



Test Report

FCC ID: 2AOLM-BLE5168

Date of issue: Dec. 28, 2017

Report Number:	CF18010213
Sample Description:	App Automotive Battery Analyzer
Model(s):	BLE-5168, BLE-X1X8(The first and the second X represent the number 0-9)
Applicant:	Clean & Green Technology Co., Ltd.
Address:	6F., NO. 110, HUAINING ST., TAIPEI TAIWAN 10046
Date of Test:	Dec. 14, 2017 to Dec. 28, 2017



TEST RESULT CERTIFICATION

Applicant's name	Clean & Green Technology Co., Ltd.
Address	6F., NO. 110, HUAINING ST., TAIPEI TAIWAN 10046
Manufacture's Name	Clean & Green Technology Co., Ltd.
Address	No.505A, Building B, Science and Technology Park, Pengnian University City, Honghualing Industrial District, Nanshan District, Shenzhen City.
Product description	
Product name	App Automotive Battery Analyzer
Model and/or type reference	: BLE-5168
Serial Model.....	BLE-X1X8(The first and the second X represent the number 0-9)
Standards	FCC Part15.247
Test procedure.....	ANSI C63.10:2013

This device described above has been tested by WH Technology Corp. and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by:

Bell Wei

Dec. 28, 2017

Approved by:

Mike Lee

Dec. 28, 2017



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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	N/A	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (d)	Power Spectral Density	PASS	
15.205	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report



1.1 TEST FACILITY

WH Technology Corp.

Add.: 7F., No.262, Sec. 3, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

FCC Registration No.: TW1083

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95 %**.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	App Automotive Battery Analyzer	
Trade Name	C&G	
Model Name	BLE-5168	
Serial Model	BLE-X1X8(The first and the second X represent the number 0-9)	
Model Difference	The wireless module used in the product is the same, but the model is named differently	
Product Description	The EUT is a App Automotive Battery Analyzer	
	Operation Frequency:	BLE: 2402-2480MHz
	Modulation Type:	GFSK
	Bit Rate of Transmitter	1Mbps
	Number Of Channel	40
	Antenna Designation:	Please see Note 3.
	Output Power(Conducted):	BLE: -6.455 dBm (Max.)
	Antenna Gain (dBi)	-2.5dBi
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.	
Channel List	Please refer to the Note 1.	
Battery	N/A	
Connecting I/O Port(s)	Please refer to the User's Manual	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- 2.

Channel List for BLE							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	--	---	20	2442	38	2478
02	2404	--	---	--	2480	39	2480
03	2406	19	2440	--	---		

3.

Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
-----	-------	------------	--------------	-----------	------------	------



A	C&G	BLE-5168	PCB antenna	/	-2.5	PCB Antenna
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2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	BT Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	BT Mode

Note:

- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported



2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED





2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
/	/	/	/	/	/

Item	Shielded Type	Ferrite Core	Length	Note
/	/	/	/	/

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

For RF conducted test:

Equipment	Manufacturer	Model	Serial No.	Calibration Due
Signal Analyzer	Agilent	N9010A	MY48030494	2018/11/4
4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	TW54063513	2018/11/4
X-series USB Peak and Average Power Sensor	Agilent	U2021XA	MY54080019	2018/11/4
vector Signal Generator	Agilent	E4438C	US44271917	2018/11/4
vector Signal Generator	Agilent	E4438C	MY49070163	2018/11/4
Dc Power Supply	GW	GPR-6030D	/	2018/11/4
Temperature & Humidity Chamber	GIANT FORCE	GTH-056P	GF-94454-1	2018/11/4
Wideband Radio Communication Tester	ROHDE&SCHWARZ	CMW500	120909	2018/11/4

For Radiated test:

Equipment	Manufacturer	Model	Serial No.	Calibration Due
Broadband TRILOG Antenna	Schwarabeck	VULB9163	9163-872	2018/11/14
Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-1145	2018/11/14
Amplifier	HP	8447D	3113A06150	2018/11/4
Amplifier	Agilent	8449B	3008A02400	2018/7/4
Test Receiver	Schwarabeck	ESPI7	100314	2018/11/4
Spectrum analyzer	Agilent	E4407B	MY41441082	2018/11/4
Signal Generator	R&S	SMT 06	832080/007	2018/11/4

Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).



3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

Frequency (MHz)	Limit	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Note:

(1) Decreases with the logarithm of the frequency from 0.15MHz to 0.5MHz.

1.1.1 Test method

1. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

2. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

3. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

4. LISN is at least 80 cm from nearest part of EUT chassis.

5. The resolution bandwidth of EMI test receiver is set at 9kHz.

1.1.2 Test Result

Not application because of the EUT is power by battery.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz



IF Bandwidth	9 kHz
--------------	-------



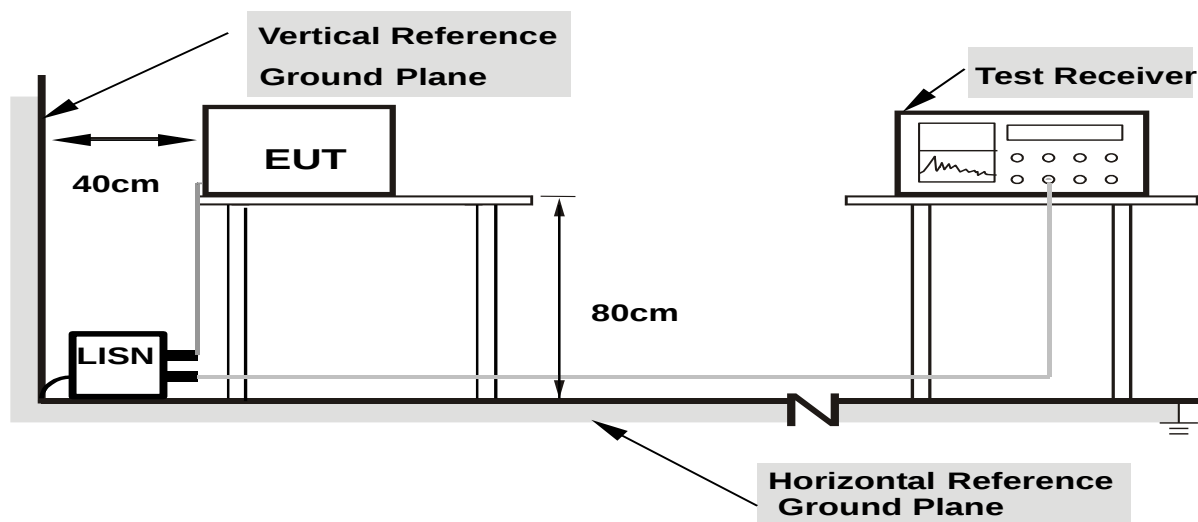
3.1.2 TEST PROCEDURE

- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



3.1.6 TEST RESULTS

EUT :	App Automotive Battery Analyzer	Model Name. :	BLE-5168
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	N/A	Test Mode :	N/A

Note: This product is powered by battery



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.



-
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
 - e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
 - f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

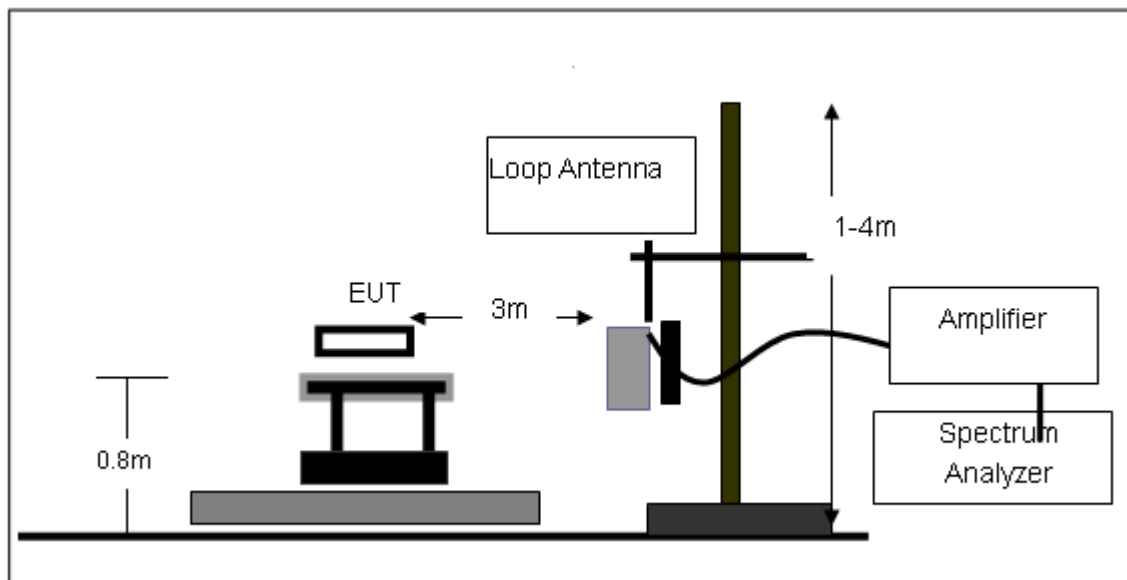
3.2.3 DEVIATION FROM TEST STANDARD

No deviation

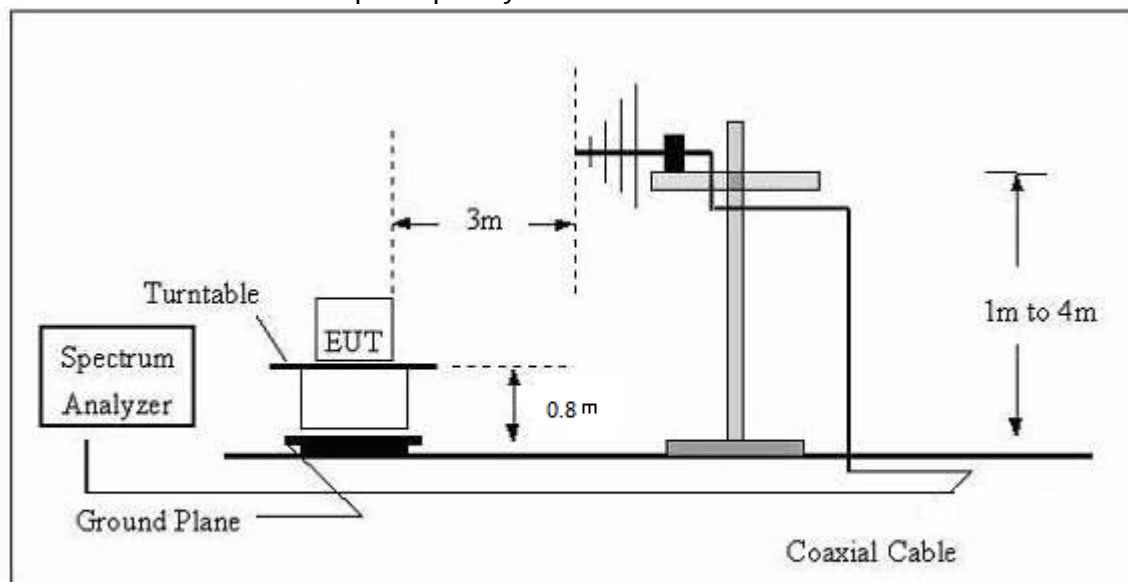


3.2.4 TEST SETUP

(A) Radiated Emission Test-Up Frequency Below 30MHz

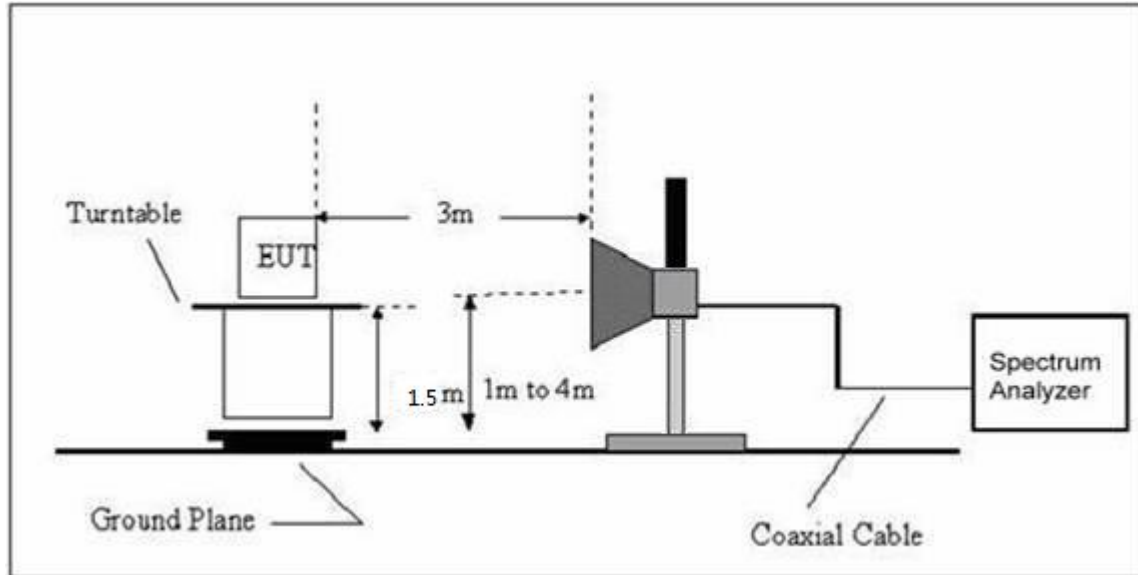


(B) Radiated Emission Test-Up Frequency 30MHz~1GHz





(C) Radiated Emission Test-Up Frequency Above 1GHz



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

EUT:	App Automotive Battery Analyzer	Model Name. :	BLE-5168
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 12V from battery
Test Mode :	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

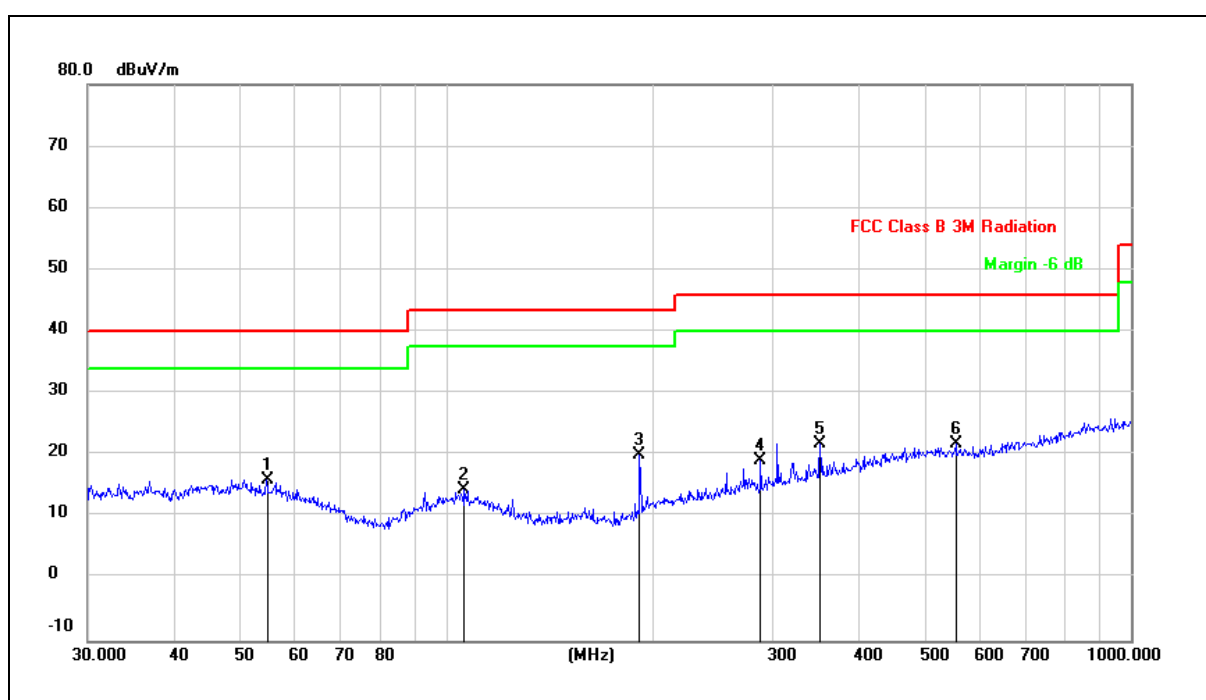
Distance extrapolation factor = $40 \log (\text{specific distance}/\text{test distance})$ (dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.



3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

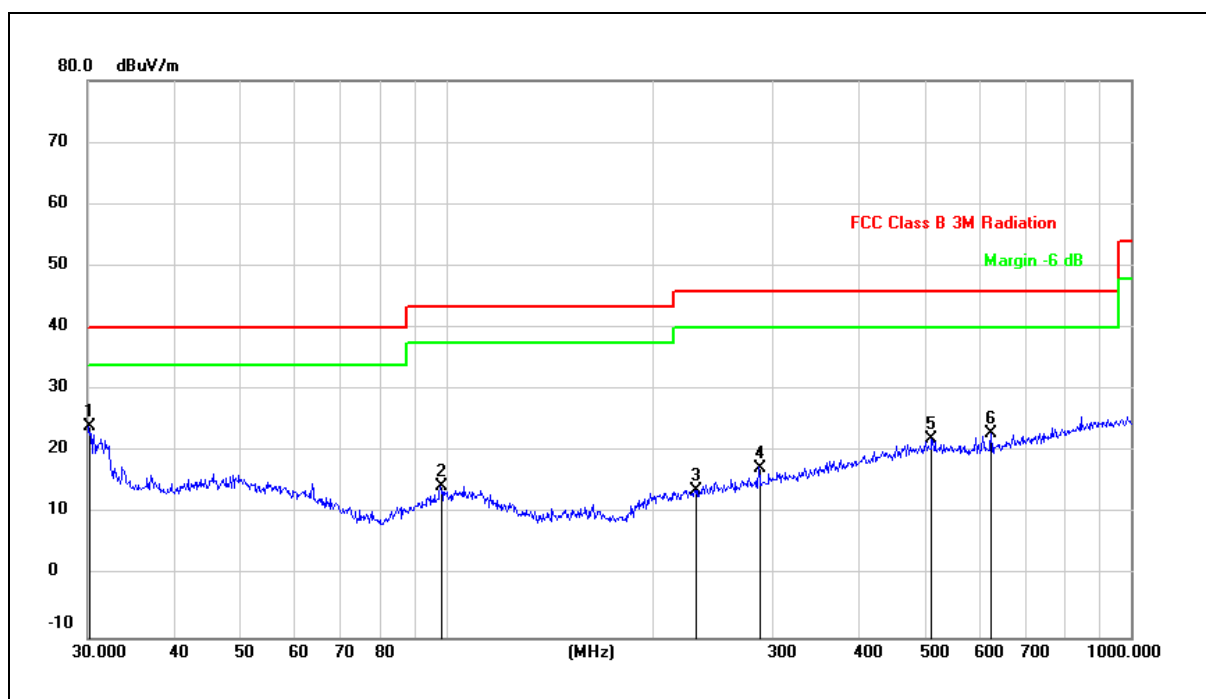
EUT :	App Automotive Battery Analyzer	Model Name :	BLE-5168
Relative Humidity:	52%	Phase:	H
Pressure:	1010 hPa	Test Voltage :	DC 12V from battery
Test Mode :	TX		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	
1	54.6429	26.36	-10.36	16.00	40.00	-24.00	QP
2	106.3850	25.73	-11.43	14.30	43.50	-29.20	QP
3	191.7450	32.99	-12.99	20.00	43.50	-23.50	QP
4	287.9904	28.06	-8.96	19.10	46.00	-26.90	QP
5	351.7079	29.45	-7.55	21.90	46.00	-24.10	QP
6	554.8254	27.02	-5.22	21.80	46.00	-24.20	QP



EUT :	App Automotive Battery Analyzer	Model Name :	BLE-5168
Relative Humidity:	52%	Phase:	V
Pressure:	1010 hPa	Test Voltage :	DC 12V from battery
Test Mode :	TX		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	
1	30.1054	35.63	-11.53	24.10	40.00	-15.90	QP
2	98.1419	26.15	-11.75	14.40	43.50	-29.10	QP
3	230.9068	24.48	-10.68	13.80	46.00	-32.20	QP
4	285.9778	25.42	-8.02	17.40	46.00	-28.60	QP
5	511.8352	27.87	-5.87	22.00	46.00	-24.00	QP
6	625.0780	27.96	-5.06	22.90	46.00	-23.10	QP



3.2.8 TEST RESULTS (1G-25GHZ)

BLE

Normal Voltage

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (2402 MHz)							
H	4113.750	47.34	-3.27	44.07	74.00	-29.93	PK
H	5782.250	45.75	-6.51	39.24	74.00	-34.76	PK
H	7086.500	46.50	-2.85	43.65	74.00	-30.35	PK
H	8061.750	47.21	-1.87	45.34	74.00	-28.66	PK
H	9765.500	46.21	1.16	47.37	74.00	-26.63	PK
H	10975.750	46.53	2.31	48.84	74.00	-25.16	PK
V	4113.750	47.42	-3.27	44.15	74.00	-29.85	PK
V	6593.000	46.54	-4.16	42.38	74.00	-31.62	PK
V	7732.750	47.27	-2.32	44.95	74.00	-29.05	PK
V	8555.250	46.56	-1.85	44.71	74.00	-29.29	PK
V	11152.000	45.95	2.37	48.32	74.00	-25.68	PK
V	11892.250	45.66	2.47	48.13	74.00	-25.87	PK
Mid Channel (2440 MHz)							
H	3961.000	47.45	-2.78	44.67	74.00	-29.33	PK
H	6839.750	46.81	-3.38	43.43	74.00	-30.57	PK
H	9154.500	46.75	-0.49	46.26	74.00	-27.74	PK
H	10423.500	45.86	2.21	48.07	74.00	-25.93	PK
H	11140.250	46.75	2.37	49.12	74.00	-24.88	PK
H	12080.250	45.82	2.53	48.35	74.00	-25.65	PK
V	3961.000	47.27	-2.78	44.49	74.00	-29.51	PK
V	6311.000	45.29	-4.91	40.38	74.00	-33.62	PK
V	7309.750	47.19	-2.77	44.42	74.00	-29.58	PK
V	8038.250	46.74	-1.87	44.87	74.00	-29.13	PK
V	9718.500	46.49	1.03	47.52	74.00	-26.48	PK
V	11222.500	45.53	2.39	47.92	74.00	-26.08	PK
High Channel (2480 MHz MHz)							
H	4019.750	46.54	-2.74	43.80	74.00	-30.20	PK
H	4407.500	45.46	-4.91	40.55	74.00	-33.45	PK
H	7345.000	47.94	-2.76	45.18	74.00	-28.82	PK
H	9589.250	46.14	0.63	46.77	74.00	-27.23	PK
H	10905.250	45.32	2.31	47.63	74.00	-26.37	PK
H	11340.000	45.29	2.43	47.72	74.00	-26.28	PK
V	3984.500	48.05	-2.68	45.37	74.00	-28.63	PK
V	7251.000	47.12	-2.81	44.31	74.00	-29.69	PK
V	9366.000	45.96	0.03	45.99	74.00	-28.01	PK
V	10435.250	45.76	2.22	47.98	74.00	-26.02	PK
V	11692.500	45.78	2.48	48.26	74.00	-25.74	PK
V	12714.750	45.29	3.01	48.30	74.00	-25.70	PK



BAND EDGE(Radiated)

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type	Comment
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		
BLE							
2380.540	50.21	-10.45	39.76	74.00	-34.24	PK	Vertical
2387.380	50.42	-9.55	40.87	74.00	-33.13	PK	Horizontal
2400.820	57.28	-10.31	46.97	74.00	-27.03	PK	Vertical
2400.820	59.84	-9.43	49.41	74.00	-24.59	PK	Horizontal
2483.550	48.48	-9.73	38.75	74.00	-35.25	PK	Vertical
2483.530	49.31	-8.66	40.65	74.00	-33.35	PK	Horizontal
2487.990	50.68	-9.70	40.98	74.00	-33.02	PK	Vertical
2489.660	50.06	-8.60	41.46	74.00	-32.54	PK	Horizontal

NOTE: The PK value is less than the AV value, AV value is not required.



4. POWER SPECTRAL DENSITY TEST

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

4.1.1 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW ≥ 3 kHz.
4. Set the VBW $\geq 3 \times$ RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



4.1.4 EUT OPERATION CONDITIONS

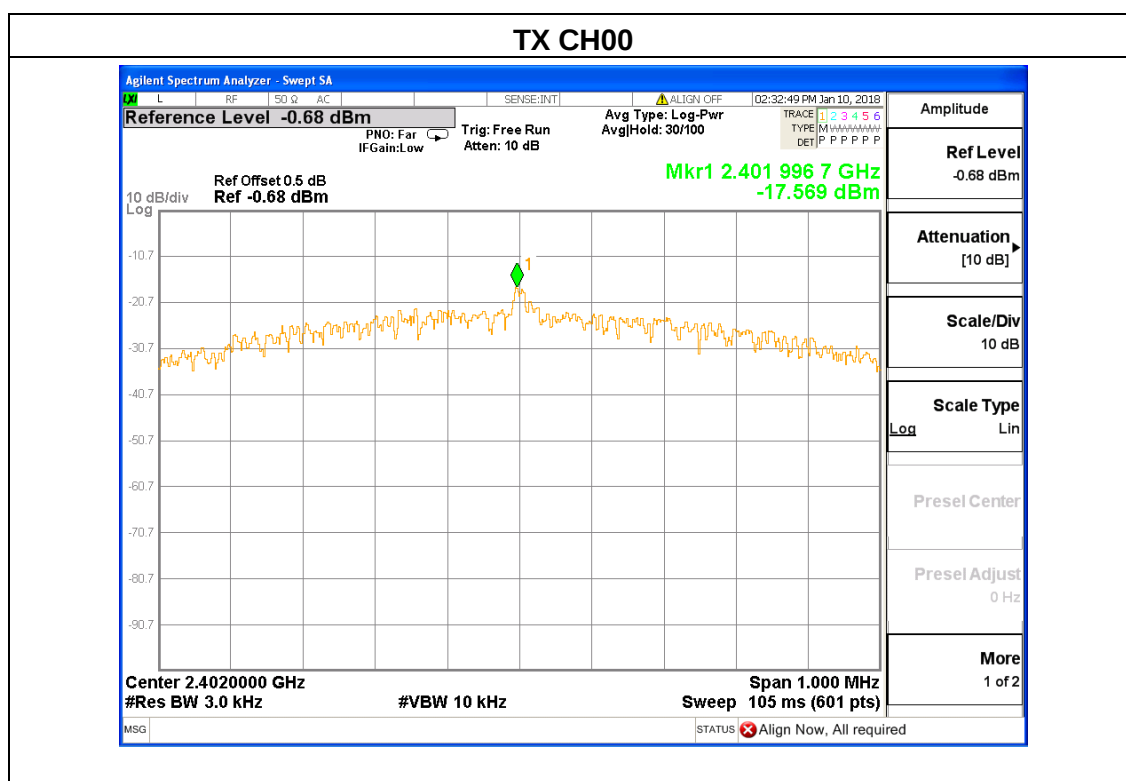
The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

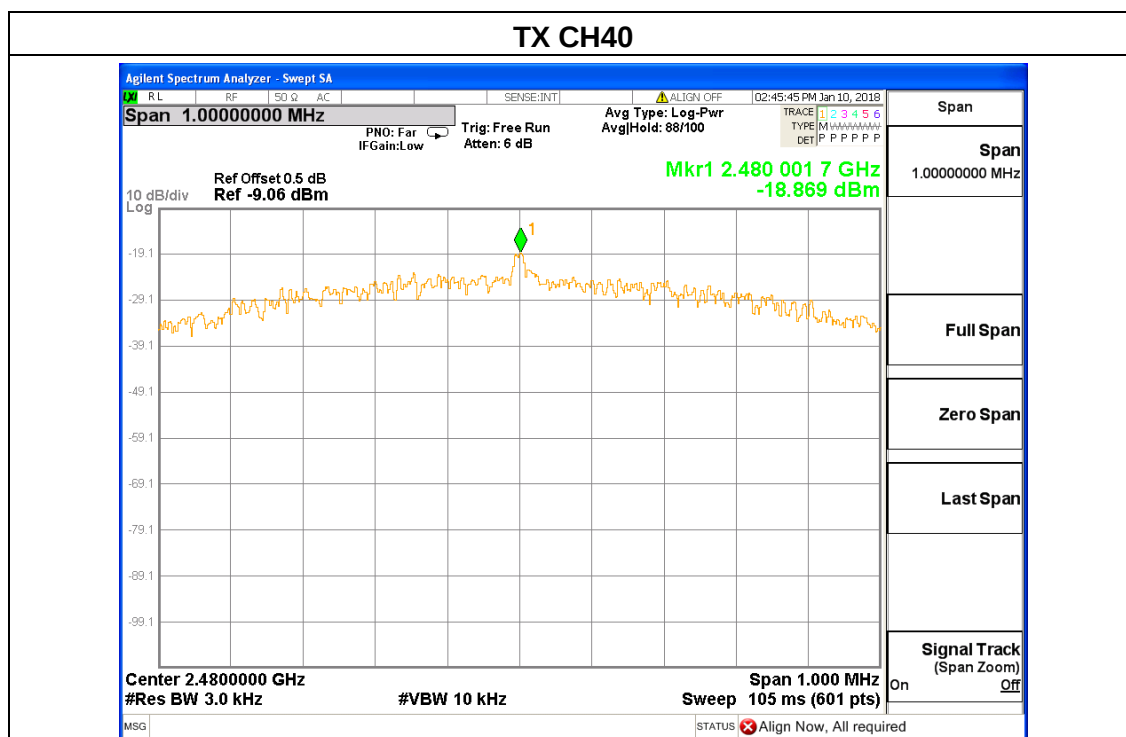
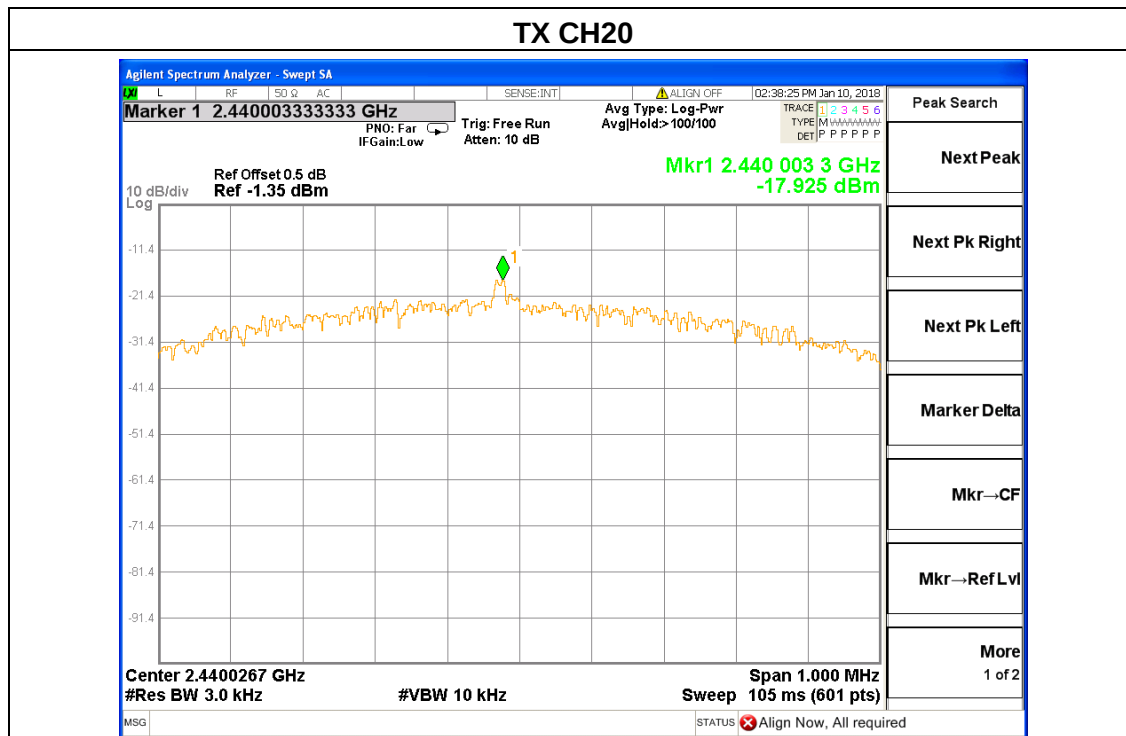


4.1.5 TEST RESULTS

EUT :	App Automotive Battery Analyzer	Model Name :	BLE-5168
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 12V from battery
Test Mode :	TX Mode /CH00, CH19, CH39		

Frequency	Power Density (dBm)	Limit (dBm)	Result
2402 MHz	-17.569	8	PASS
2440 MHz	-17.925	8	PASS
2480 MHz	-18.869	8	PASS







5. BANDWIDTH TEST

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

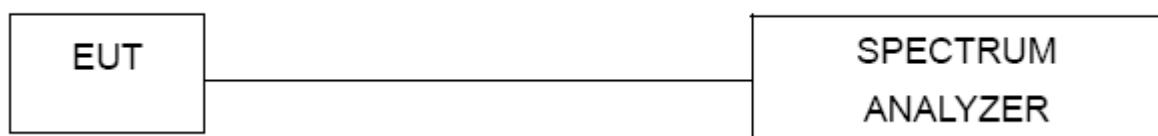
5.1.1 TEST PROCEDURE

1. Set RBW= 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times \text{RBW}$.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

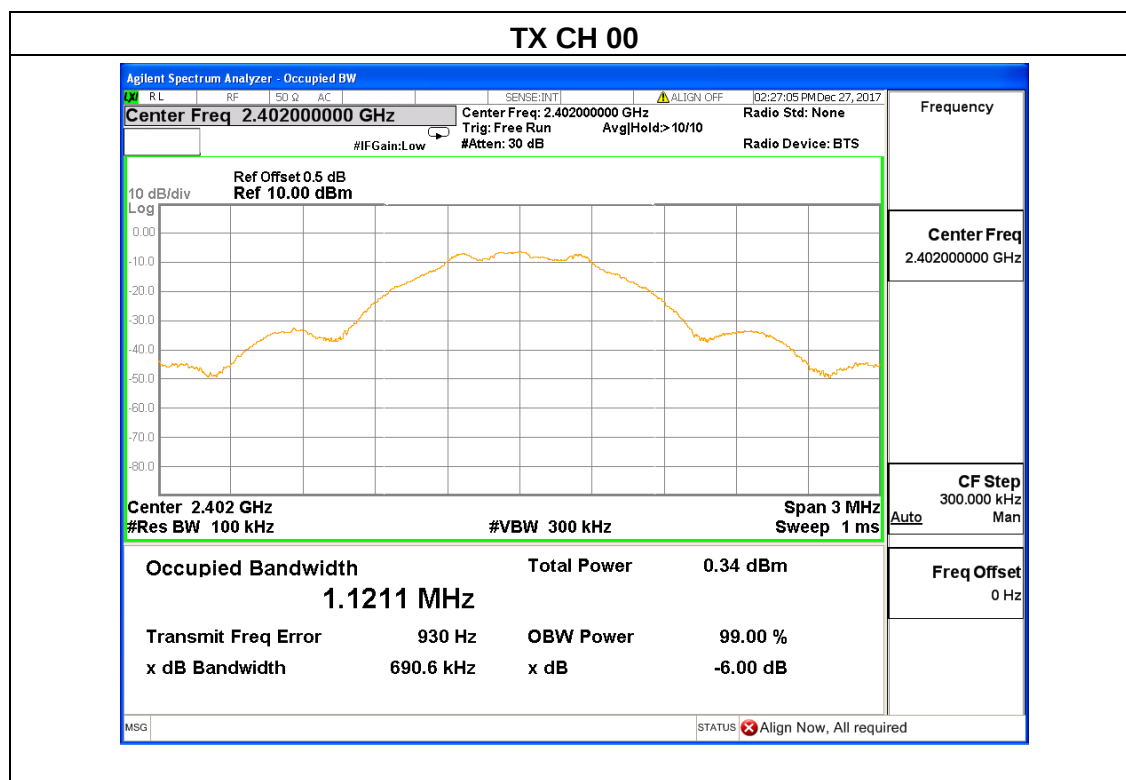
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



5.1.5 TEST RESULTS

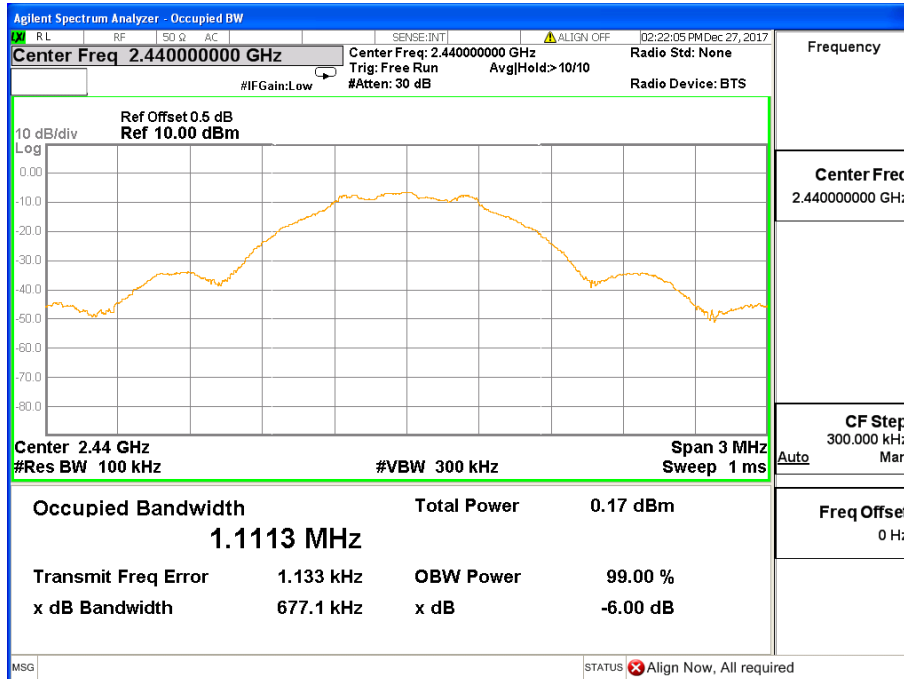
EUT :	App Automotive Battery Analyzer	Model Name :	BLE-5168
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 12V from battery
Test Mode :	TX Mode /CH00, CH19, CH39		

Channel	Frequency (MHz)	6dB bandwidth (KHz)	Limit (kHz)	Result
Low	2402	690.6	500	Pass
Middle	2440	677.1	500	Pass
High	2480	667.6	500	Pass

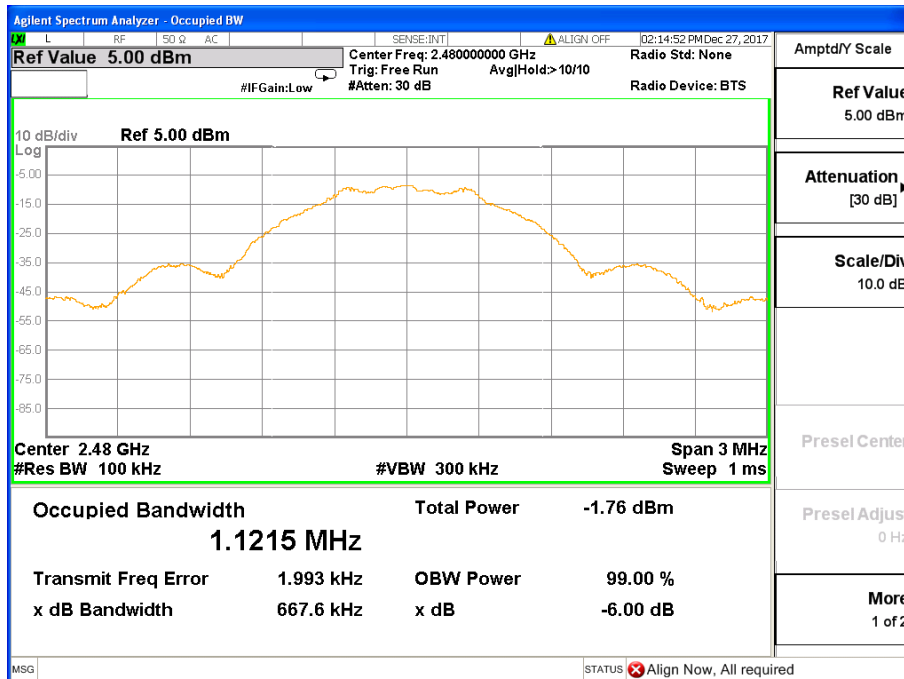




TX CH 19



TX CH 39





6. PEAK OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

6.1.1 TEST PROCEDURE

- a. The EUT was directly connected to the Power meter

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

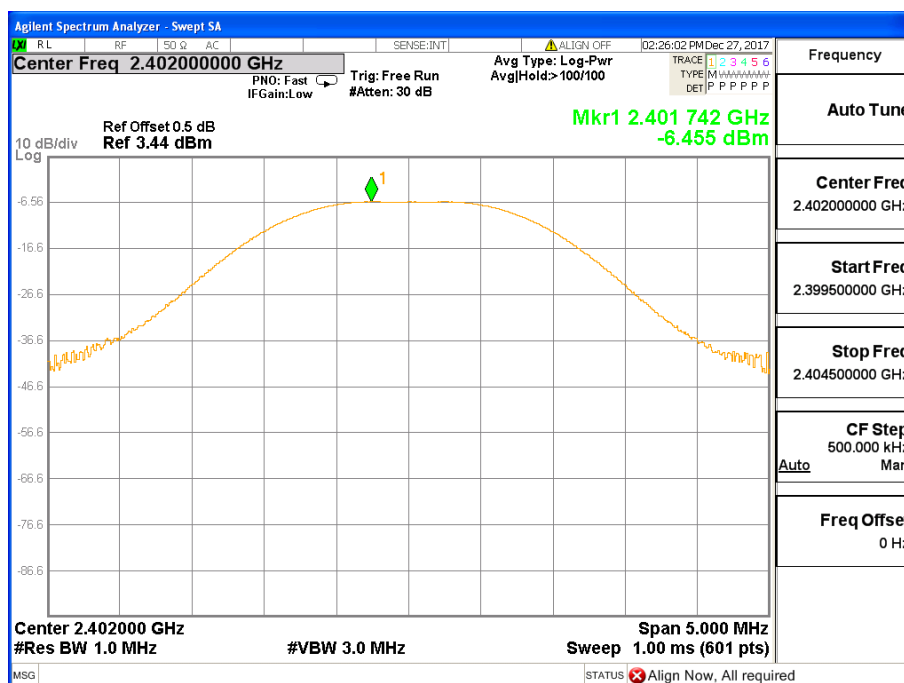


6.1.5 TEST RESULTS

EUT :	App Automotive Battery Analyzer	Model Name :	BLE-5168
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 12V from battery
Test Mode :	TX Mode /CH00, CH19, CH39		

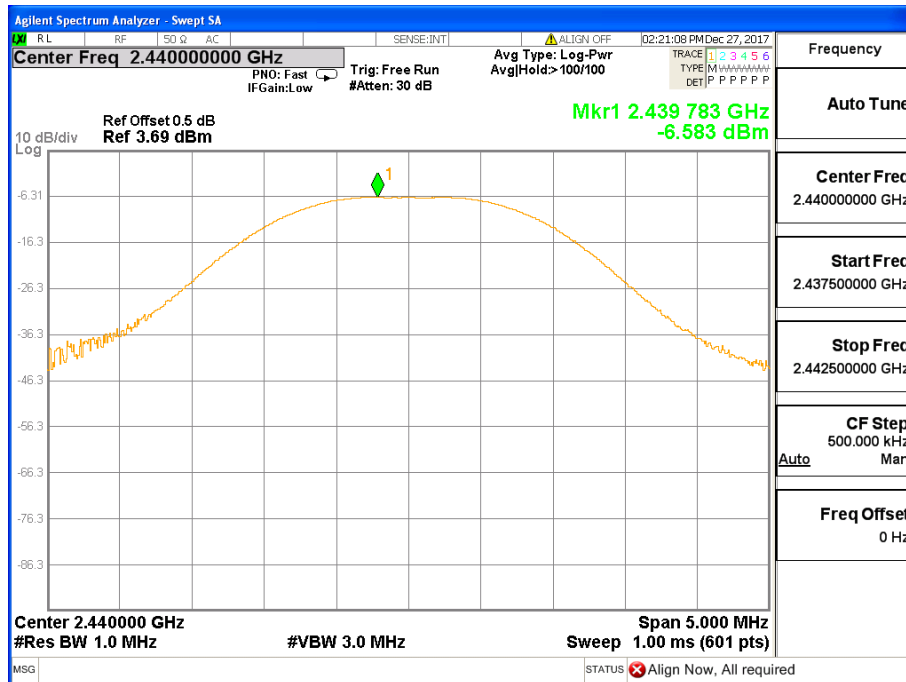
TX BLE Mode			
Test Channe	Frequency	Maximum Conducted Output Power(PK)	LIMIT
	(MHz)	(dBm)	dBm
CH01	2402	-6.455	30
CH20	2440	-6.583	30
CH40	2480	-7.879	30

CH00

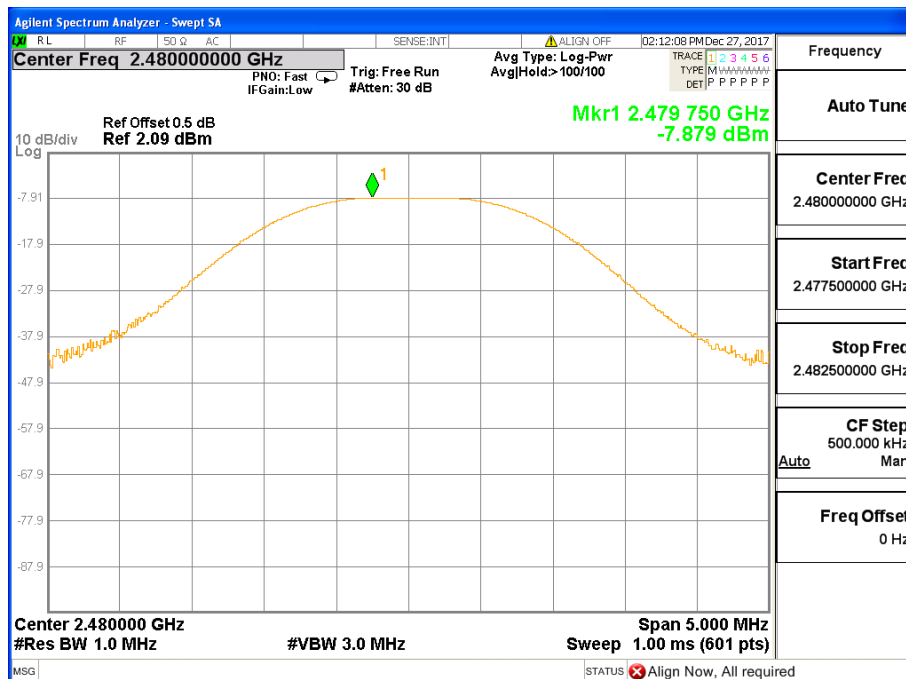




CH19



CH39





6.1.6. 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE

APPLICABLE STANDARD

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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 either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

TEST PROCEDURE

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
- Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- Repeat above procedures until all measured frequencies were complete.

6.1.7 DEVIATION FROM STANDARD

No deviation.

6.1.8 TEST SETUP





6.1.9 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



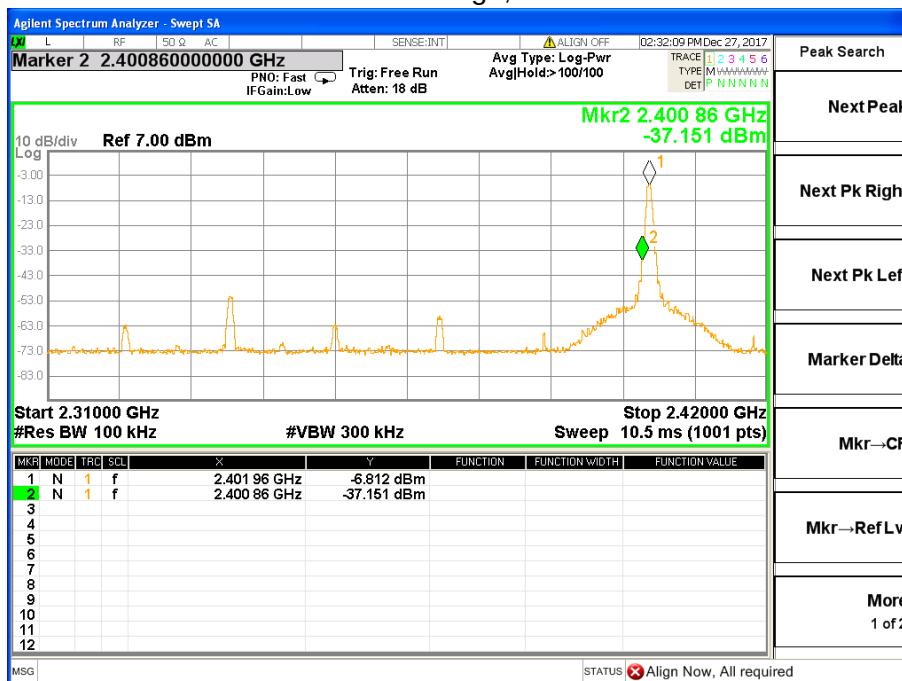
6.1.10 TEST RESULTS

EUT :	App Automotive Battery Analyzer	Model Name :	BLE-5168
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 12V from battery

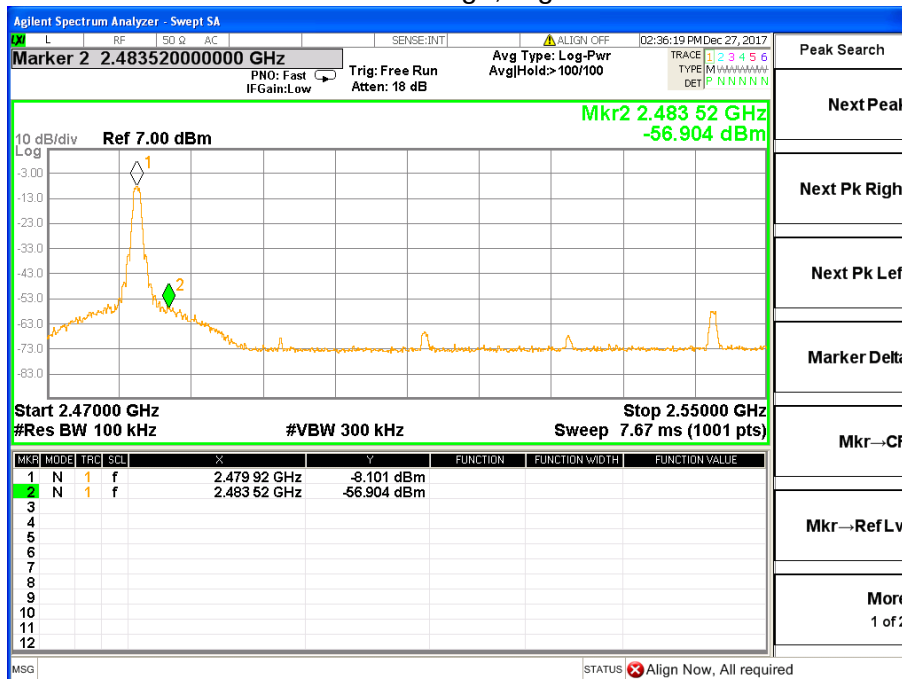
Frequency Band	Delta Peak to band emission (dBc)	> Limit (dBc)	Result
BLE mode			
Left-band	30.339	20	Pass
Right-band	48.803	20	Pass



BLE: Band Edge, Left Side



BLE: Band Edge, Right Side





7. ANTENNA REQUIREMENT

7.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

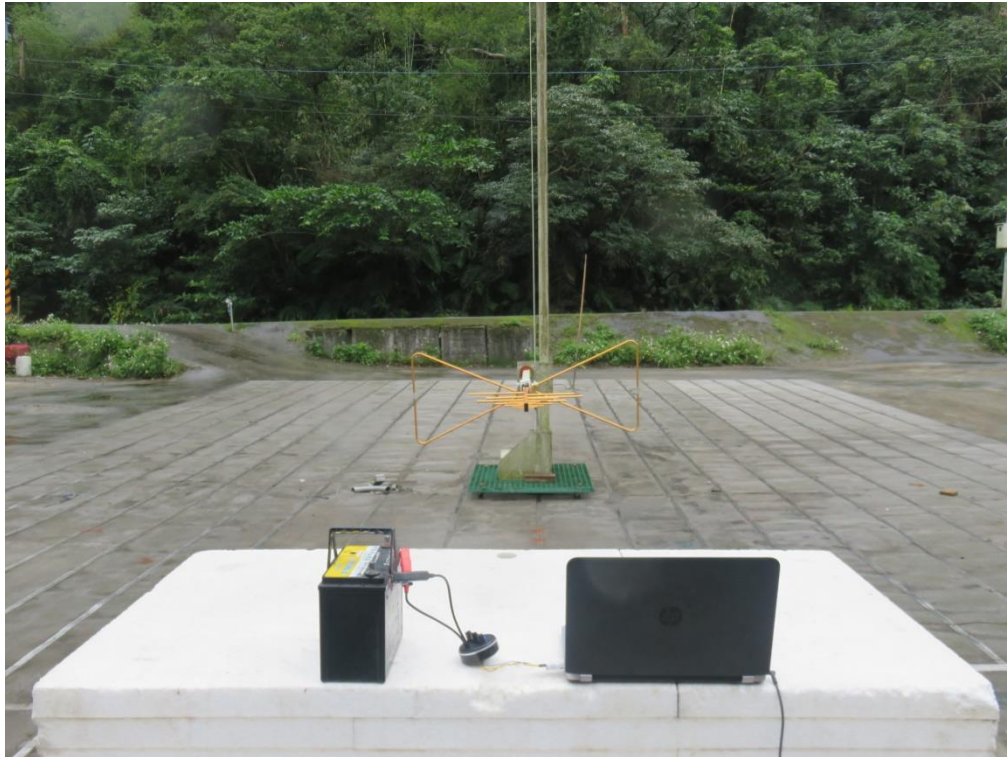
7.2 EUT ANTENNA

The EUT antenna is PCB antenna. It comply with the standard requirement. In case of replacement of broken antenna the same antenna type must be used.



8. EUT TEST PHOTO

Radiated Measurement Photos



----END OF REPORT----