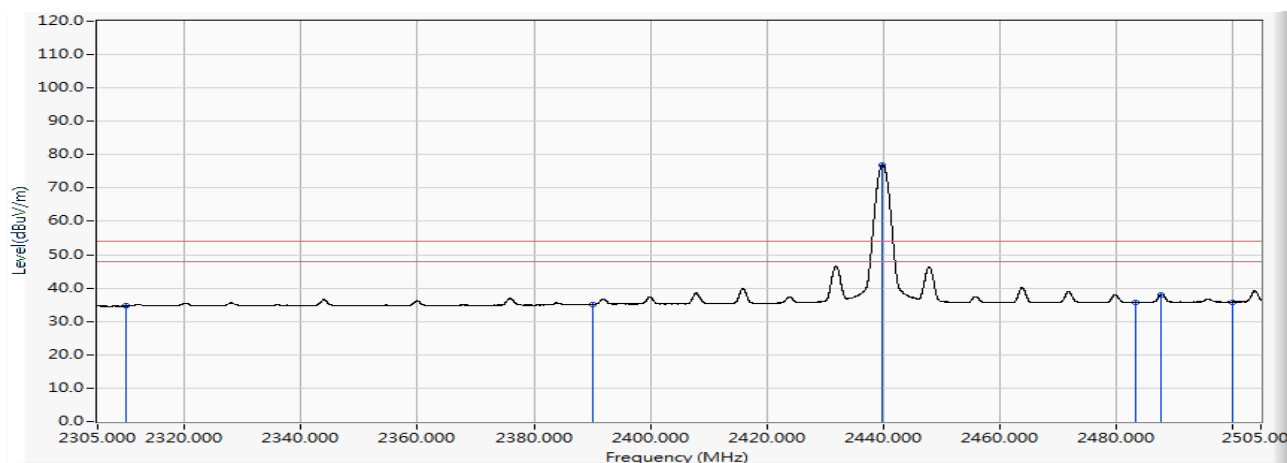


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	12.384	33.712	46.096	-27.904	74.000	PEAK
2		2390.000	12.911	33.622	46.533	-27.467	74.000	PEAK
3	*	2440.000	13.241	89.258	102.499	28.499	74.000	PEAK
4		2483.500	13.527	33.935	47.462	-26.538	74.000	PEAK
5		2487.320	13.552	37.395	50.947	-23.053	74.000	PEAK
6		2500.000	13.629	34.111	47.740	-26.260	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 : DEKRA Taiwan CB2-H	Time : 2017/11/29
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - VERTICAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2440MHz

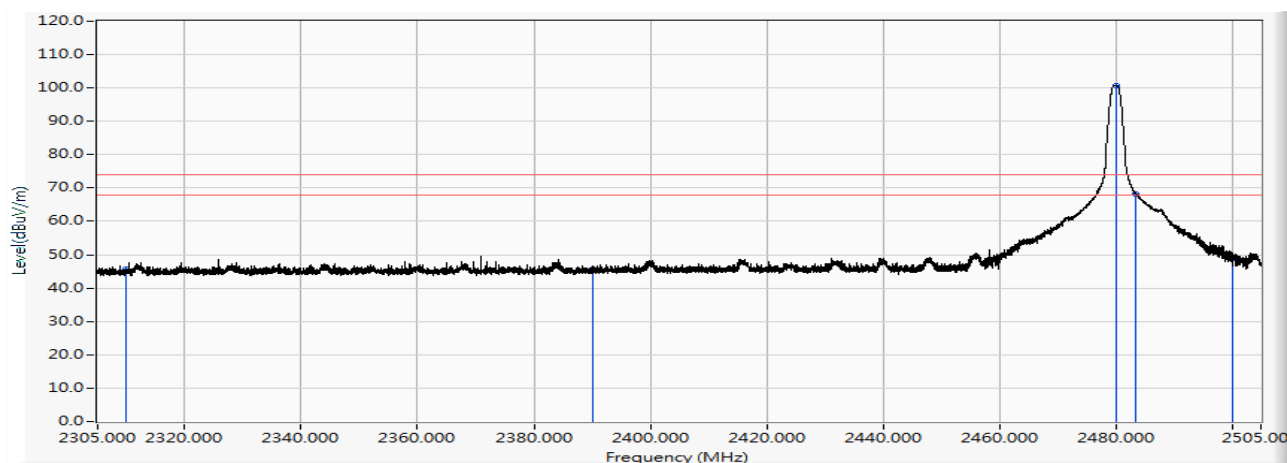


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	12.384	22.283	34.667	-19.333	54.000	AVERAGE
2		2390.000	12.911	22.263	35.174	-18.826	54.000	AVERAGE
3	*	2439.960	13.241	63.768	77.008	23.008	54.000	AVERAGE
4		2483.500	13.527	22.189	35.716	-18.284	54.000	AVERAGE
5		2487.940	13.557	24.550	38.106	-15.894	54.000	AVERAGE
6		2500.000	13.629	22.190	35.819	-18.181	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 : DEKRA Taiwan CB2-H	Time : 2017/11/29
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - HORIZONTAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2480MHz

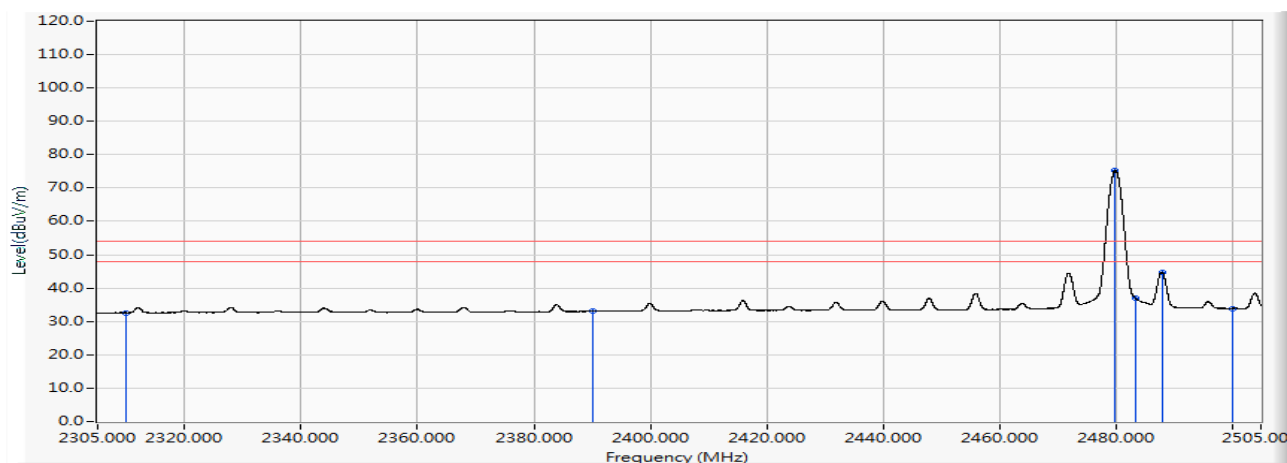


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	12.384	33.170	45.554	-28.446	74.000	PEAK
2		2390.000	12.911	32.851	45.762	-28.238	74.000	PEAK
3	*	2480.000	13.504	87.278	100.782	26.782	74.000	PEAK
4		2483.500	13.527	54.822	68.349	-5.651	74.000	PEAK
5		2483.520	13.527	54.828	68.355	-5.645	74.000	PEAK
6		2500.000	13.629	35.272	48.901	-25.099	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 : DEKRA Taiwan CB2-H	Time : 2017/11/29
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - HORIZONTAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2480MHz

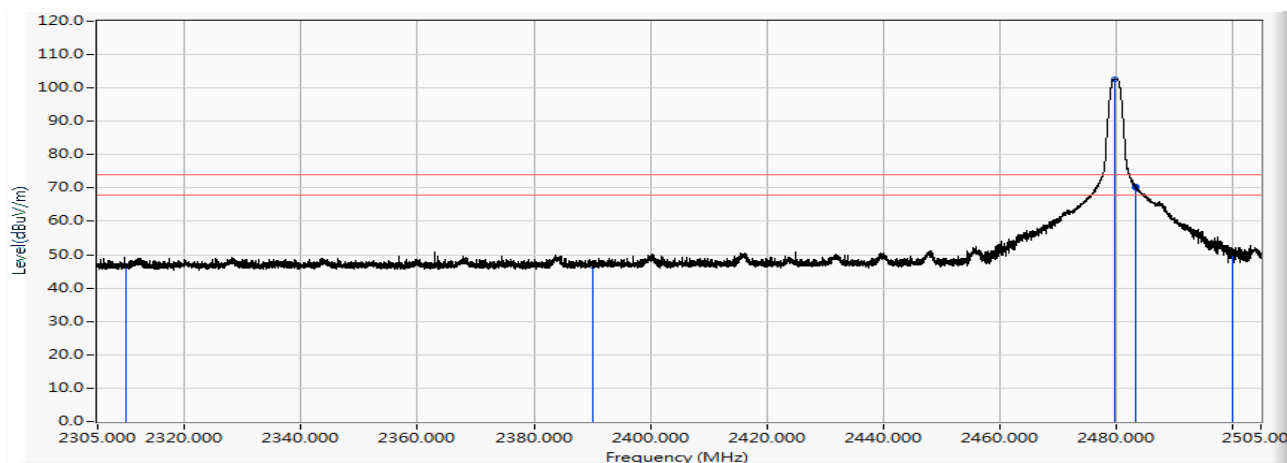


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	12.384	20.214	32.598	-21.402	54.000	AVERAGE
2		2390.000	12.911	20.194	33.105	-20.895	54.000	AVERAGE
3	*	2479.980	13.504	61.663	75.167	21.167	54.000	AVERAGE
4		2483.500	13.527	23.315	36.842	-17.158	54.000	AVERAGE
5		2487.960	13.557	31.278	44.835	-9.165	54.000	AVERAGE
6		2500.000	13.629	20.299	33.928	-20.072	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 : DEKRA Taiwan CB2-H	Time : 2017/11/29
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - VERTICAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2480MHz

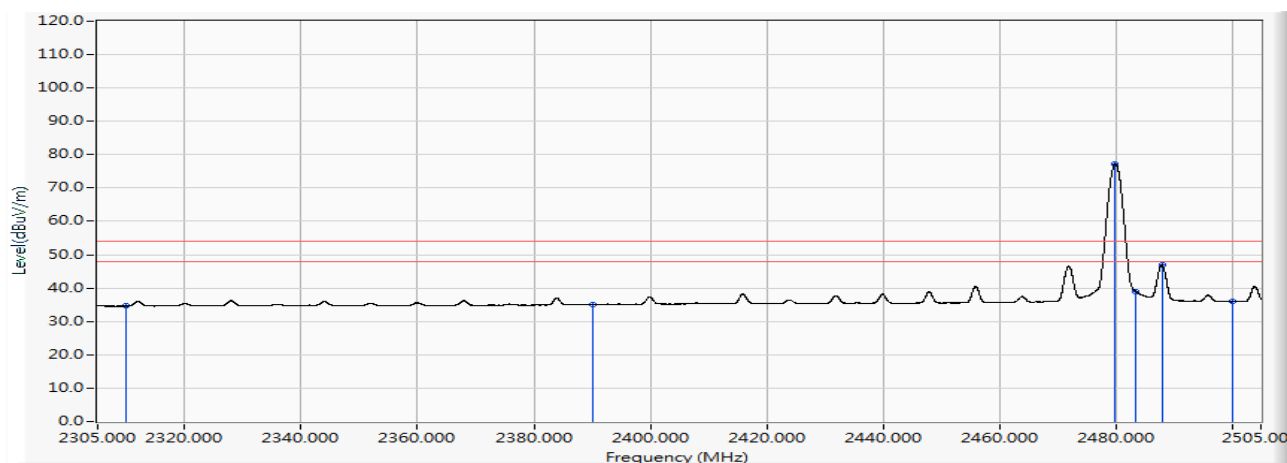


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	12.384	34.111	46.495	-27.505	74.000	PEAK
2		2390.000	12.911	33.843	46.754	-27.246	74.000	PEAK
3	*	2479.980	13.504	89.257	102.761	28.761	74.000	PEAK
4		2483.500	13.527	56.528	70.055	-3.945	74.000	PEAK
5		2483.520	13.527	56.822	70.349	-3.651	74.000	PEAK
6		2500.000	13.629	36.345	49.974	-24.026	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 : DEKRA Taiwan CB2-H	Time : 2017/11/29
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB2_FCC_EFS_B091_1-18GHz_3M_0117 - VERTICAL	Power : DC 5V
EUT : Analog GPS Speedometer	Note : Mode 1: Transmitter_Power by PC_ 802.15.1_BLE_2480MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	12.384	22.223	34.607	-19.393	54.000	AVERAGE
2		2390.000	12.911	22.201	35.112	-18.888	54.000	AVERAGE
3	*	2479.940	13.504	63.759	77.263	23.263	54.000	AVERAGE
4		2483.500	13.527	25.382	38.909	-15.091	54.000	AVERAGE
5		2487.960	13.557	33.290	46.847	-7.153	54.000	AVERAGE
6		2500.000	13.629	22.308	35.937	-18.063	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. DTS Bandwidth

7.1. Test Equipment

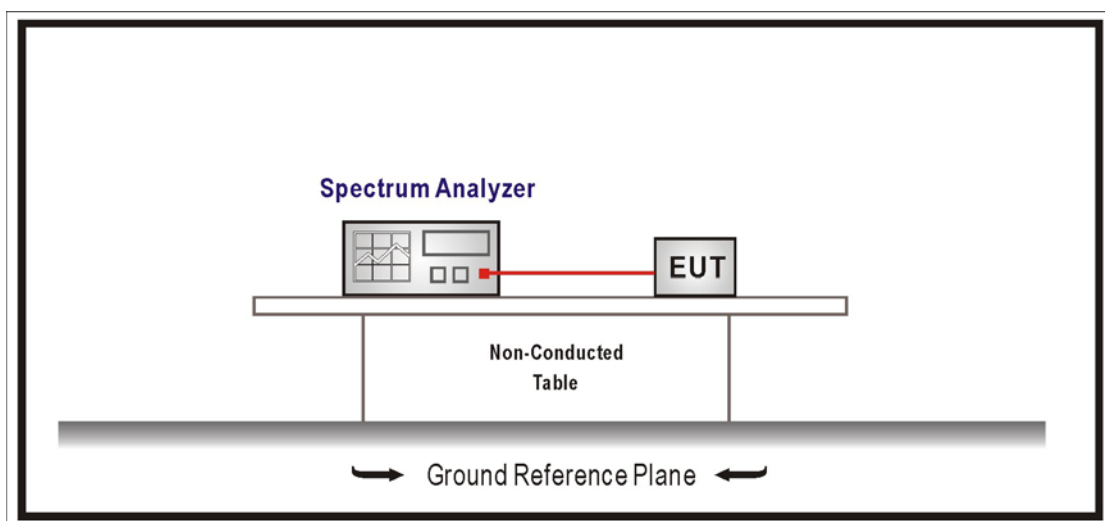
The following test equipments are used during the test:

DTS Bandwidth / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2017/03/13	2018/03/12
Spectrum Analyzer	Agilent	N9010A	US47140172	2017/07/26	2018/07/25

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

7.2. Test Setup



7.3. Test Procedures

The EUT was setup according to ANSI C63.10:2013; tested procedure section 8.1 of KDB558074 D01 V04 for compliance to FCC 47CFR 15.247 requirements. Set RBW = 100KHz, Set the VBW $\geq 3 \times$ RBW, Sweep Time=Auto, Set Peak Detector.

7.4. Limits

The 6 dB bandwidth must be greater than 500 kHz.

7.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2016

7.6. Uncertainty

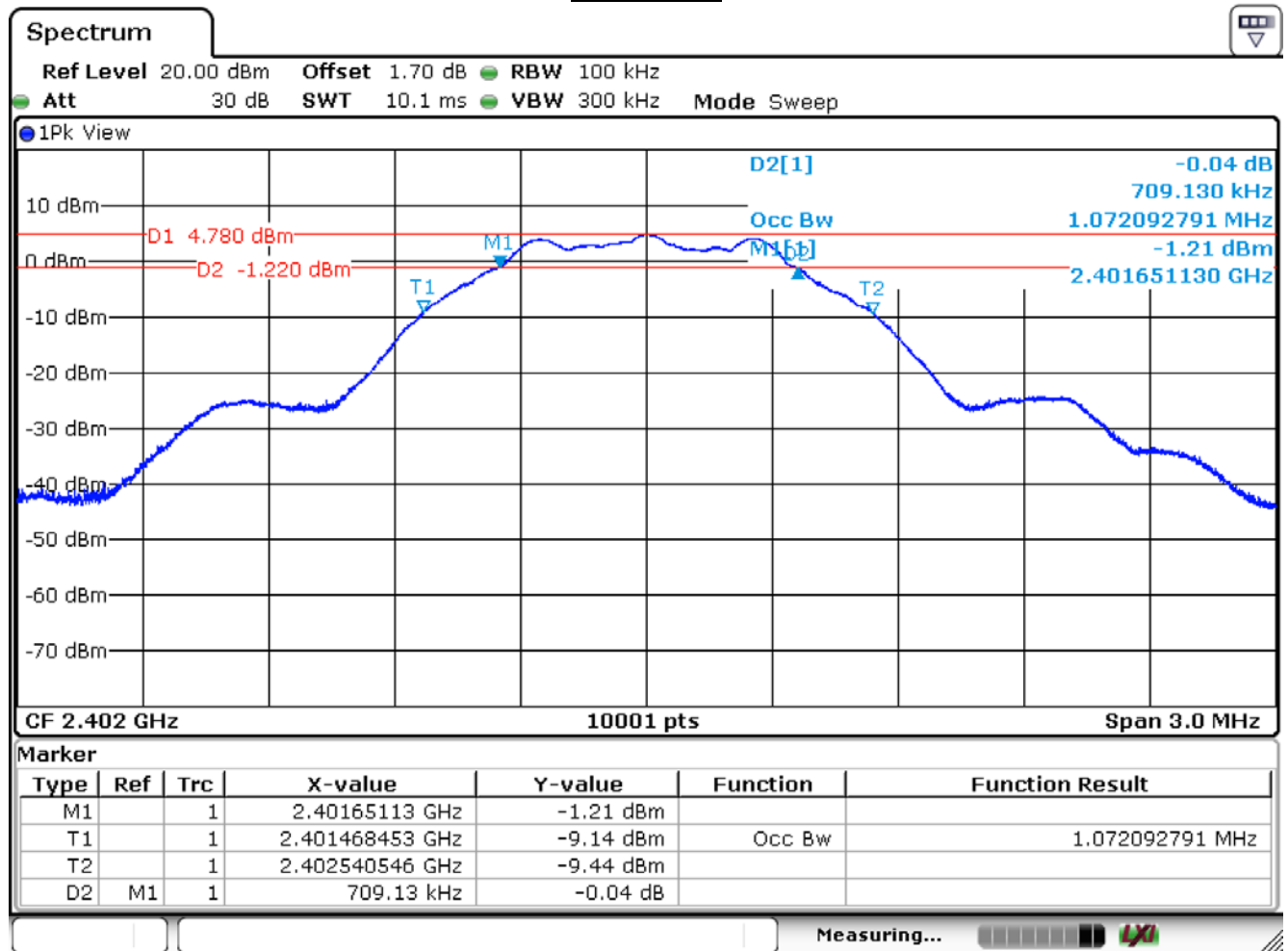
The measurement uncertainty is defined as $\pm 150\text{Hz}$

7.7. Test Result

Product	Analog GPS Speedometer		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmitter Power by PC		
Date of Test	2017/12/02	Test Site	SR10-H

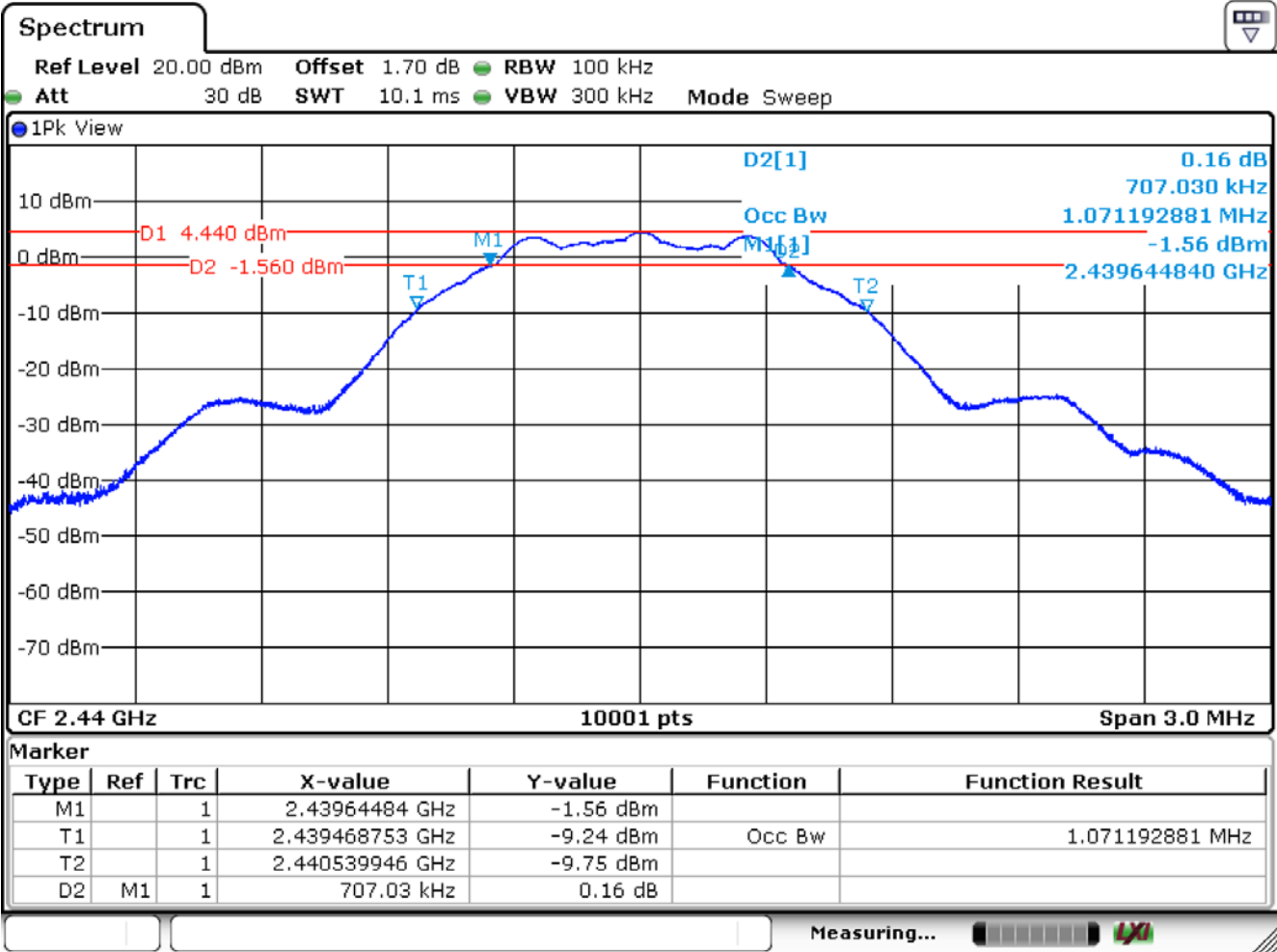
Channel No.	Frequency (MHz)	Measure Level (KHz)	Limit (KHz)	Result
00	2402	709.130	≥ 500	Pass
19	2440	707.030	≥ 500	Pass
39	2480	707.030	≥ 500	Pass

Channel 00



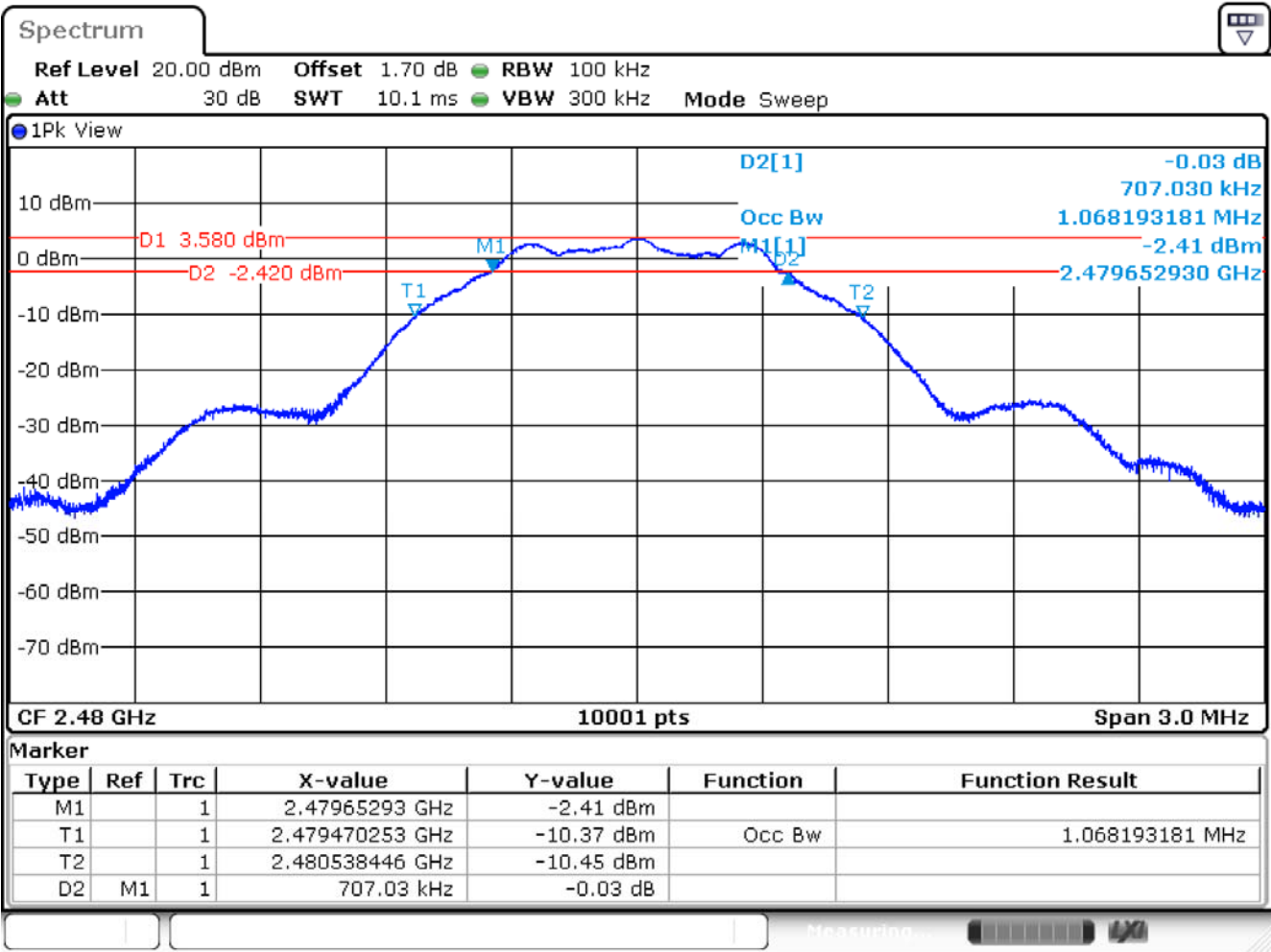
Date: 1.DEC.2017 15:53:29

Channel 19



Date: 1.DEC.2017 15:59:58

Channel 39



Date: 2.DEC.2017 17:10:00

8. Occupied Bandwidth

8.1. Test Equipment

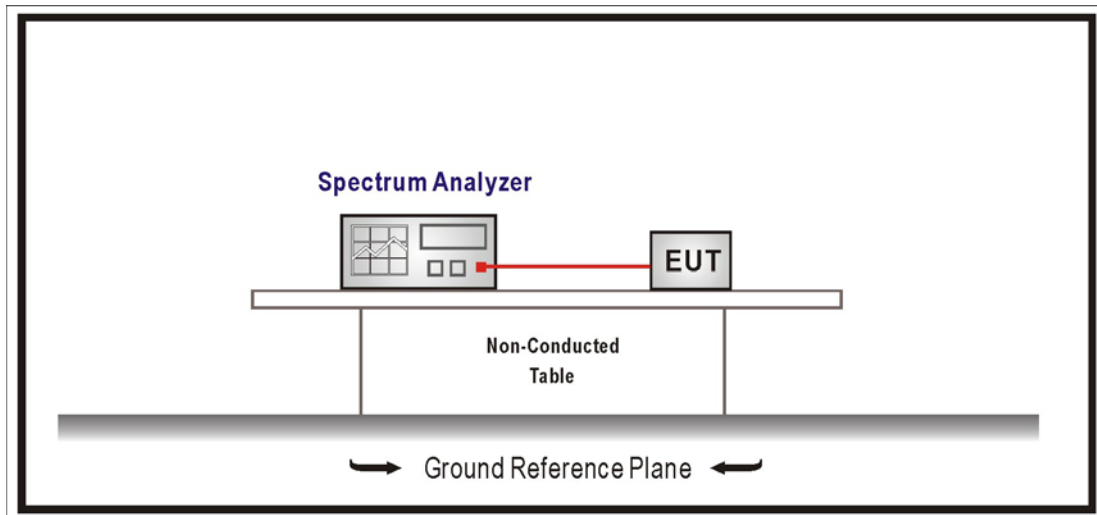
The following test equipment is used during the test:

Occupied Bandwidth / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2017/01/23	2018/01/22
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2017/03/13	2018/03/12
Spectrum Analyzer	Agilent	N9010A	US47140172	2017/07/26	2018/07/25

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

8.2. Test Setup



8.3. Limits

N/A

8.4. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB558074 D01 V04 for compliance to FCC 47CFR 15.247 requirements.

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

8.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

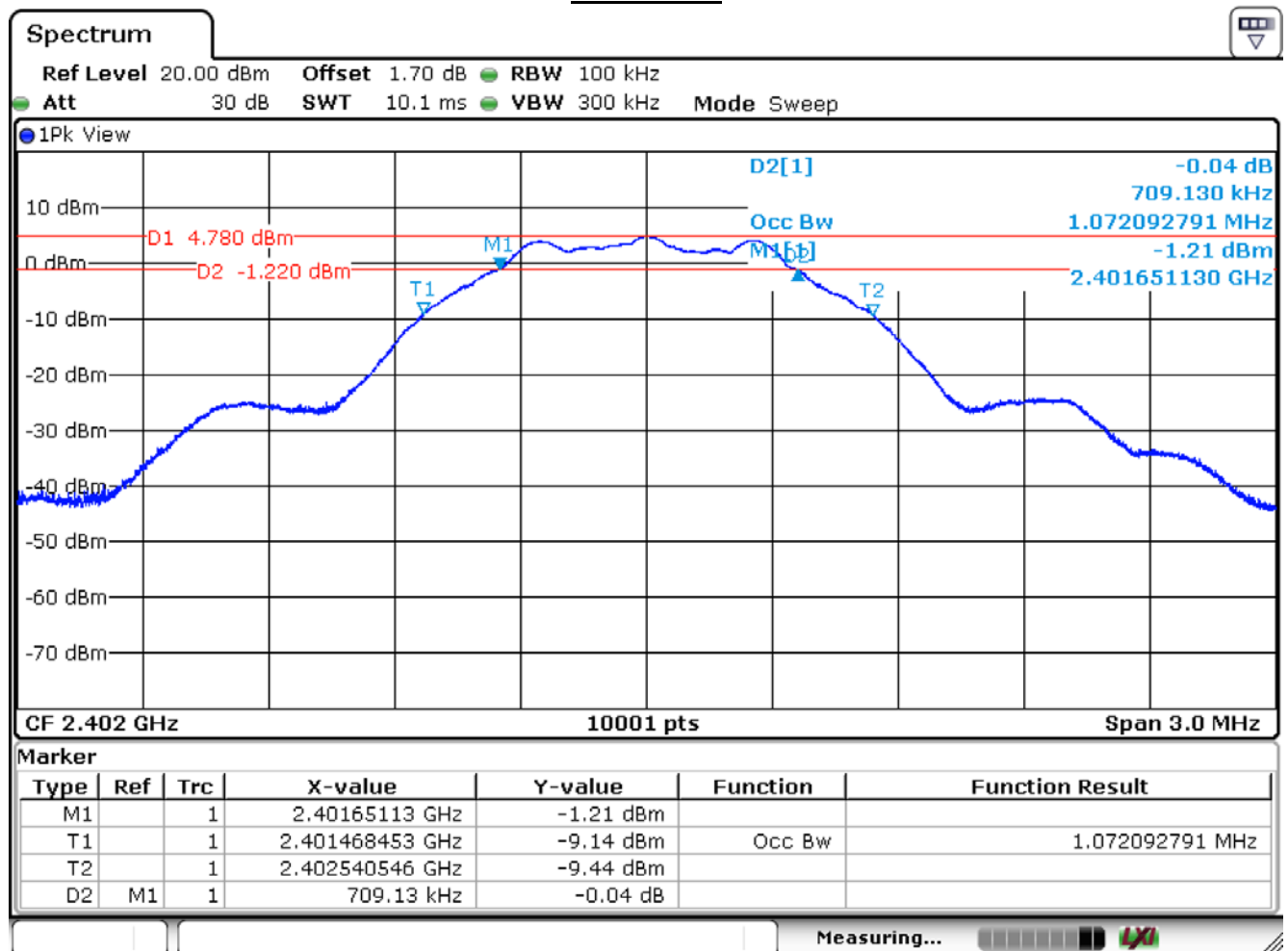
8.6. Test Result

Product	Analog GPS Speedometer		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmitter_Power by PC		
Date of Test	2017/12/02	Test Site	SR10-H

GFSK

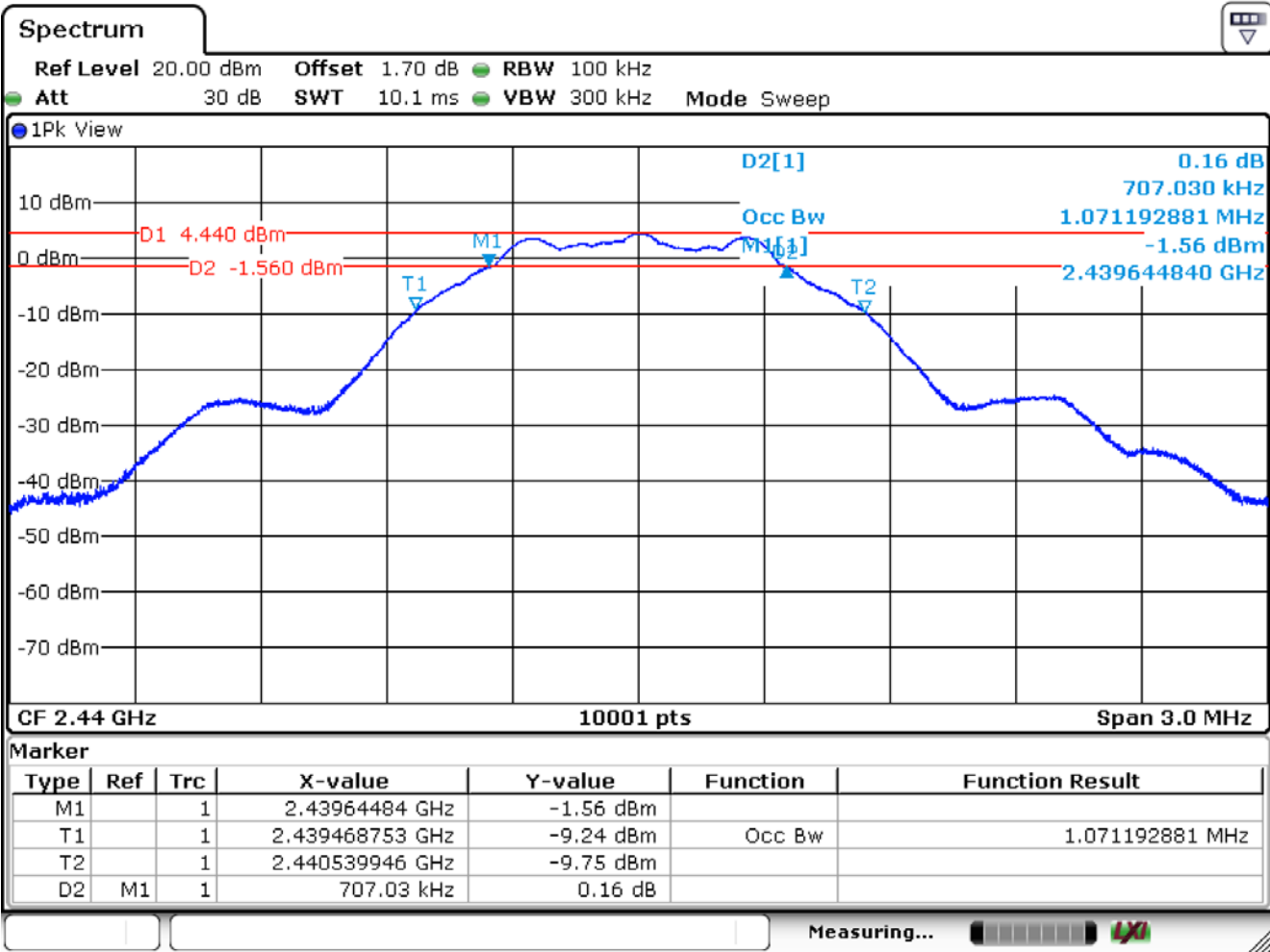
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
00	2402	1.072	--	Pass
19	2440	1.071	--	Pass
39	2480	1.068	--	Pass

Channel 00



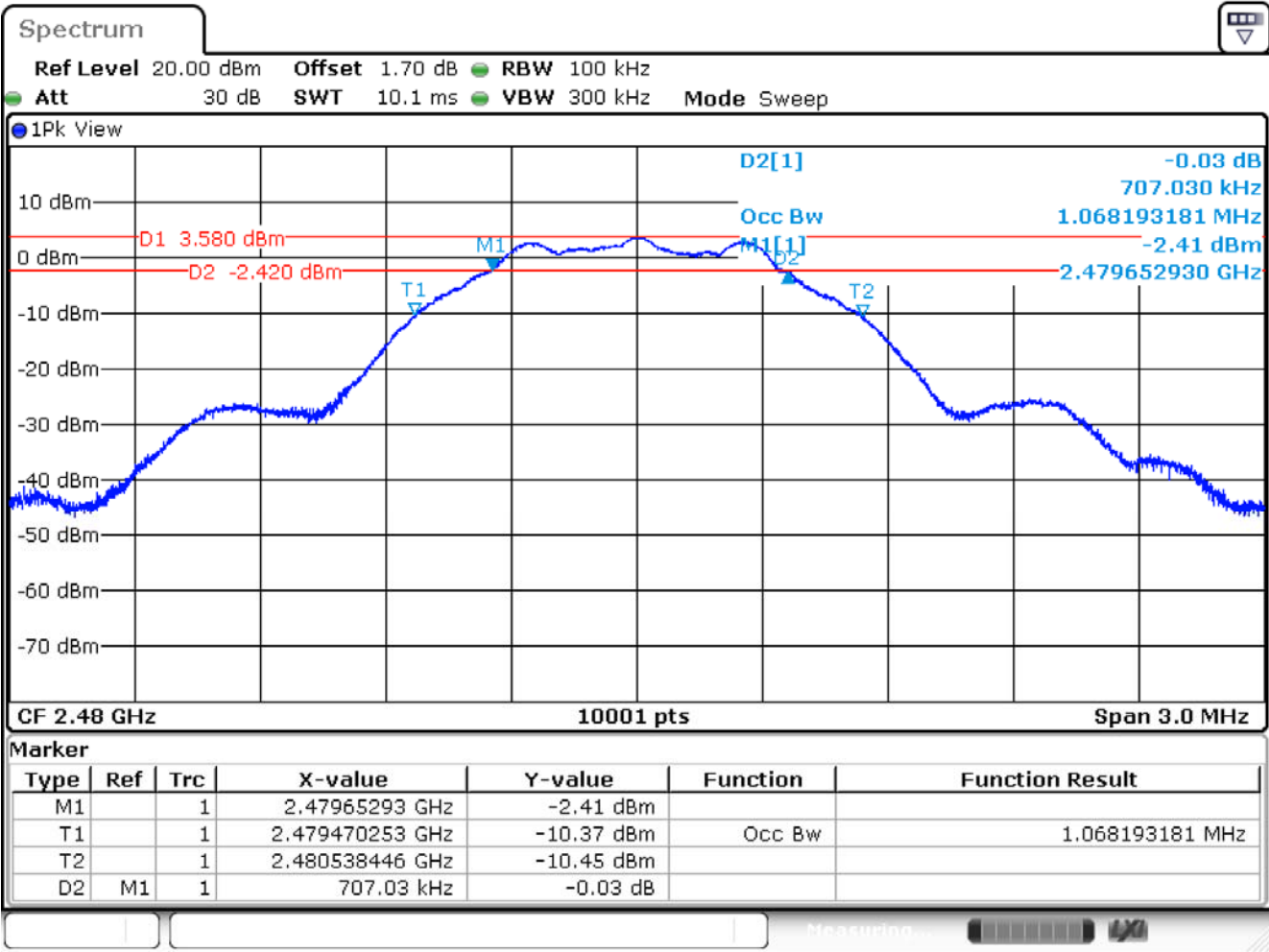
Date: 1.DEC.2017 15:53:29

Channel 19



Date: 1.DEC.2017 15:59:58

Channel 39



Date: 2.DEC.2017 17:10:00

9. Power Density

9.1. Test Equipment

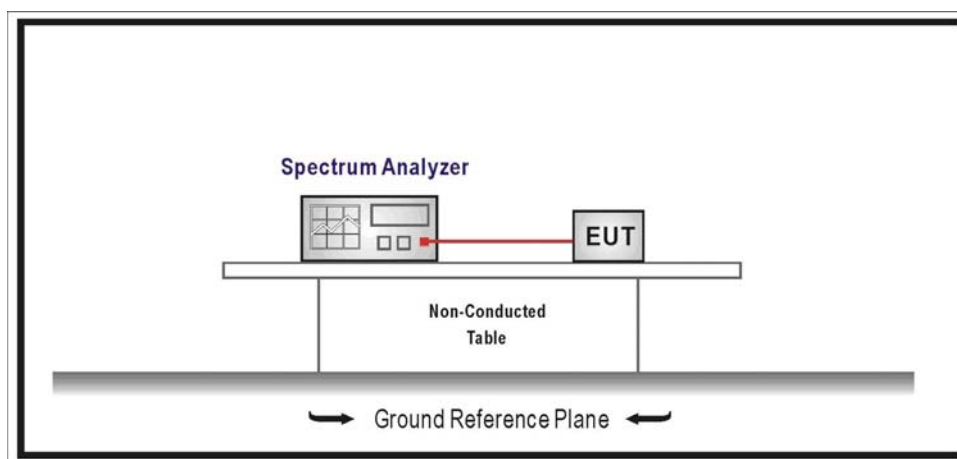
The following test equipment is used during the test:

Power Density / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2017/01/23	2018/01/22
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2017/03/13	2018/03/12

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

9.2. Test Setup



9.3. 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.

9.4. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB558074 D01 V04 for compliance to FCC 47CFR 15.247 requirements.

9.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

9.6. Uncertainty

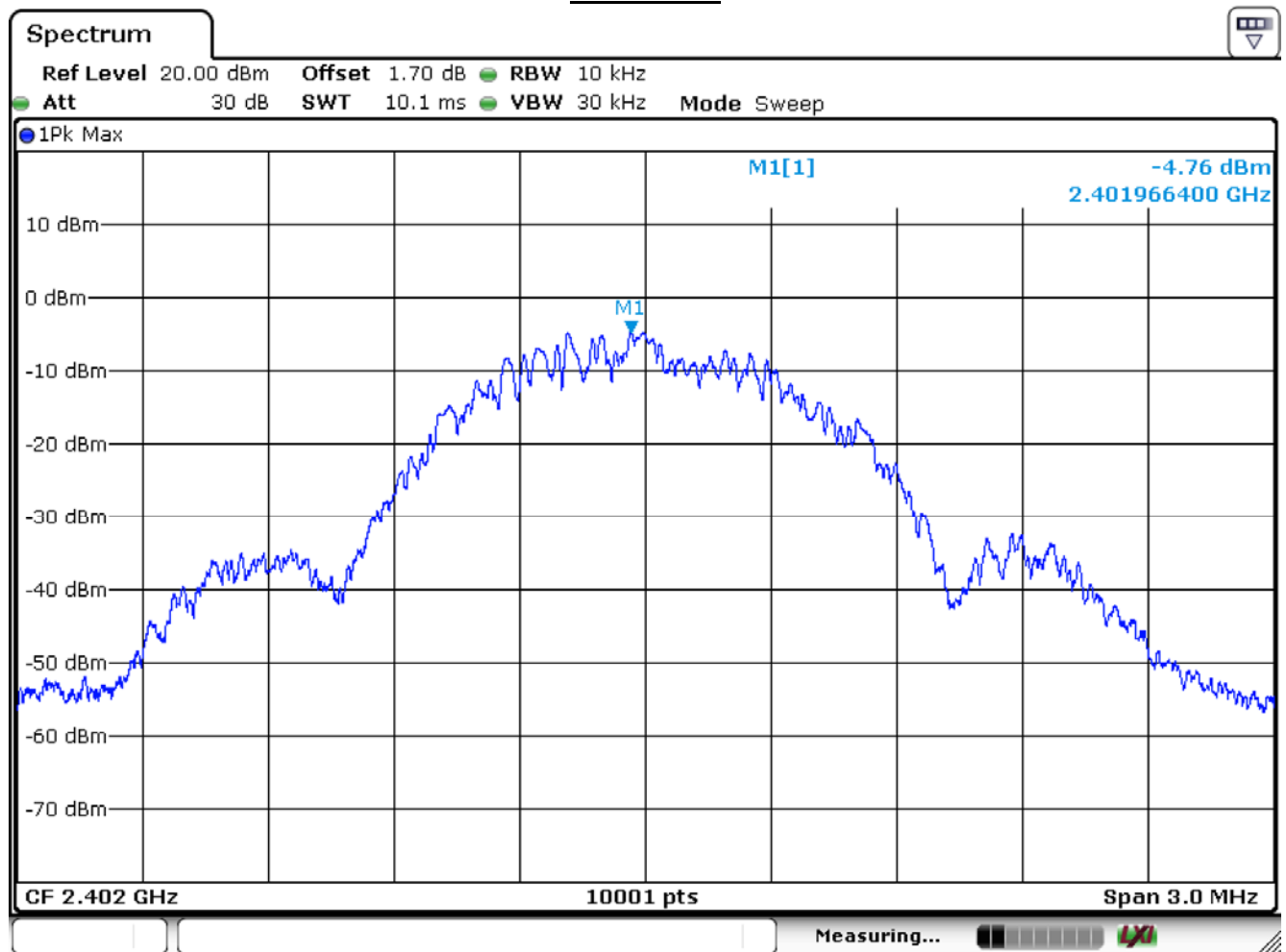
The measurement uncertainty is defined as $\pm 1.27\text{dB}$.

9.7. Test Result

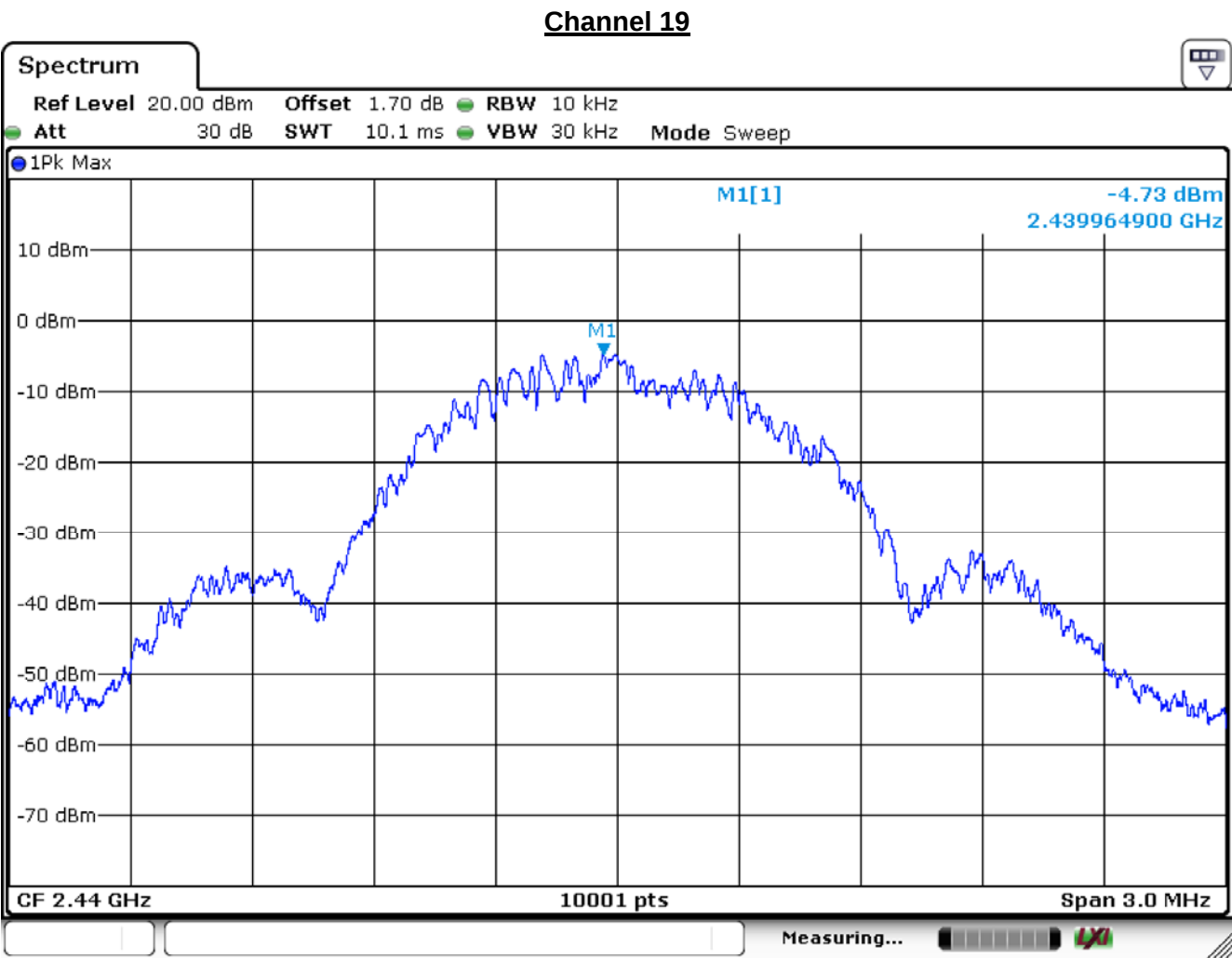
Product	Analog GPS Speedometer		
Test Item	Power Density		
Test Mode	Mode 1: Transmitter_Power by PC		
Date of Test	2017/12/01	Test Site	SR10-H

Channel No.	Frequency (MHz)	Measure Level (dBm/3KHz)	Limit (dBm/3KHz)	Result
00	2402	-4.760	≤ 8.000	Pass
19	2440	-4.730	≤ 8.000	Pass
39	2480	-5.460	≤ 8.000	Pass

Channel 00

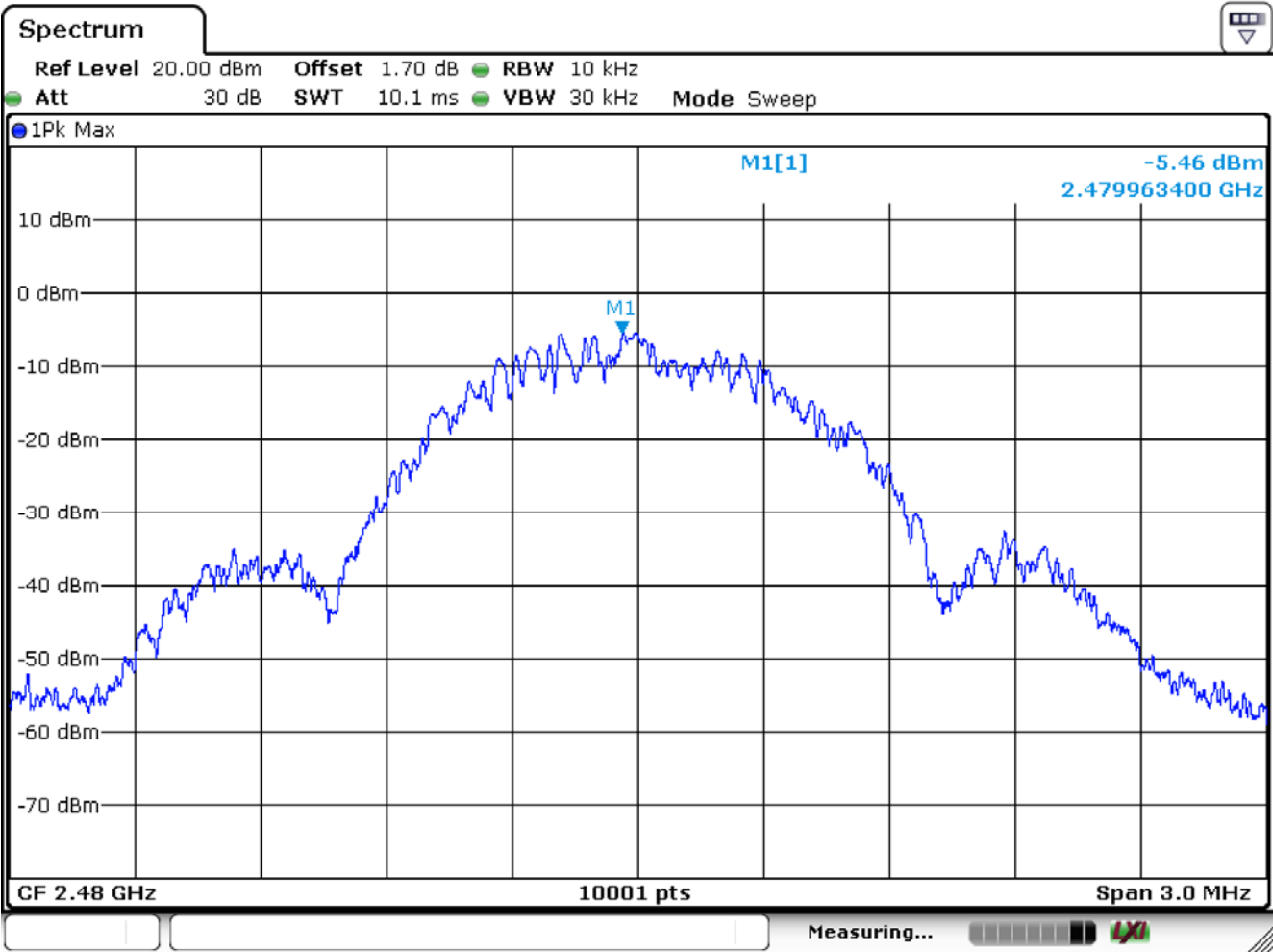


Date: 1.DEC.2017 17:45:50



Date: 1.DEC.2017 17:43:27

Channel 39



Date: 1.DEC.2017 17:38:40

Attachment 1

➤ Test Setup Photograph

<Radiated Emission>

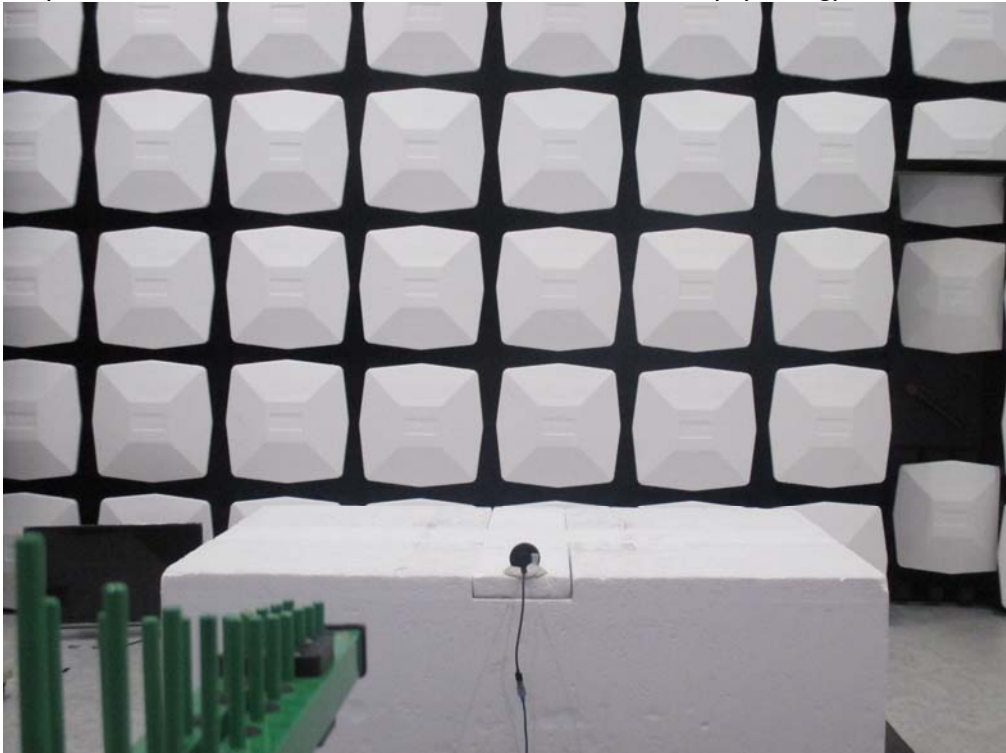
Test Mode : Mode 1: Transmitter_Power by PC

Description : Front View of Radiated Emission Test Setup (Bi-Log)



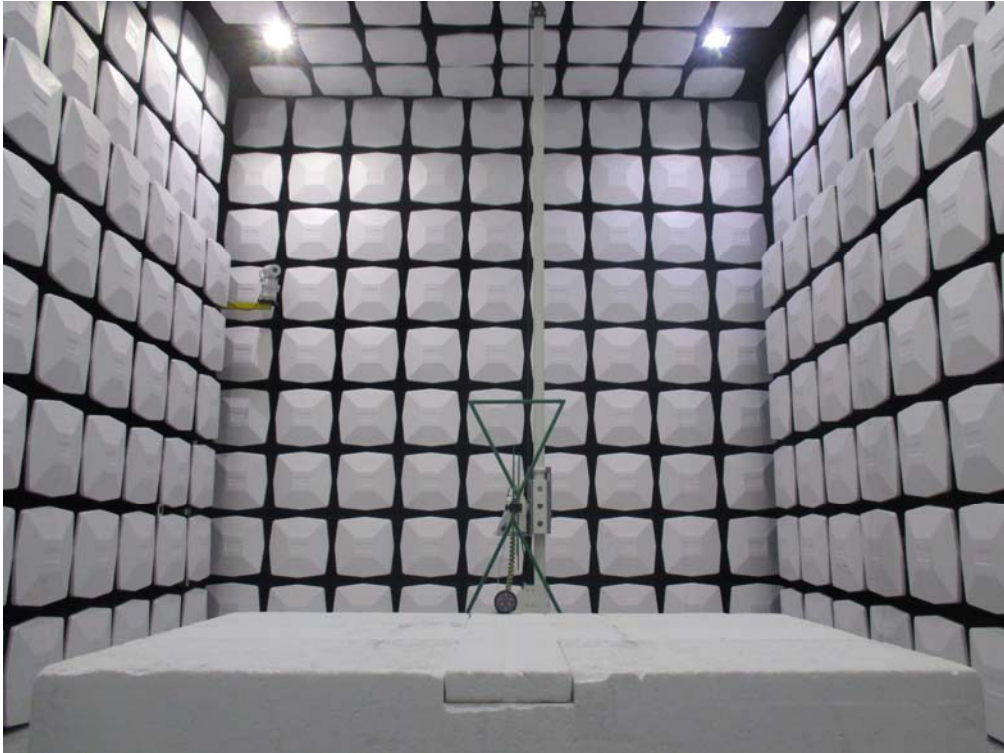
Test Mode : Mode 1: Transmitter_Power by PC

Description : Back View of Radiated Emission Test Setup (Bi-Log)



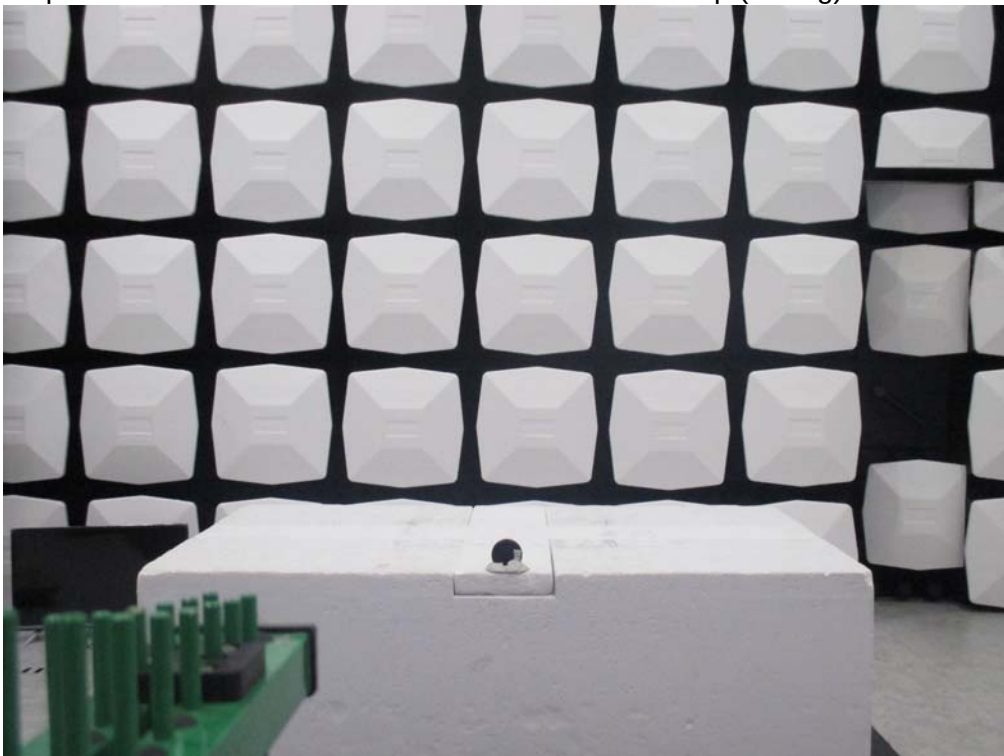
Test Mode : Mode 2: Transmitter_Power by Battery

Description : Front View of Radiated Emission Test Setup (Bi-Log)



Test Mode : Mode 2: Transmitter_Power by Battery

Description : Back View of Radiated Emission Test Setup (Bi-Log)



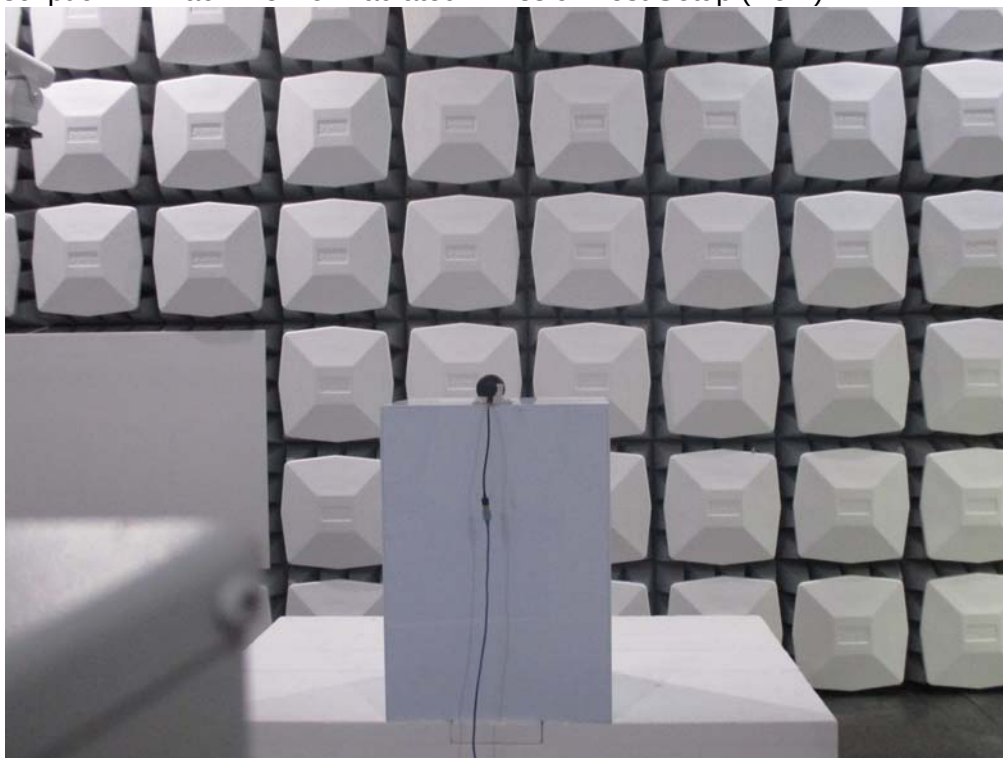
Test Mode : Mode 1: Transmitter_Power by PC

Description : Front View of Radiated Emission Test Setup (Horn)



Test Mode : Mode 1: Transmitter_Power by PC

Description : Back View of Radiated Emission Test Setup (Horn)



Attachment 2

➤ EUT External Photograph

(1) EUT Photo



(2) EUT Photo



(3) EUT Photo



(4) EUT Photo



(5) EUT Photo



(6) EUT Photo



(7) EUT Photo



(8) EUT Photo



(9) EUT Photo



Attachment 3

➤ EUT Internal Photograph

(1) EUT Photo



(2) EUT Photo



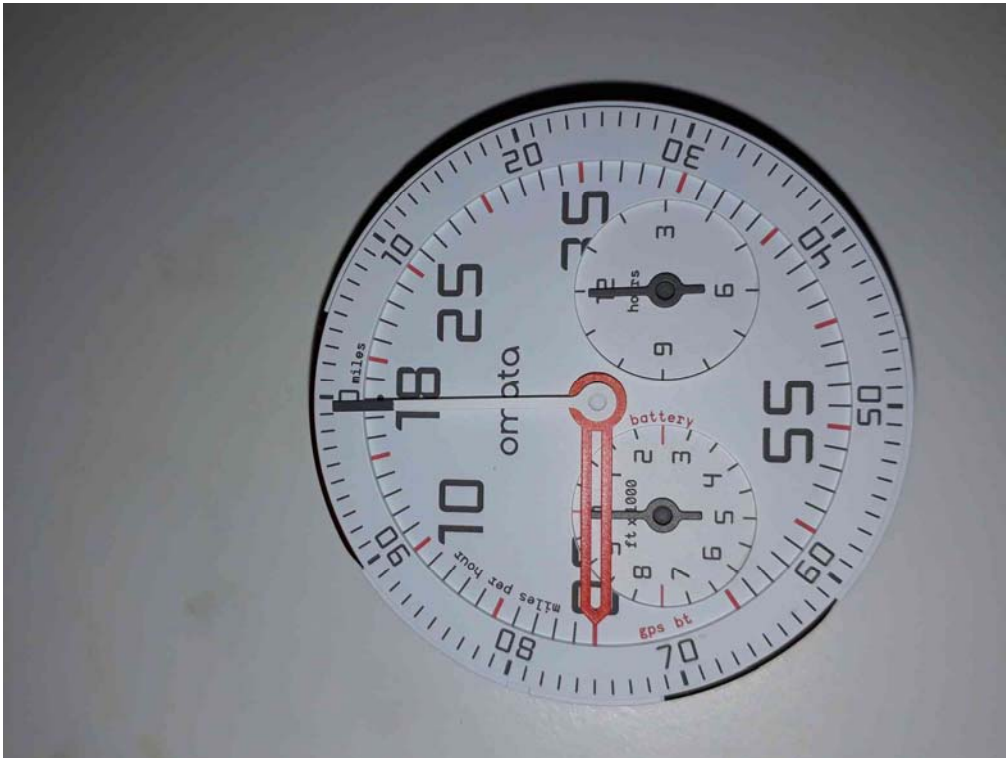
(3) EUT Photo



(4) EUT Photo



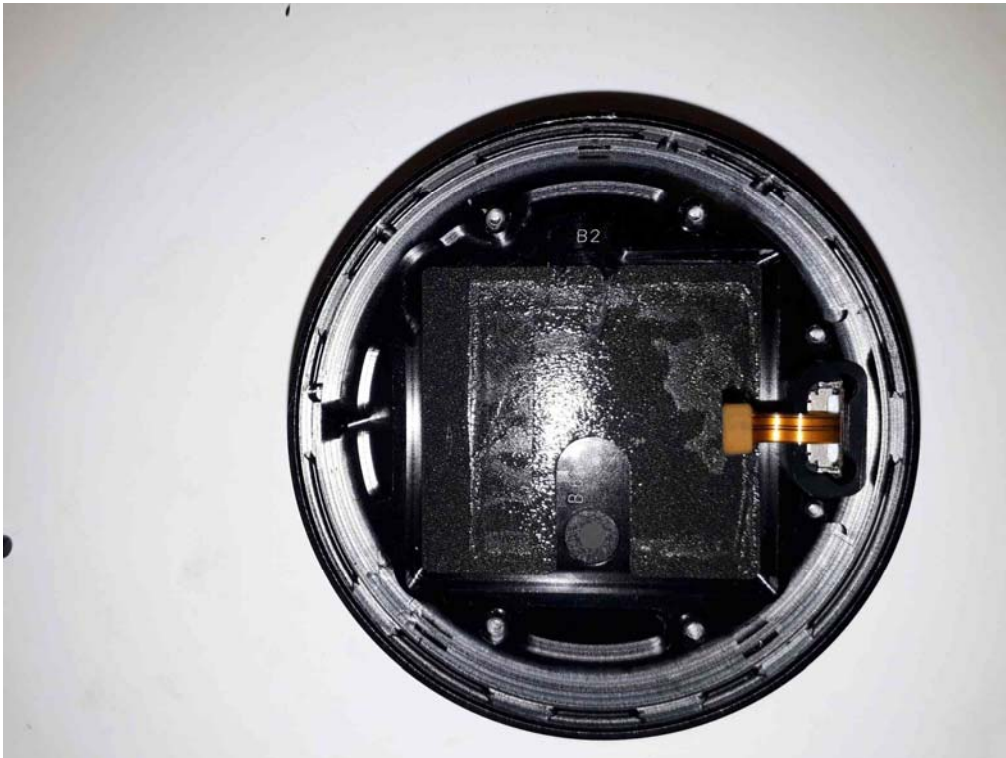
(5) EUT Photo



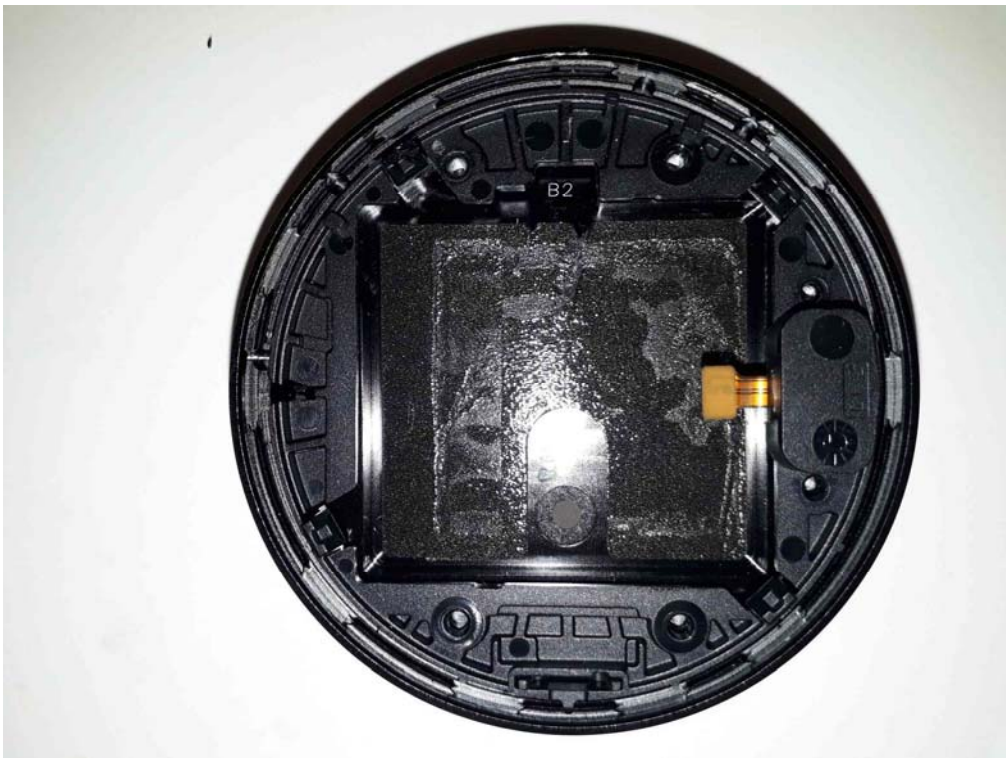
(6) EUT Photo



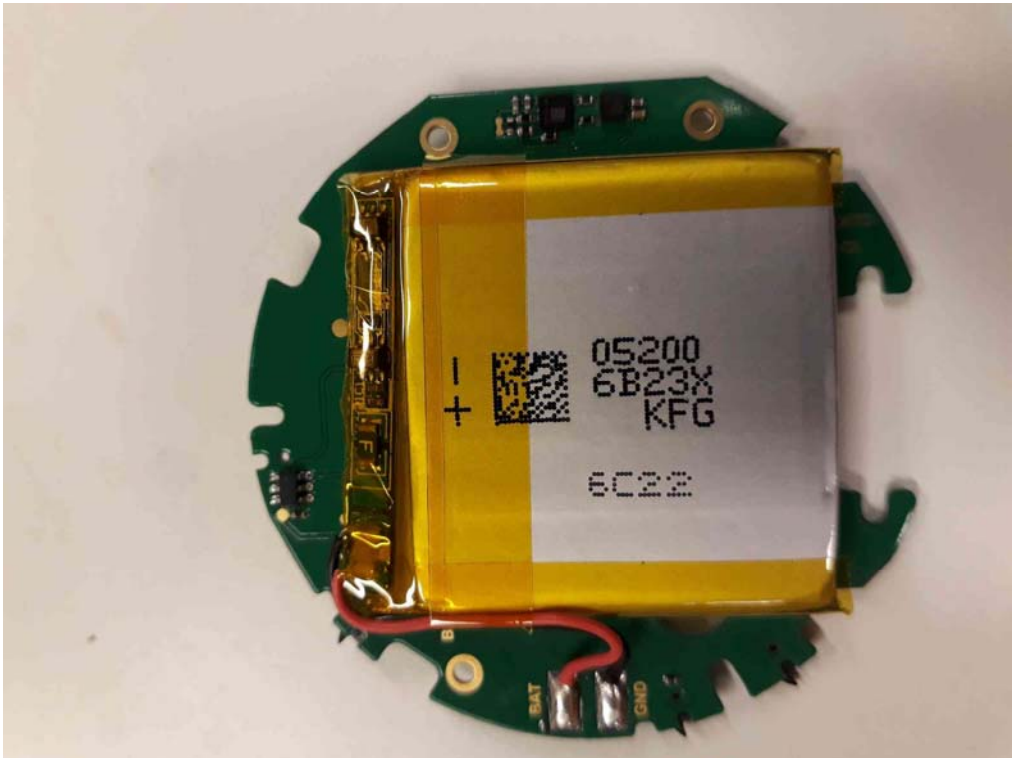
(7) EUT Photo



(8) EUT Photo



(9) EUT Photo



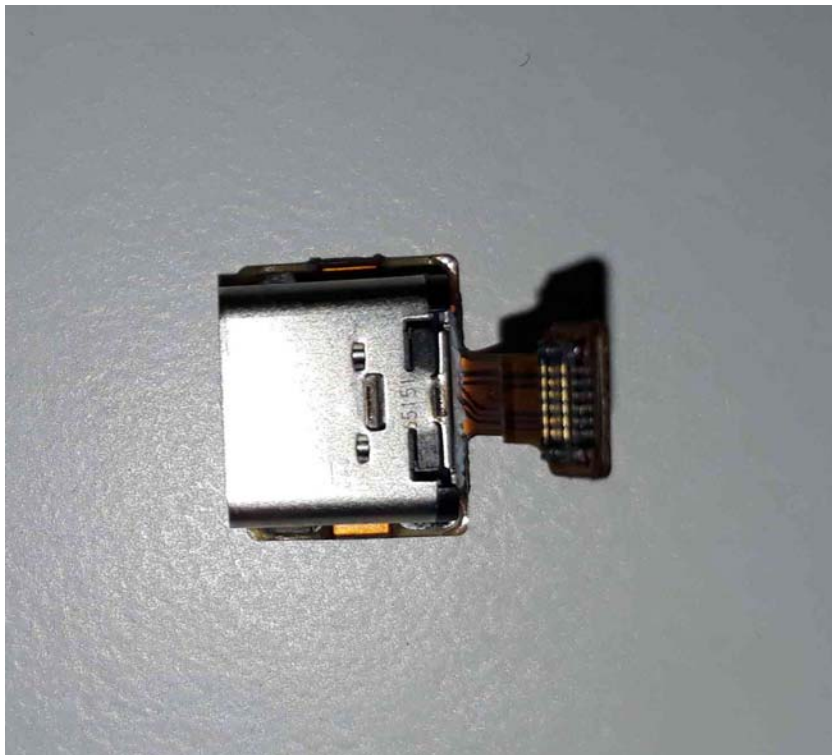
(10) EUT Photo



(11) EUT Photo



(12) EUT Photo



(13) EUT Photo (Bezel_front)



(14) EUT Photo (Bezel_back)

