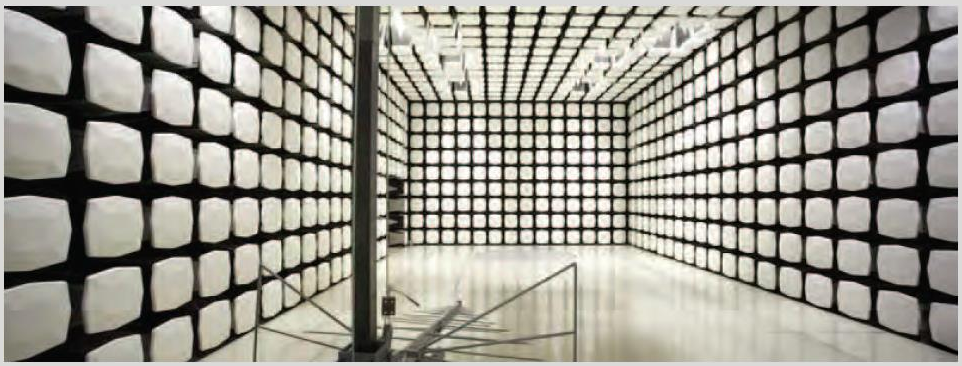
Continental Automotive Systems Inc

RCKF2B

FCC 15.247:2021

Bluetooth Low Energy DTS Radio

Report: ONMS0001, Issue Date: April 16, 2021



NVLAP LAB CODE: 200630-0

CERTIFICATE OF TEST

Last Date of Test: April 16, 2021
Continental Automotive Systems Inc.
EUT: RCKF2B

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2021	ANSI C63.10:2013, KDB 558074

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	No	N/A	Not required, EUT powered from a vehicle
11.12.1, 11.13.2, 6.5, 6.6	Spurious Radiated Emissions	Yes	Pass	
11.6	Duty Cycle	Yes	N/A	Characterization of radio operation.
11.8.2	Occupied Bandwidth	Yes	Pass	
11.9.1.1	Radiated Power EIRP	Yes	Pass	
11.9.1.1	Equivalent Isotropic Radiated Power	Yes	Pass	
11.10.2	Power Spectral Density	Yes	Pass	
11.11	Band Edge Compliance	Yes	Pass	
11.11	Spurious Conducted Emissions	Yes	Pass	

Deviations From Test Standards

None

Approved By:

Kyle Holgate, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

REVISION HISTORY

Revision Number	Description	Date (yyyy-mm-dd)	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Element to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

European Union

European Commission – Within Element, we have a EU Notified Body validated for the EMCD and RED Directives.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIT / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

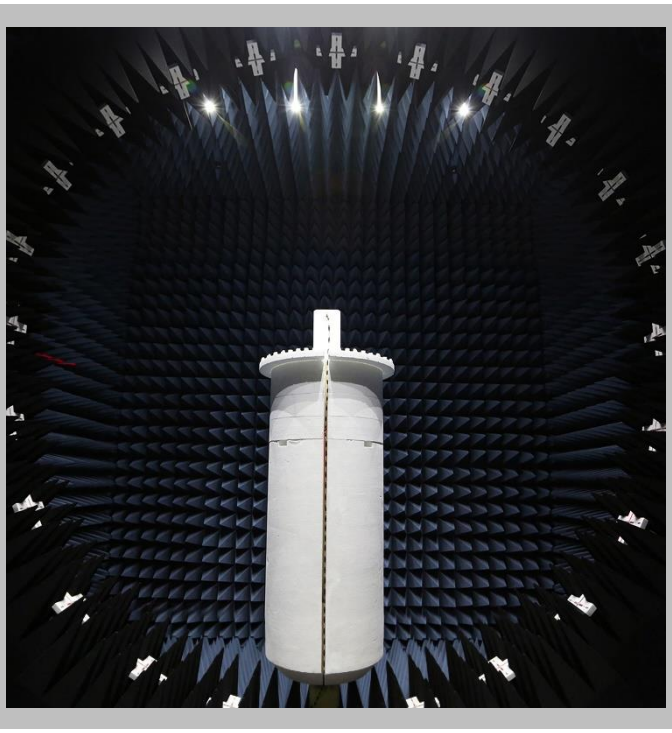
MIC – Recognized by MIC as a CAB for the acceptance of test data.

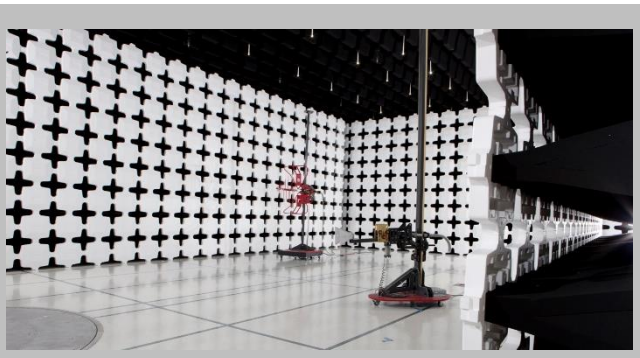
SCOPE

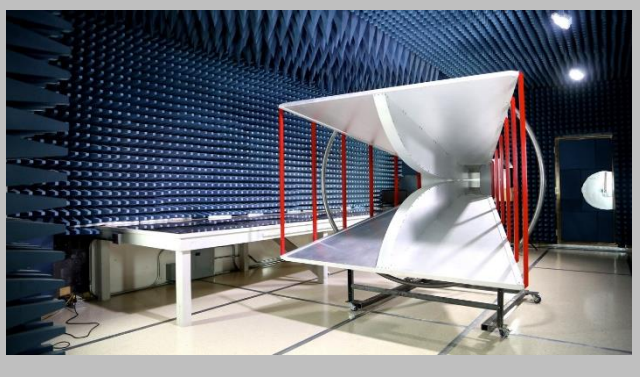
For details on the Scopes of our Accreditations, please visit:
https://www.nwemc.com/emc-testing-accreditations

FACILITIES

California	Minnesota	Oregon	Texas	Washington
Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP				
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada				
2834B-1, 2834B-3	2834E-1, 2834E-3	2834D-1	2834G-1	2834F-1
BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI				
A-0029	A-0109	A-0108	A-0201	A-0110
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA				
US0158	US0175	US0017	US0191	US0157







MEASUREMENT UNCERTAINTY

element
TMU.2015.07.10

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

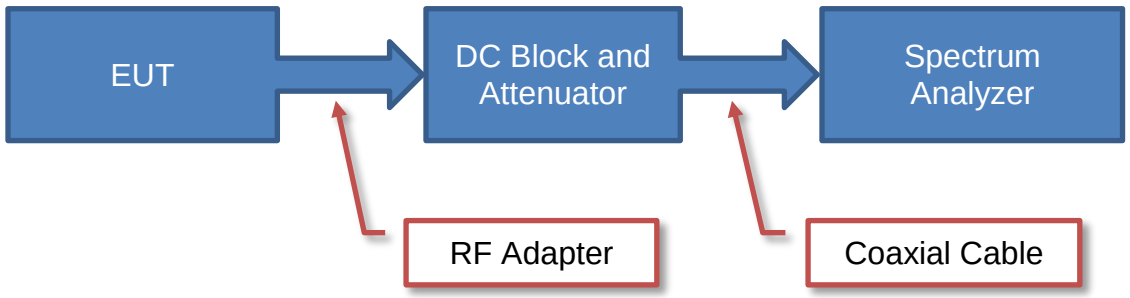
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable test description page. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

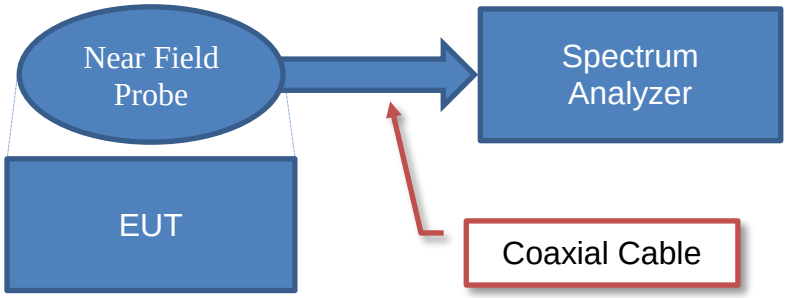
Test	+ MU	- MU
Frequency Accuracy	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.6 dB	-2.6 dB

Test Setup Block Diagrams

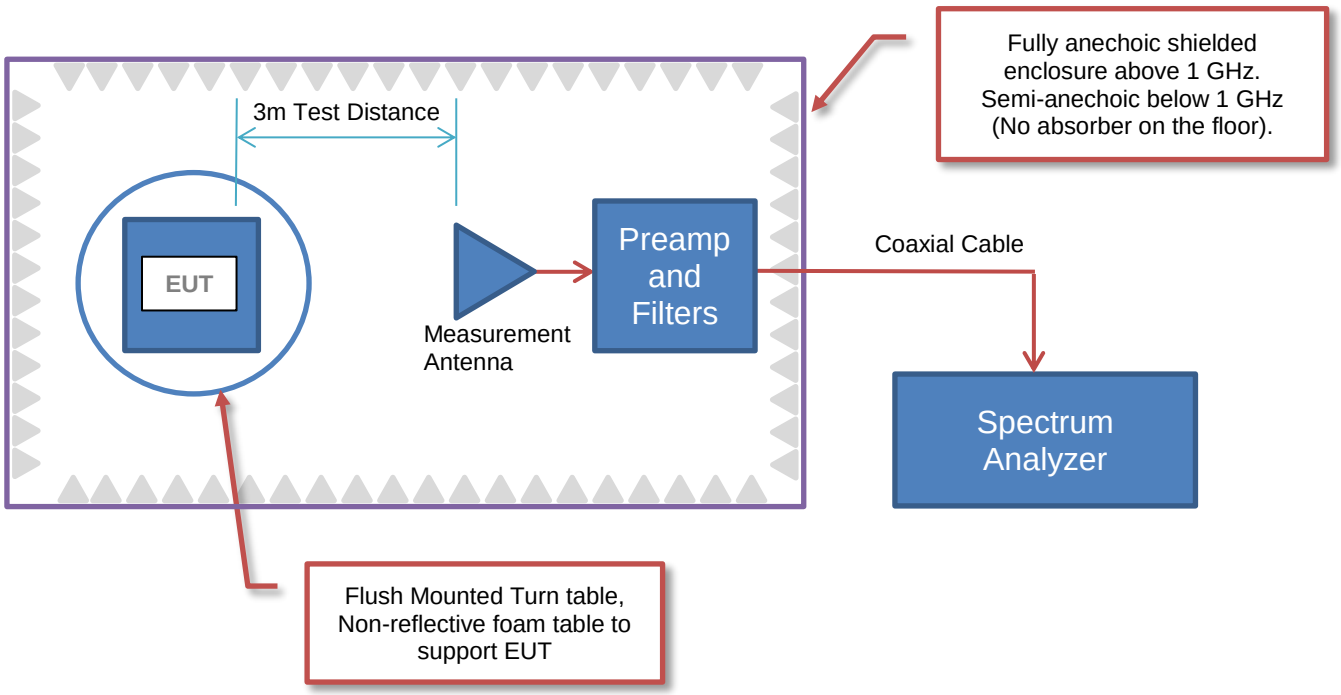
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Continental Automotive Systems Inc.
Address:	4685 Investment Drive
City, State, Zip:	Troy, Michigan 48098
Test Requested By:	Jacqueline Pinto of Continental Intelligent Transportation Systems
EUT:	RCKF2B
First Date of Test:	October 26, 2020
Last Date of Test:	April 16, 2021
Receipt Date of Samples:	October 7, 2020
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
RCKF2B is a universal Remote Keyless Entry transmitter device. It is powered by 8 to 16 VDC from the vehicle. In use, this device is a standalone device that is installed inside a vehicle cabin. RCKF2B is controlled via a mobile application and connected to a mobile phone via Bluetooth. This device communicates with a vehicles access system via a wireless connection.

Testing Objective:
To demonstrate compliance of the Bluetooth Low Energy DTS radio to FCC 15.247 requirements.

CONFIGURATIONS

Configuration ONMS0003- 1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Periodic and BLE radio	Continental Automotive Systems Inc.	RCKF2B	RCKF15-0521-E45F-97B9

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Lenovo	N585	CB17045993
USB to serial converter	Sparkfun	None	None
AC/DC Power Adapter	Lenovo	PA-1400-12	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power	No	2.0 m	No	Periodic and BLE radio	DC power supply
Programming Cable	No	0.1 m	No	Periodic and BLE radio	USB to serial converter
USB Cable	Yes	0.9 m	No	USB to serial converter	Laptop
AC Power	No	1.0 m	No	AC Mains	AC/DC Power Adapter
DC Power	No	1.8 m	No	AC/DC Power Adapter	Laptop

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2020-10-26	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2020-10-27	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2020-10-27	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	2020-10-27	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2021-02-26	Equivalent Isotropic Radiated Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	2021-02-26	Radiated Power EIRP	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	2021-02-26	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
8	2021-04-14	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
9	2021-04-14	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
10	2021-04-14	Equivalent Isotropic Radiated Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
11	2021-04-14	Radiated Power EIRP	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
12	2021-04-14	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
13	2021-04-14	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
14	2021-04-16	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
15	2021-04-16	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWER SETTINGS AND ANTENNAS

The power settings, antenna gain value(s) and cable loss (if applicable) used for the testing contained in this report were provided by the customer and will affect the validity of the results. Element assumes no responsibility for the accuracy of this information.

ANTENNA GAIN (dBi)

Type	Provided by:	Frequency Range (MHz)	Gain (dBi)
Strip	Manufacturer	2400 - 2480	-1.0 dBi

The EUT was tested using the power settings provided by the manufacturer:

SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Types / Data Rates	Type	Channel	Frequency (MHz)	Power Setting
BLE LR 125 kbps	DTS	42	2402	High Power 31
		80	2442	High Power 31
		120	2480	High Power 31
BLE 1 Mbps	DTS	42	2402	High Power 31
		80	2442	High Power 31
		120	2480	High Power 31

SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2021.01.22.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Continuous Tx BLE, Low Ch = 2402 MHz, Mid Ch = 2440 MHz, High Ch = 2480 MHz. Power Setting = High Power 31
Continuous Tx BLE LR 125kbps, Low Ch = 2402 MHz, Mid Ch = 2440 MHz, High Ch = 2480 MHz. Power Setting = High Power 31

POWER SETTINGS INVESTIGATED

12 VDC

CONFIGURATIONS INVESTIGATED

ONMS0003 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26500 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Filter - High Pass	Micro-Tronics	HPM50111	HFO	2020-11-17	2021-11-17
Attenuator	Coaxicom	3910-20	AXZ	2021-02-15	2022-02-15
Cable	ESM Cable Corp.	TTBJ141-KMKM-72	EVY	2020-07-25	2021-07-25
Cable	None	Standard Gain Horns Cable	EVF	2020-11-18	2021-11-18
Cable	N/A	Double Ridge Horn Cables	EVB	2020-11-17	2021-11-17
Cable	N/A	Bilog Cables	EVA	2020-11-17	2021-11-17
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	2020-07-25	2021-07-25
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2020-11-18	2021-11-18
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-08001200-30-10P	PAO	2020-11-18	2021-11-18
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	2020-11-17	2021-11-17
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	2020-11-17	2021-11-17
Antenna - Standard Gain	ETS Lindgren	3160-09	AIV	NCR	NCR
Antenna - Standard Gain	ETS Lindgren	3160-08	AHV	NCR	NCR
Antenna - Standard Gain	ETS Lindgren	3160-07	AHU	NCR	NCR
Antenna - Double Ridge	EMCO	3115	AHC	2020-07-01	2022-07-01
Antenna - Biconilog	Teseq	CBL 6141B	AXR	2020-10-13	2022-10-13
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	2020-06-25	2021-06-25
Power Supply - DC	Topward	TPS-2000	TPD	NCR	NCR

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = Average Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements within 2 MHz of the allowable band may have been taken using the integration method from ANSI C63.10 clause 11.13.3. This procedure uses the channel power feature of the spectrum analyzer to integrate the power of the emission within a 1 MHz bandwidth.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the AV measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of 20*log(1/dc).

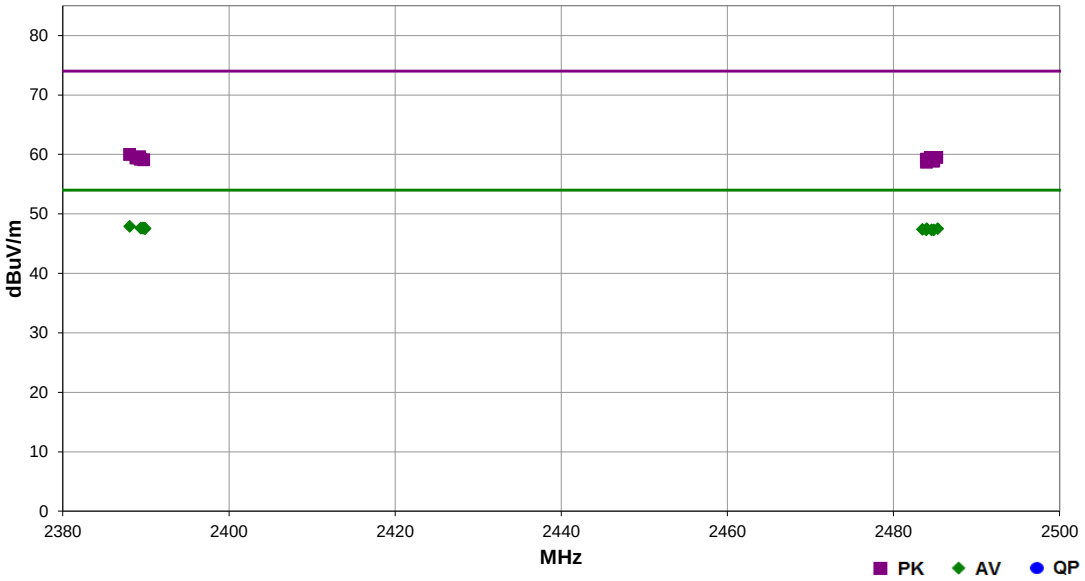
SPURIOUS RADIATED EMISSIONS

EmiR5 2021.01.08.0 PSA-ESCI 2021.01.22.0

Work Order:	ONMS0003	**Date:**	2021-02-26		
Project:	None	**Temperature:**	22.8 °C		
Job Site:	EV01	**Humidity:**	34% RH		
Serial Number:	See Configuration	**Barometric Pres.:**	1023 mbar	**Tested by:**	Eric Gioe and Jeff Alcoke
EUT:	RCKF2B				
Configuration:	1				
Customer:	Continental Automotive Systems Inc				
Attendees:	None				
EUT Power:	12 VDC				
Operating Mode:	Continuous Tx BLE, Low Ch = 2402 MHz, Mid Ch = 2440 MHz, High Ch = 2480 MHz. Power Setting = High Power 31				
Deviations:	None				
Comments:	See comments below for Channel, Date rate, and EUT orientation.				

Test Specifications	**Test Method**
FCC 15.247:2021	ANSI C63.10:2013

Run #	4	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2388.057	31.4	-3.5	1.5	216.0	3.0	20.0	Horz	AV	0.0	47.9	54.0	-6.1	Low Ch., BLE 1Mbps, EUT on Side
2389.383	31.1	-3.5	1.5	346.0	3.0	20.0	Horz	AV	0.0	47.6	54.0	-6.4	Low Ch., BLE 1Mbps, EUT Vert
2389.863	31.1	-3.5	2.45	58.0	3.0	20.0	Vert	AV	0.0	47.6	54.0	-6.4	Low Ch., BLE 1Mbps, EUT on Side
2389.727	31.1	-3.5	1.5	246.0	3.0	20.0	Horz	AV	0.0	47.6	54.0	-6.4	Low Ch., BLE 1Mbps, EUT Horz
2389.587	31.1	-3.5	1.5	308.0	3.0	20.0	Vert	AV	0.0	47.6	54.0	-6.4	Low Ch., BLE 1Mbps, EUT Horz
2389.893	31.0	-3.5	1.5	224.0	3.0	20.0	Vert	AV	0.0	47.5	54.0	-6.5	Low Ch., BLE 1Mbps, EUT Vert
2484.020	31.1	-3.6	1.5	320.0	3.0	20.0	Horz	AV	0.0	47.5	54.0	-6.5	High Ch., BLE 1Mbps, EUT on Side
2485.333	31.0	-3.5	1.5	250.0	3.0	20.0	Horz	AV	0.0	47.5	54.0	-6.5	High Ch., BLE 1Mbps, EUT Horz
2483.503	31.0	-3.6	1.5	283.0	3.0	20.0	Vert	AV	0.0	47.4	54.0	-6.6	High Ch., BLE 1Mbps, EUT on Side
2484.590	30.9	-3.6	1.5	200.0	3.0	20.0	Horz	AV	0.0	47.3	54.0	-6.7	High Ch., BLE 1Mbps, EUT Vertical
2484.853	30.9	-3.6	1.5	0.0	3.0	20.0	Vert	AV	0.0	47.3	54.0	-6.7	High Ch., BLE 1Mbps, EUT Vertical
2483.960	30.9	-3.6	1.5	345.0	3.0	20.0	Vert	AV	0.0	47.3	54.0	-6.7	High Ch., BLE 1Mbps, EUT Horz
2388.030	43.5	-3.5	1.5	246.0	3.0	20.0	Horz	PK	0.0	60.0	74.0	-14.0	Low Ch., BLE 1Mbps, EUT Horz
2389.217	43.1	-3.5	1.5	216.0	3.0	20.0	Horz	PK	0.0	59.6	74.0	-14.4	Low Ch., BLE 1Mbps, EUT on Side
2485.200	43.0	-3.5	1.5	320.0	3.0	20.0	Horz	PK	0.0	59.5	74.0	-14.5	High Ch., BLE 1Mbps, EUT on Side
2484.430	43.1	-3.6	1.5	283.0	3.0	20.0	Vert	PK	0.0	59.5	74.0	-14.5	High Ch., BLE 1Mbps, EUT on Side
2388.803	42.9	-3.5	1.5	224.0	3.0	20.0	Vert	PK	0.0	59.4	74.0	-14.6	Low Ch., BLE 1Mbps, EUT Vert
2389.270	42.8	-3.5	2.45	58.0	3.0	20.0	Vert	PK	0.0	59.3	74.0	-14.7	Low Ch., BLE 1Mbps, EUT on Side
2389.323	42.7	-3.5	1.5	308.0	3.0	20.0	Vert	PK	0.0	59.2	74.0	-14.8	Low Ch., BLE 1Mbps, EUT Horz
2483.960	42.8	-3.6	1.5	345.0	3.0	20.0	Vert	PK	0.0	59.2	74.0	-14.8	High Ch., BLE 1Mbps, EUT Horz
2389.730	42.6	-3.5	1.5	346.0	3.0	20.0	Horz	PK	0.0	59.1	74.0	-14.9	Low Ch., BLE 1Mbps, EUT Vert
2484.857	42.5	-3.6	1.5	0.0	3.0	20.0	Vert	PK	0.0	58.9	74.0	-15.1	High Ch., BLE 1Mbps, EUT Vertical
2484.773	42.5	-3.6	1.5	250.0	3.0	20.0	Horz	PK	0.0	58.9	74.0	-15.1	High Ch., BLE 1Mbps, EUT Horz
2483.980	42.3	-3.6	1.5	200.0	3.0	20.0	Horz	PK	0.0	58.7	74.0	-15.3	High Ch., BLE 1Mbps, EUT Vertical

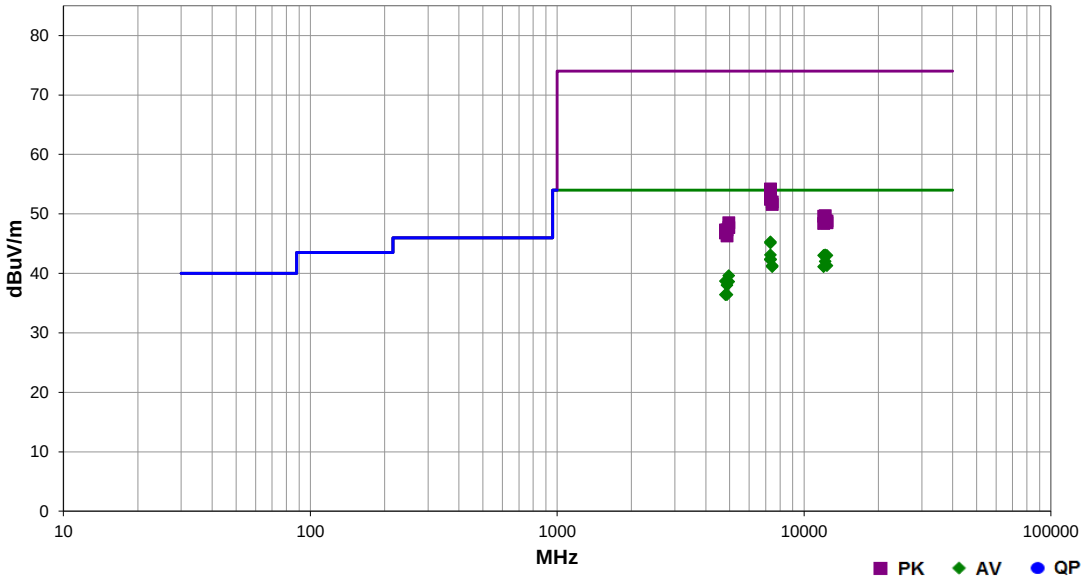
SPURIOUS RADIATED EMISSIONS

EmiR5 2021.01.08.0 PSA-ESCI 2021.01.22.0

Work Order:	ONMS0003	**Date:**	2021-02-26		
Project:	None	**Temperature:**	22.5 °C		
Job Site:	EV01	**Humidity:**	34.4% RH		
Serial Number:	See Configuration	**Barometric Pres.:**	1024 mbar	**Tested by:**	Eric Gioe and Jeff Alcoke
EUT:	RCKF2B				
Configuration:	1				
Customer:	Continental Automotive Systems Inc				
Attendees:	None				
EUT Power:	12 VDC				
Operating Mode:	Continuous Tx BLE, Low Ch = 2402 MHz, Mid Ch = 2440 MHz, High Ch = 2480 MHz. Power Setting = High Power 31				
Deviations:	None				
Comments:	See comments below for Channel, Date rate, and EUT orientation.				

Test Specifications	**Test Method**
FCC 15.247:2021	ANSI C63.10:2013

Run #	18	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7320.475	33.6	11.7	1.71	360.0	3.0	0.0	Vert	AV	0.0	45.3	54.0	-8.7	Mid Ch., BLE 1Mbps, EUT Horz
7320.533	33.4	11.7	1.24	18.0	3.0	0.0	Horz	AV	0.0	45.1	54.0	-8.9	Mid Ch., BLE 1Mbps, EUT on Side
7320.350	31.4	11.7	2.4	285.0	3.0	0.0	Vert	AV	0.0	43.1	54.0	-10.9	Mid Ch., BLE 1Mbps, EUT Vert
12198.870	42.2	0.9	1.0	3.0	3.0	0.0	Vert	AV	0.0	43.1	54.0	-10.9	Mid Ch., BLE 1Mbps, EUT Horz
12008.820	41.9	1.1	1.02	356.0	3.0	0.0	Vert	AV	0.0	43.0	54.0	-11.0	Low Ch., BLE 1Mbps, EUT Horz
12398.800	41.5	1.5	2.14	10.0	3.0	0.0	Horz	AV	0.0	43.0	54.0	-11.0	High Ch., BLE 1Mbps, EUT on Side
7319.358	30.7	11.7	1.5	134.0	3.0	0.0	Vert	AV	0.0	42.4	54.0	-11.6	Mid Ch., BLE 1Mbps, EUT on Side
7320.375	30.6	11.7	2.54	157.0	3.0	0.0	Horz	AV	0.0	42.3	54.0	-11.7	Mid Ch., BLE 1Mbps, EUT Vert
7319.467	30.6	11.7	1.28	190.0	3.0	0.0	Horz	AV	0.0	42.3	54.0	-11.7	Mid Ch., BLE 1Mbps, EUT Horz
12201.030	41.1	0.9	1.0	5.0	3.0	0.0	Horz	AV	0.0	42.0	54.0	-12.0	Mid Ch., BLE 1Mbps, EUT on Side
7440.308	29.1	12.2	1.76	8.0	3.0	0.0	Vert	AV	0.0	41.3	54.0	-12.7	High Ch., BLE 1Mbps, EUT Horz
12398.800	39.8	1.5	1.1	2.0	3.0	0.0	Vert	AV	0.0	41.3	54.0	-12.7	High Ch., BLE 1Mbps, EUT Horz
12008.780	40.0	1.1	1.5	350.0	3.0	0.0	Horz	AV	0.0	41.1	54.0	-12.9	Low Ch., BLE 1Mbps, EUT on Side
7440.492	28.9	12.2	2.18	113.0	3.0	0.0	Horz	AV	0.0	41.1	54.0	-12.9	High Ch., BLE 1Mbps, EUT on Side
4959.942	33.7	5.9	2.99	123.0	3.0	0.0	Horz	AV	0.0	39.6	54.0	-14.4	High Ch., BLE 1Mbps, EUT on Side
4803.767	33.6	5.1	1.01	88.0	3.0	0.0	Vert	AV	0.0	38.7	54.0	-15.3	Low Ch., BLE 1Mbps, EUT Horz
4960.067	32.7	5.9	1.5	133.0	3.0	0.0	Vert	AV	0.0	38.6	54.0	-15.4	High Ch., BLE 1Mbps, EUT Horz
4880.008	32.0	6.0	1.51	214.0	3.0	0.0	Horz	AV	0.0	38.0	54.0	-16.0	Mid Ch., BLE 1Mbps, EUT on Side
4880.058	30.4	6.0	1.37	168.0	3.0	0.0	Vert	AV	0.0	36.4	54.0	-17.6	Mid Ch., BLE 1Mbps, EUT Horz
4803.758	31.3	5.1	1.0	187.0	3.0	0.0	Horz	AV	0.0	36.4	54.0	-17.6	Low Ch., BLE 1Mbps, EUT on Side
7320.617	42.5	11.7	1.71	360.0	3.0	0.0	Vert	PK	0.0	54.2	74.0	-19.8	Mid Ch., BLE 1Mbps, EUT Horz
7320.367	42.2	11.7	1.24	18.0	3.0	0.0	Horz	PK	0.0	53.9	74.0	-20.1	Mid Ch., BLE 1Mbps, EUT on Side
7320.233	41.4	11.7	2.4	285.0	3.0	0.0	Vert	PK	0.0	53.1	74.0	-20.9	Mid Ch., BLE 1Mbps, EUT Vert
7319.142	40.8	11.7	2.54	157.0	3.0	0.0	Horz	PK	0.0	52.5	74.0	-21.5	Mid Ch., BLE 1Mbps, EUT Vert
7320.208	40.8	11.7	1.5	134.0	3.0	0.0	Vert	PK	0.0	52.5	74.0	-21.5	Mid Ch., BLE 1Mbps, EUT on Side
7320.850	40.8	11.7	1.28	190.0	3.0	0.0	Horz	PK	0.0	52.5	74.0	-21.5	Mid Ch., BLE 1Mbps, EUT Horz
7440.858	39.8	12.2	1.76	8.0	3.0	0.0	Vert	PK	0.0	52.0	74.0	-22.0	High Ch., BLE 1Mbps, EUT Horz

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7439.633	39.4	12.2	2.18	113.0	3.0	0.0	Horz	PK	0.0	51.6	74.0	-22.4	High Ch., BLE 1Mbps, EUT on Side
12198.730	48.8	0.9	1.0	3.0	3.0	0.0	Vert	PK	0.0	49.7	74.0	-24.3	Mid Ch., BLE 1Mbps, EUT Horz
12008.630	48.5	1.1	1.02	356.0	3.0	0.0	Vert	PK	0.0	49.6	74.0	-24.4	Low Ch., BLE 1Mbps, EUT Horz
12201.370	48.0	0.9	1.0	5.0	3.0	0.0	Horz	PK	0.0	48.9	74.0	-25.1	Mid Ch., BLE 1Mbps, EUT on Side
12398.830	47.3	1.5	2.14	10.0	3.0	0.0	Horz	PK	0.0	48.8	74.0	-25.2	High Ch., BLE 1Mbps, EUT on Side
4960.258	42.6	5.9	2.99	123.0	3.0	0.0	Horz	PK	0.0	48.5	74.0	-25.5	High Ch., BLE 1Mbps, EUT on Side
12401.240	47.0	1.5	1.1	2.0	3.0	0.0	Vert	PK	0.0	48.5	74.0	-25.5	High Ch., BLE 1Mbps, EUT Horz
12008.730	47.3	1.1	1.5	350.0	3.0	0.0	Horz	PK	0.0	48.4	74.0	-25.6	Low Ch., BLE 1Mbps, EUT on Side
4960.717	41.8	5.9	1.5	133.0	3.0	0.0	Vert	PK	0.0	47.7	74.0	-26.3	High Ch., BLE 1Mbps, EUT Horz
4879.400	41.3	6.0	1.51	214.0	3.0	0.0	Horz	PK	0.0	47.3	74.0	-26.7	Mid Ch., BLE 1Mbps, EUT on Side
4803.383	42.2	5.1	1.01	88.0	3.0	0.0	Vert	PK	0.0	47.3	74.0	-26.7	Low Ch., BLE 1Mbps, EUT Horz
4804.308	41.6	5.2	1.0	187.0	3.0	0.0	Horz	PK	0.0	46.8	74.0	-27.2	Low Ch., BLE 1Mbps, EUT on Side
4880.533	40.3	6.0	1.37	168.0	3.0	0.0	Vert	PK	0.0	46.3	74.0	-27.7	Mid Ch., BLE 1Mbps, EUT Horz

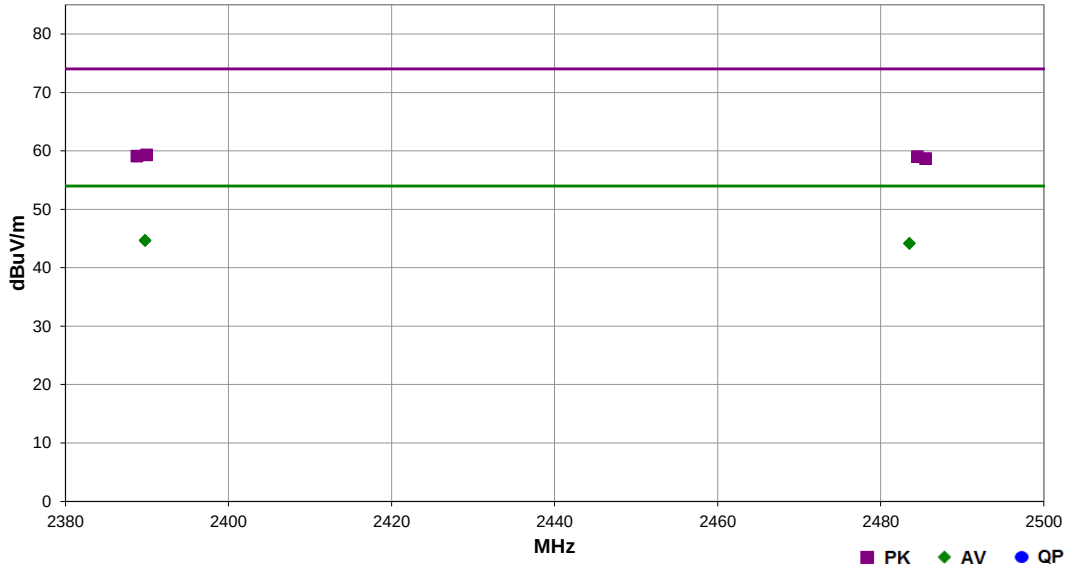
SPURIOUS RADIATED EMISSIONS

EmiR5 2021.01.08.0 PSA-ESCI 2021.03.17.0

Work Order:	ONMS0003	**Date:**	2021-04-16		
Project:	None	**Temperature:**	21.9 °C		
Job Site:	EV01	**Humidity:**	34.1% RH		
Serial Number:	See Configuration	**Barometric Pres.:**	1024 mbar	**Tested by:**	Jeff Alcoke
EUT:	RCKF2B				
Configuration:	1				
Customer:	Continental Automotive Systems Inc				
Attendees:	Jim O'brien				
EUT Power:	12 VDC				
Operating Mode:	BLE LR 125 kbps, Low Channel = 2402 MHz, Mid Channel = 2440 MHz, High Channel = 2480 MHz. Power Setting = High Power 31				
Deviations:	None				
Comments:	All measurements were noisefloor, no DCCF was applied to the average values.				

Test Specifications	**Test Method**
FCC 15.247:2021	ANSI C63.10:2013

Run #	33	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2389.770	28.2	-3.5	1.0	355.0	3.0	20.0	Horz	AV	0.0	44.7	54.0	-9.3	Low Channel, BLE LR 125kbps, EUT on Side
2389.767	28.1	-3.5	1.0	204.0	3.0	20.0	Vert	AV	0.0	44.6	54.0	-9.4	Low Channel, BLE LR 125kbps, EUT on Side
2483.523	27.8	-3.6	1.5	339.0	3.0	20.0	Horz	AV	0.0	44.2	54.0	-9.8	High Channel, BLE LR 125kbps, EUT on Side
2483.533	27.7	-3.6	2.34	291.0	3.0	20.0	Vert	AV	0.0	44.1	54.0	-9.9	High Channel, BLE LR 125kbps, EUT on Side
2389.937	42.8	-3.5	1.0	355.0	3.0	20.0	Horz	PK	0.0	59.3	74.0	-14.7	Low Channel, BLE LR 125kbps, EUT on Side
2388.753	42.6	-3.5	1.0	204.0	3.0	20.0	Vert	PK	0.0	59.1	74.0	-14.9	Low Channel, BLE LR 125kbps, EUT on Side
2484.497	42.6	-3.6	1.5	339.0	3.0	20.0	Horz	PK	0.0	59.0	74.0	-15.0	High Channel, BLE LR 125kbps, EUT on Side
2485.497	42.2	-3.5	2.34	291.0	3.0	20.0	Vert	PK	0.0	58.7	74.0	-15.3	High Channel, BLE LR 125kbps, EUT on Side

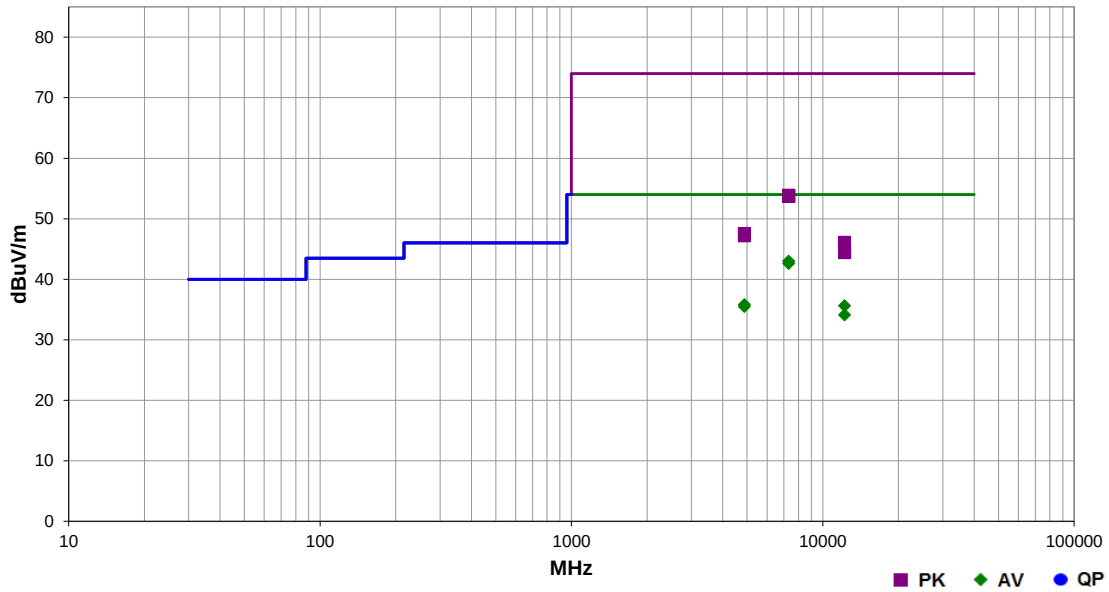
SPURIOUS RADIATED EMISSIONS

EmiR5 2021.01.08.0 PSA-ESCI 2021.03.17.0

Work Order:	ONMS0003	**Date:**	2021-04-16		
Project:	None	**Temperature:**	21.9 °C		
Job Site:	EV01	**Humidity:**	34.1% RH		
Serial Number:	See Configuration	**Barometric Pres.:**	1024 mbar	**Tested by:**	Jeff Alcoke
EUT:	RCKF2B				
Configuration:	1				
Customer:	Continental Automotive Systems Inc				
Attendees:	Jim O'brien				
EUT Power:	12 VDC				
Operating Mode:	Continuous Tx - BLE 125 kbps, Low Channel = 2402 MHz, Mid Channel = 2440 MHz, High Channel = 2480 MHz. Power Setting = High Power 31				
Deviations:	None				
Comments:	The BLE LR 125kbps radio operates at a duty cycle (DC) of 87.7%, a duty cycle correction factor of 20*log(1/DC) = 20*log(1/0.887) = 1.1 dB was applied to the average measurements.				

Test Specifications	**Test Method**
FCC 15.247:2021	ANSI C63.10:2013

Run #	34	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7320.550	30.2	11.7	1.3	42.0	1.1	0.0	Horz	AV	0.0	43.0	54.0	-11.0	Mid Ch, BLE LR 125kbps, EUT on Side
7320.583	29.8	11.7	3.0	16.0	1.1	0.0	Vert	AV	0.0	42.6	54.0	-11.4	Mid Ch, BLE LR 125kbps, EUT Horz
7319.983	42.2	11.7	1.3	42.0	0.0	0.0	Horz	PK	0.0	53.9	74.0	-20.1	Mid Ch, BLE LR 125kbps, EUT on Side
7319.383	42.0	11.7	3.0	16.0	0.0	0.0	Vert	PK	0.0	53.7	74.0	-20.3	Mid Ch, BLE LR 125kbps, EUT Horz
4880.275	28.7	6.0	2.6	241.0	1.1	0.0	Horz	AV	0.0	35.8	54.0	-18.2	Mid Ch, BLE LR 125kbps, EUT on Side
12201.070	33.6	0.9	1.0	46.0	1.1	0.0	Horz	AV	0.0	35.6	54.0	-18.4	Mid Ch, BLE LR 125kbps, EUT on Side
4879.642	28.4	6.0	1.6	193.0	1.1	0.0	Vert	AV	0.0	35.5	54.0	-18.5	Mid Ch, BLE LR 125kbps, EUT Horz
12201.050	32.1	0.9	1.0	213.0	1.1	0.0	Vert	AV	0.0	34.1	54.0	-19.9	Mid Ch, BLE LR 125kbps, EUT Horz
4879.633	41.5	6.0	2.6	241.0	0.0	0.0	Horz	PK	0.0	47.5	74.0	-26.5	Mid Ch, BLE LR 125kbps, EUT on Side
4880.333	41.2	6.0	1.6	193.0	0.0	0.0	Vert	PK	0.0	47.2	74.0	-26.8	Mid Ch, BLE LR 125kbps, EUT Horz
12198.760	45.2	0.9	1.0	46.0	0.0	0.0	Horz	PK	0.0	46.1	74.0	-27.9	Mid Ch, BLE LR 125kbps, EUT on Side
12200.990	43.5	0.9	1.0	213.0	0.0	0.0	Vert	PK	0.0	44.4	74.0	-29.6	Mid Ch, BLE LR 125kbps, EUT Horz

DUTY CYCLE

XMit 2020.12.30.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Power Supply - DC	Topward	TPS-2000	TPD	NCR	NCR
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	2020-06-25	2021-06-25
Cable	N/A	ible Ridge Horn Ca	EVB	2020-11-17	2021-11-17
Amplifier - Pre-Amplifier	Miteq	F-3D-00100800-32-	PAG	2020-11-17	2021-11-17
Antenna - Double Ridge	EMCO	3115	AHC	2020-07-01	2022-07-01

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

DUTY CYCLE

TbtTx 2019.08.30.0 XMit 2020.12.30.0

EUT:	RCKF2B			Work Order:	ONMS0003
Serial Number:	See configuration			Date:	14-Apr-21
Customer:	Continental Automotive Systems Inc.			Temperature:	22.9 °C
Attendees:	None			Humidity:	26.8% RH
Project:	None			Barometric Pres.:	1024 mbar
Tested by:	Jeff Alcoke	Power:	12 VDC	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247:2021	ANSI C63.10:2013

COMMENTS

The BLE 1 Mbps data rates operate at 100% duty cycle. No screen captures were collected.

DEVIATIONS FROM TEST STANDARD

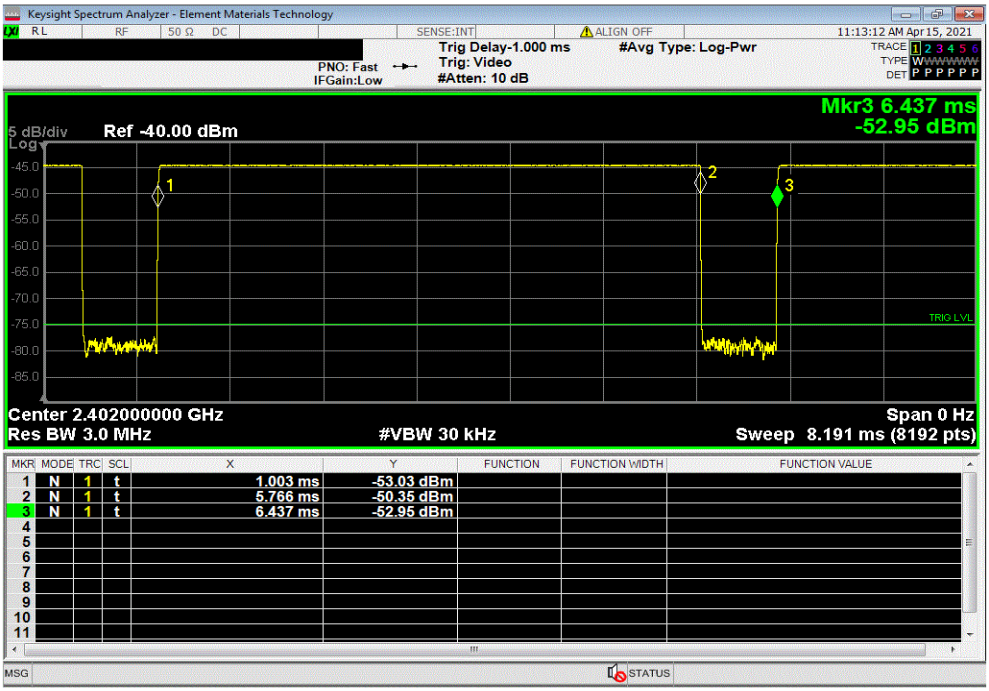
None

Configuration #	1	Signature

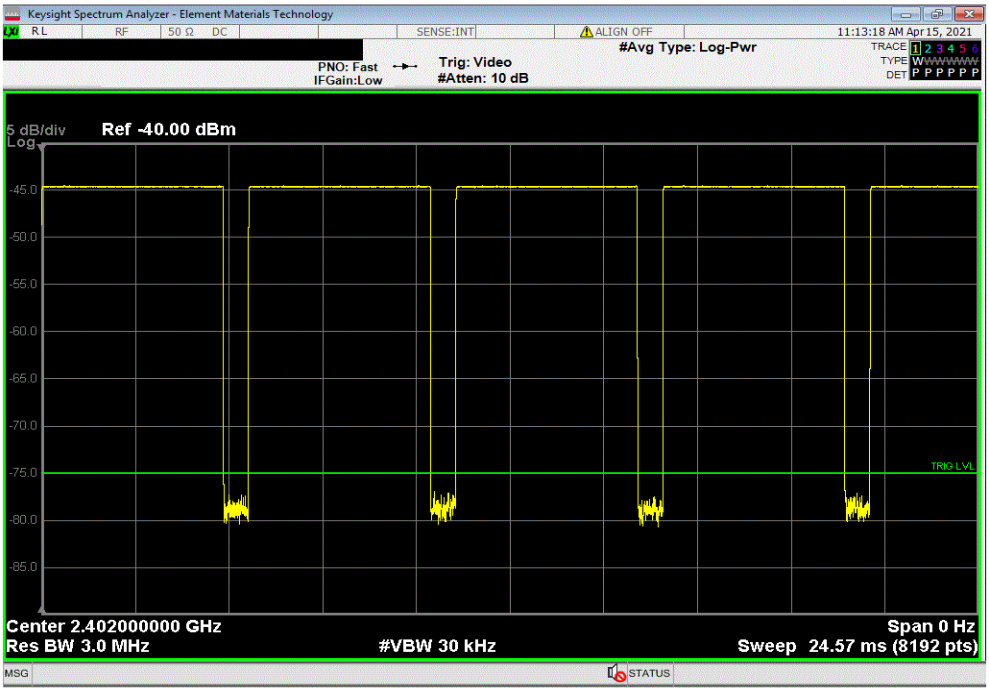
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
BLE LR 125 kbps Low Channel, 2402 MHz	4.763 ms	5.434 ms	1	87.7	N/A	N/A
BLE LR 125 kbps Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE LR 125 kbps Mid Channel, 2440 MHz	4.765 ms	5.434 ms	1	87.7	N/A	N/A
BLE LR 125 kbps Mid Channel, 2440 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE LR 125 kbps High Channel, 2480 MHz	4.763 ms	5.433 ms	1	87.7	N/A	N/A
BLE LR 125 kbps High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A

DUTY CYCLE

BLE LR 125 kbps Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	4.763 ms	5.434 ms	1	87.7	N/A	N/A

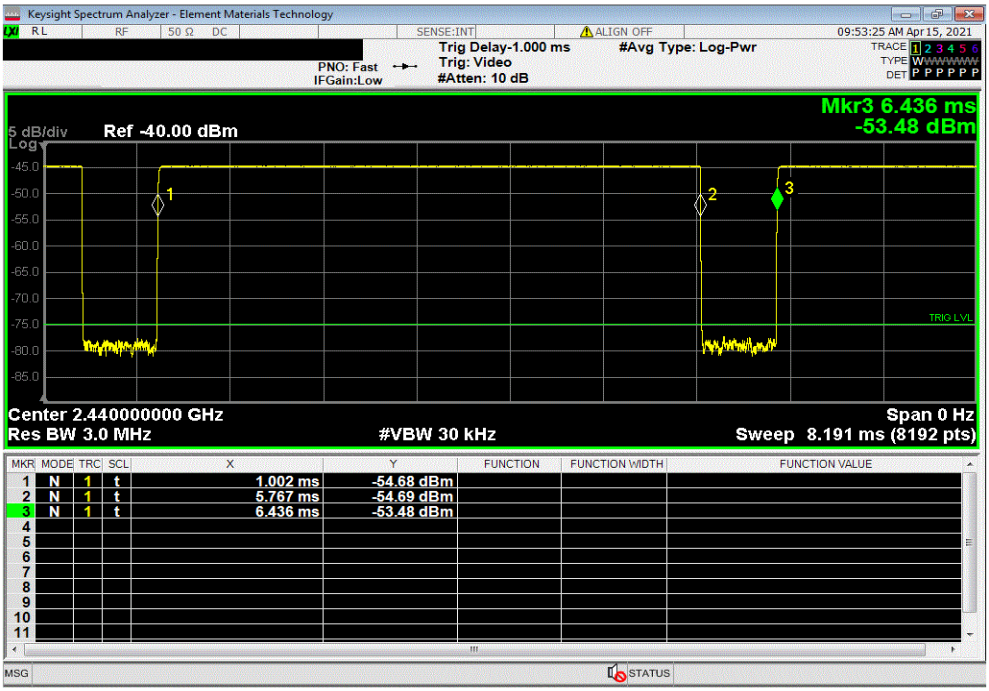


BLE LR 125 kbps Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

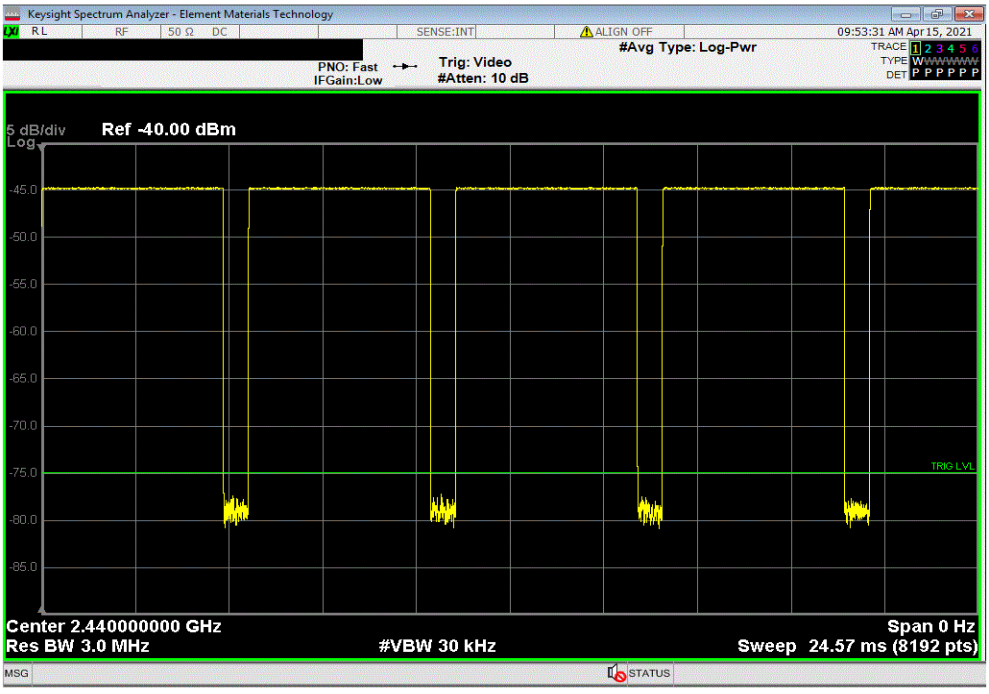


DUTY CYCLE

BLE LR 125 kbps Mid Channel, 2440 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	4.765 ms	5.434 ms	1	87.7	N/A	N/A

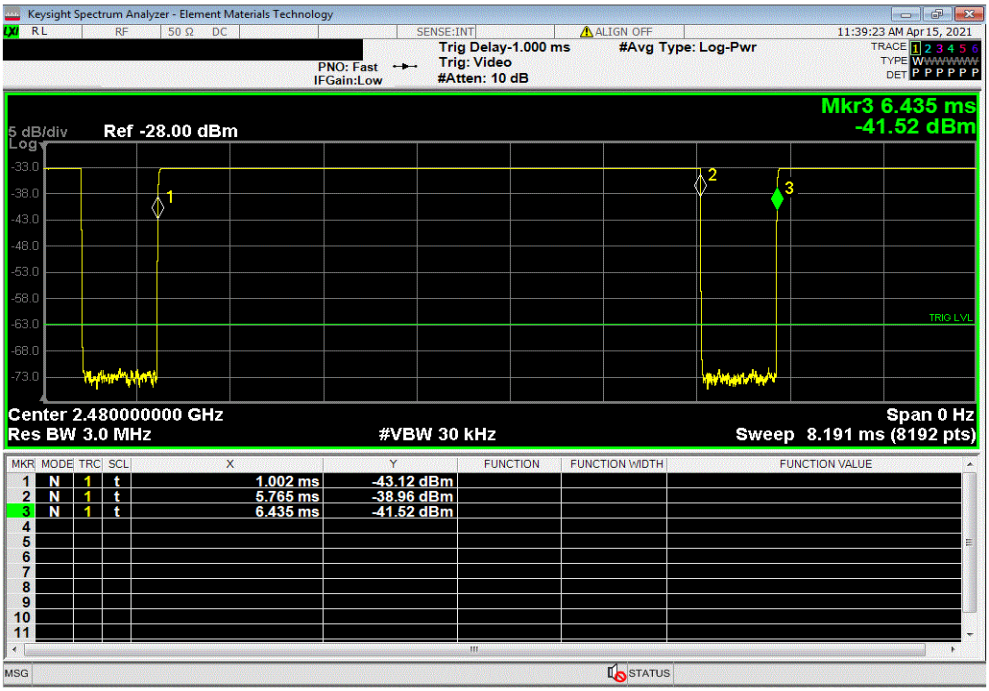


BLE LR 125 kbps Mid Channel, 2440 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

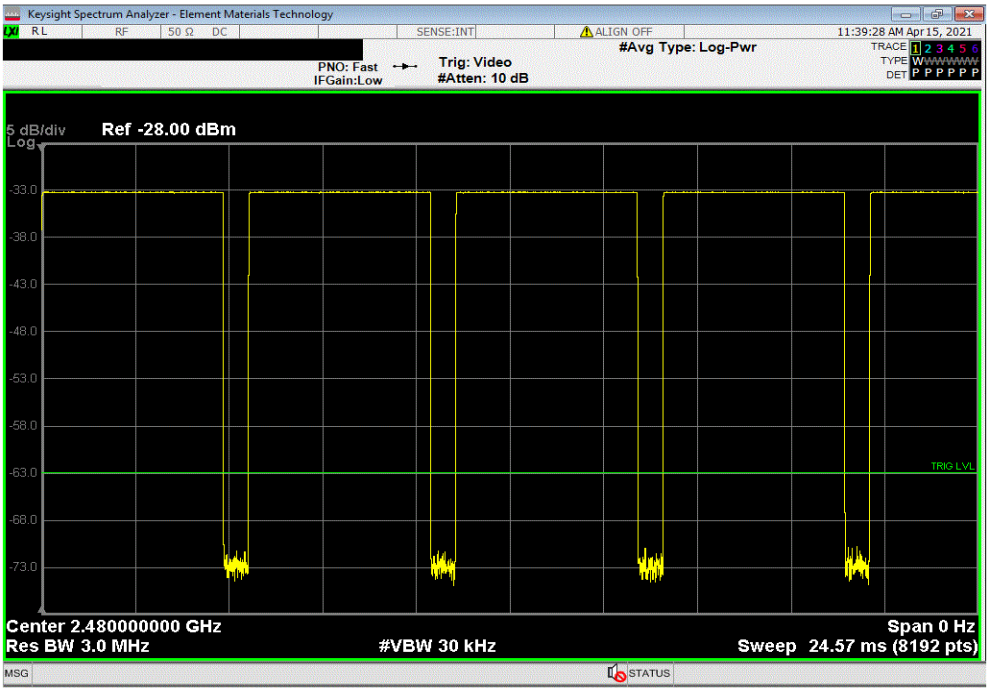


DUTY CYCLE

BLE LR 125 kbps High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	4.763 ms	5.433 ms	1	87.7	N/A	N/A



BLE LR 125 kbps High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



OCCUPIED BANDWIDTH

XMit 2020.12.30.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	2020-12-08	2021-12-08
Attenuator	Coaxicom	3910-20	AXZ	2021-02-15	2022-02-15
Amplifier - Pre-Amplifier	Miteq	F-3D-00100800-32-	PAG	2020-11-17	2021-11-17
Cable	N/A	uble Ridge Horn Ca	EVB	2020-11-17	2021-11-17
Antenna - Double Ridge	EMCO	3115	AHC	2020-07-01	2022-07-01
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	2020-06-25	2021-06-25

TEST DESCRIPTION

The EUT was set to the channels and modes listed in the datasheet.

The 6dB occupied bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The 99.0% occupied bandwidth was also measured at the same time which can be needed during Output Power depending on the applicable method.

OCCUPIED BANDWIDTH

TbtTx 2019.08.30.0 XMit 2020.12.30.0

EUT:	**RCKF2B**			**Work Order:**	**ONMS0003**
Serial Number:	**See configuration**			**Date:**	**14-Apr-21**
Customer:	**Continental Automotive Systems Inc**			**Temperature:**	**22.9 °C**
Attendees:	**None**			**Humidity:**	**26.7% RH**
Project:	**None**			**Barometric Pres.:**	**1024 mbar**
Tested by:	**Jeff Alcoke**	**Power:**	**12 VDC**	**Job Site:**	**EV01**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2021	ANSI C63.10:2013

COMMENTS

Analyzer AFO was used for BLE LR measurements.

DEVIATIONS FROM TEST STANDARD

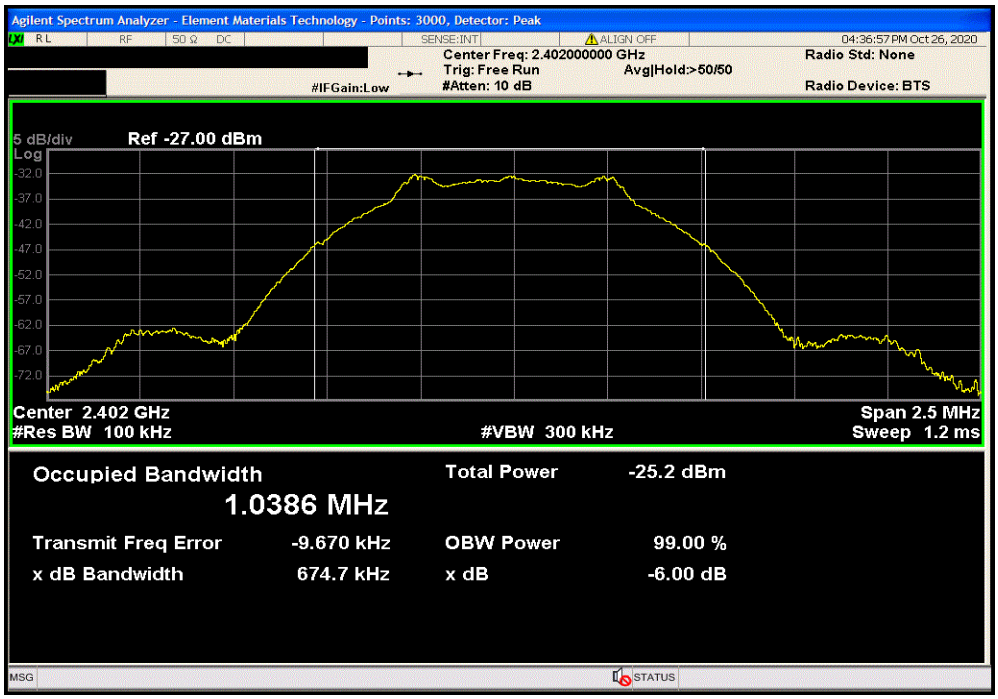
None

Configuration #	**1**	*Signature*

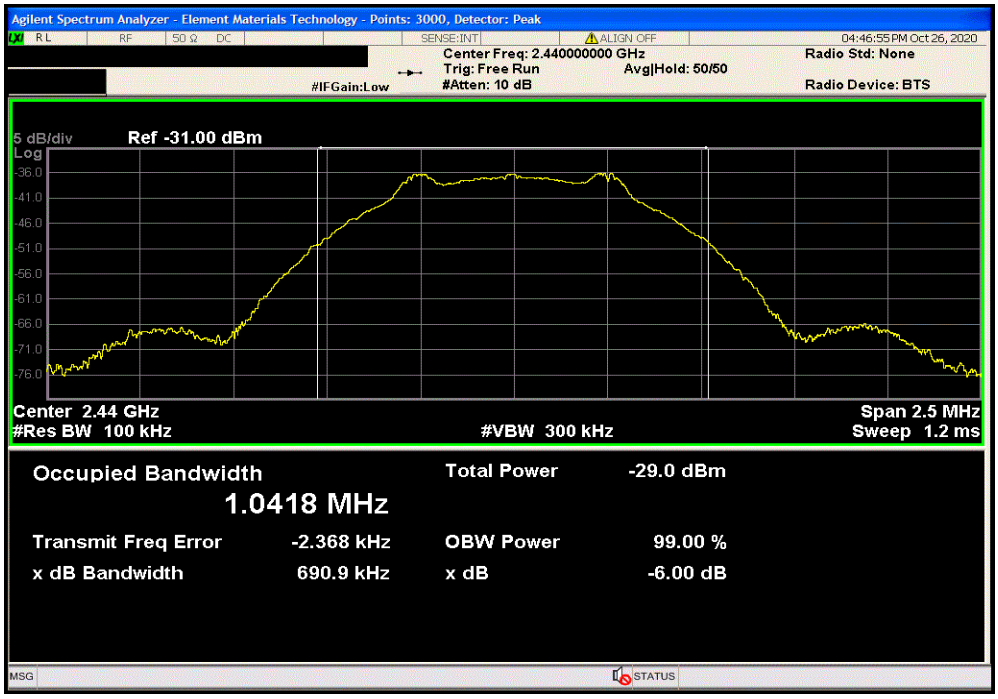
	Value	**Limit (≥)**	**Result**
BLE 1 Mbps Low Channel, 2402 MHz	674.721 kHz	500 kHz	Pass
BLE 1 Mbps Mid Channel, 2440 MHz	690.904 kHz	500 kHz	Pass
BLE 1 Mbps High Channel, 2480 MHz	679.864 kHz	500 kHz	Pass
BLE LR 125 kbps Low Channel, 2402 MHz	664.9 kHz	500 kHz	Pass
BLE LR 125 kbps Mid Channel, 2440 MHz	662.272 kHz	500 kHz	Pass
BLE LR 125 kbps High Channel, 2480 MHz	654.973 kHz	500 kHz	Pass

OCCUPIED BANDWIDTH

BLE 1 Mbps Low Channel, 2402 MHz						
				Value	Limit (≥)	Result
				674.721 kHz	500 kHz	Pass

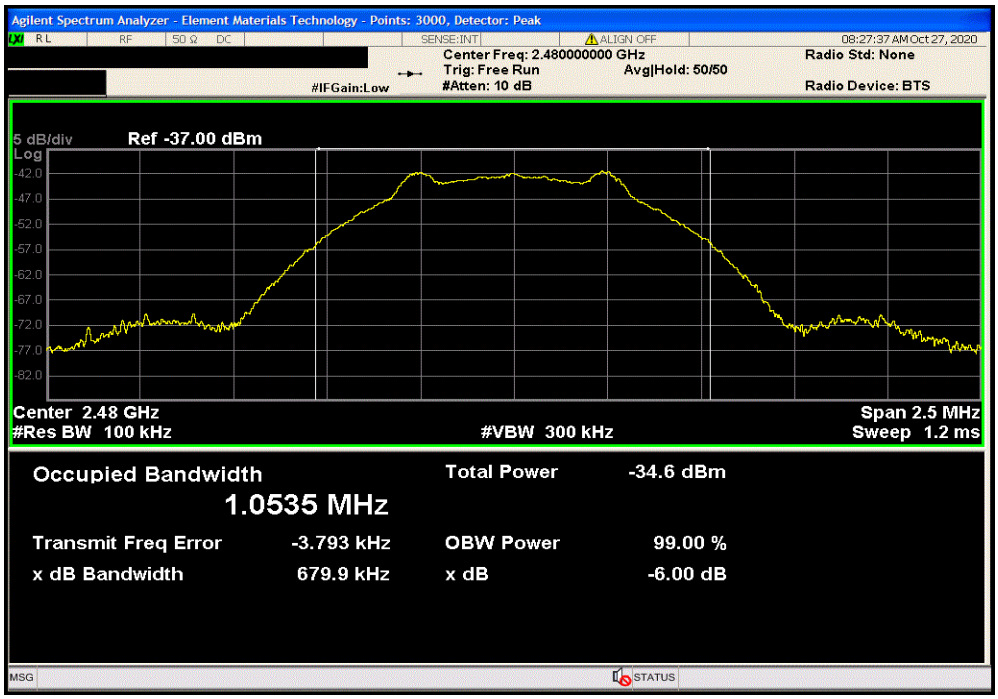


BLE 1 Mbps Mid Channel, 2440 MHz						
				Value	Limit (≥)	Result
				690.904 kHz	500 kHz	Pass

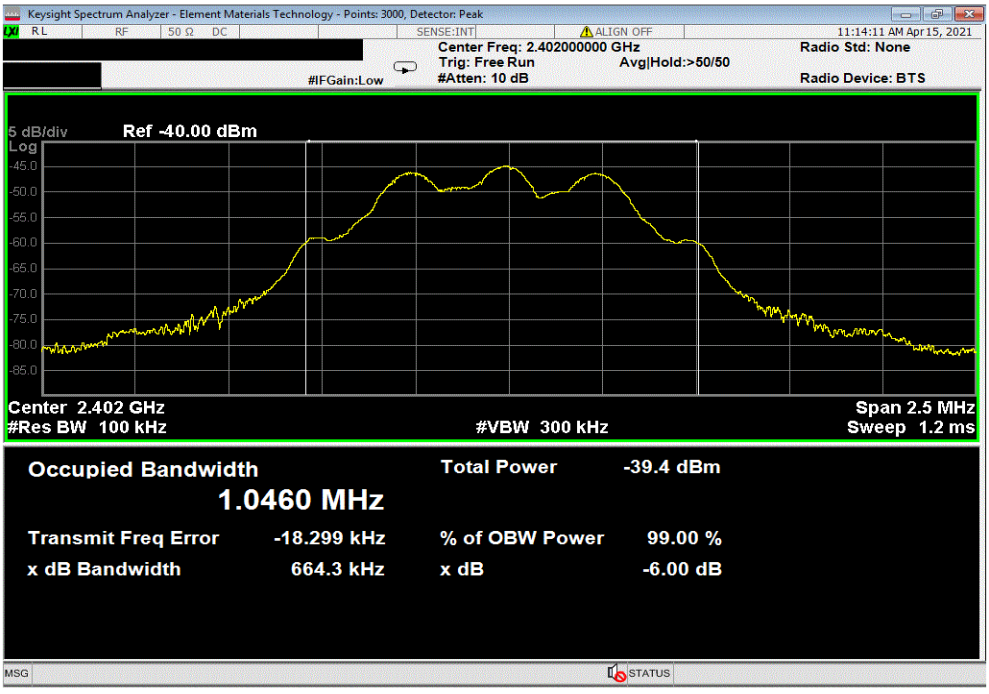


OCCUPIED BANDWIDTH

BLE 1 Mbps High Channel, 2480 MHz						
				Value	Limit (≥)	Result
				679.864 kHz	500 kHz	Pass

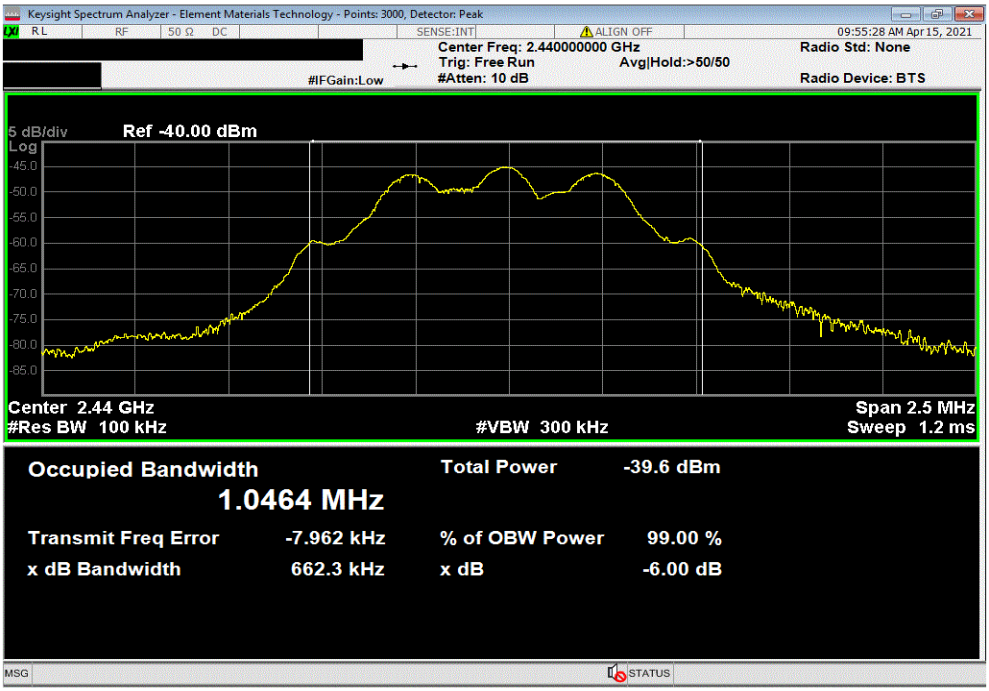


BLE LR 125 kbps Low Channel, 2402 MHz						
				Value	Limit (≥)	Result
				664.9 kHz	500 kHz	Pass

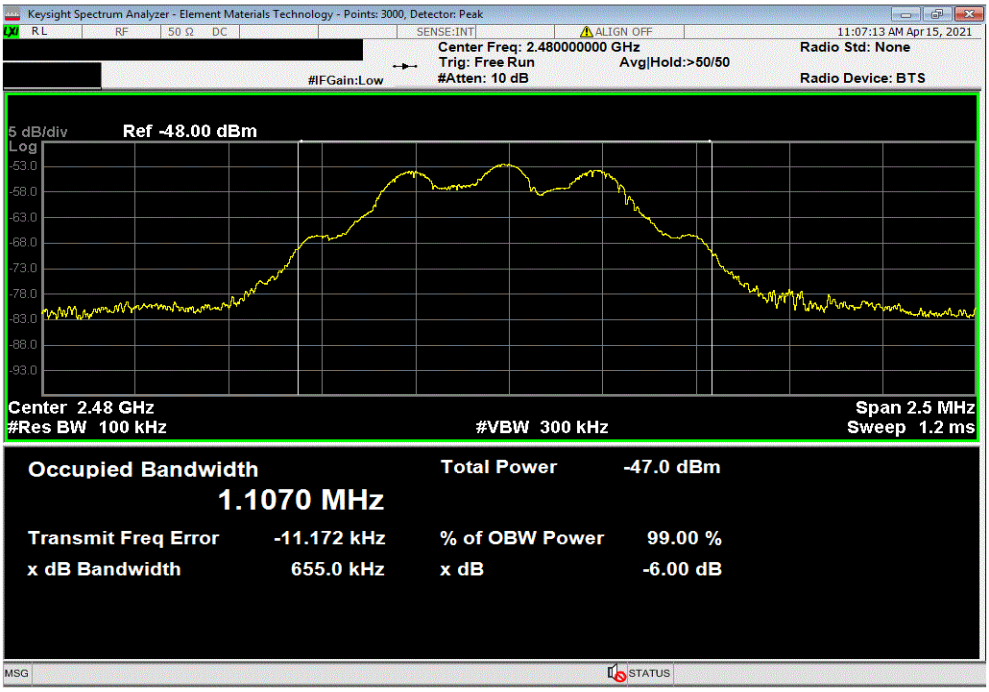


OCCUPIED BANDWIDTH

BLE LR 125 kbps Mid Channel, 2440 MHz						
				Value	Limit (≥)	Result
				662.272 kHz	500 kHz	Pass



BLE LR 125 kbps High Channel, 2480 MHz						
				Value	Limit (≥)	Result
				654.973 kHz	500 kHz	Pass



RADIATED POWER EIRP

XMit 2020.03.25.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Cable	N/A	Double Ridge Horn Cables	EVB	2020-11-17	2021-11-17
Antenna - Double Ridge	EMCO	3115	AHC	2020-07-01	2022-07-01
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	2020-06-25	2021-06-25
Power Supply - DC	Topward	TPS-2000	TPD	NCR	NCR

TEST DESCRIPTION

The measurement was made in a radiated configuration of the fundamental with the carrier fully maximized for its highest radiated power. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2013 section 11.9.1.1 was used for the measurements.

The conducted output power values were derived by subtracting the antenna gain in dBi from the Radiated Power EIRP values located elsewhere in this report. The worst-case radiated measurements for each operating channel are shown.

RADIATED POWER EIRP

TbtTx 2019.08.30.0 XMit 2020.03.25.0

EUT:	**RCKF2B**			**Work Order:**	**ONMS0003**
Serial Number:	**None**			**Date:**	**14-Apr-21**
Customer:	**Continental Automotive Systems Inc**			**Temperature:**	**22 °C**
Attendees:	**None**			**Humidity:**	**34.5% RH**
Project:	**None**			**Barometric Pres.:**	**1022 mbar**
Tested by:	**Jeff Alcoke**	**Power:**	**12 VDC**	**Job Site:**	**EV01**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2021	ANSI C63.10:2013

COMMENTS

Testing performed using power setting = High Power 31

DEVIATIONS FROM TEST STANDARD

None

Configuration #	**1**	*Signature*

	Radiated Power EIRP (dBm)	Antenna Gain (dBi)	Output Power (dBm)	Limit (dBm)	Results
BLE 1 Mbps Low Channel, 2402 MHz	-3.5	-1	-2.5	30	Pass
BLE 1 Mbps Mid Channel, 2440 MHz	-0.4	-1	0.6	30	Pass
BLE 1 Mbps High Channel, 2480 MHz	-7.0	-1	-6	30	Pass
BLE LR 125 kbps Low Channel, 2402 MHz	2.5	-1	3.5	30	Pass
BLE LR 125 kbps Mid Channel, 2440 MHz	3	-1	4	30	Pass
BLE LR 125 kbps High Channel, 2480 MHz	-3.8	-1	-2.8	30	Pass

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

PSA-ESCI 2021.01.22.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Continuous Tx BLE, Low Ch = 2402 MHz, Mid Ch = 2440 MHz, High Ch = 2480 MHz. Power Setting = High Power 31
BLE LR 125kbps, Low Ch = 2402 MHz, Mid Ch = 2440 MHz, High Ch = 2480 MHz. Power Setting = High Power 31

POWER SETTINGS INVESTIGATED

12 VDC

CONFIGURATIONS INVESTIGATED

ONMS0003 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	2400 MHz	Stop Frequency	2483.5 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Cable	N/A	Double Ridge Horn Cables	EVB	2020-11-17	2021-11-17
Antenna - Double Ridge	EMCO	3115	AHC	2020-07-01	2022-07-01
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	2020-06-25	2021-06-25
Power Supply - DC	Topward	TPS-2000	TPD	NCR	NCR

TEST DESCRIPTION

The peak output power was measured with the EUT set to low, middle and high transmit frequencies. A field strength measurement was made of the fundamental with the carrier fully maximized for its highest radiated power.

The final data was converted from field strength to radiated power using the equations found in ANSI C63.10:2013, Annex G.2.

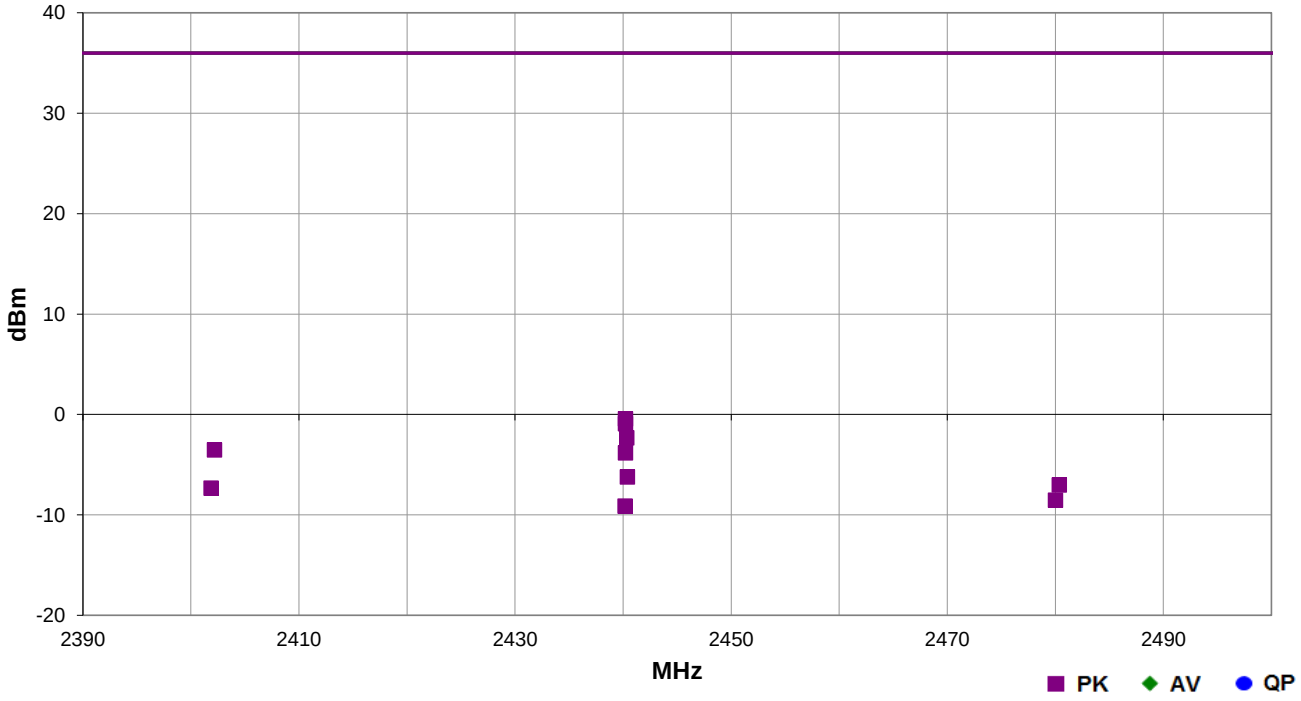
EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

EmiR5 2021.01.08.0 PSA-ESCI 2021.01.22.0

Work Order:	ONMS0003	**Date:**	2021-02-26		
Project:	None	**Temperature:**	22.2 °C		
Job Site:	EV01	**Humidity:**	34.5% RH		
Serial Number:	See Configuration	**Barometric Pres.:**	1022 mbar	**Tested by:**	Jeff Alcoke
EUT:	RCKF2B				
Configuration:	1				
Customer:	Continental Automotive Systems Inc				
Attendees:	None				
EUT Power:	12 VDC				
Operating Mode:	Continuous Tx BLE, Low Ch = 2402 MHz, Mid Ch = 2440 MHz, High Ch = 2480 MHz. Power Setting = High Power 31				
Deviations:	Nons				
Comments:	Testing performed using power setting = High Power 31				

Test Specifications	**Test Method**
FCC 15.247:2021	ANSI C63.10:2013

Run #	0	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	2402.183	1.48	151.0	Horz	PK	443.7E-6	-3.5	36.0	-39.5	Low Ch. BLE 1 Mbps, EUT on Side
	2401.867	1.43	60.0	Vert	PK	185.0E-6	-7.3	36.0	-43.3	Low Ch. BLE 1 Mbps, EUT on Side
	2440.217	1.08	155.0	Horz	PK	906.0E-6	-0.4	36.0	-36.4	Mid Ch. BLE 1 Mbps, EUT on Side
	2440.217	1.62	158.0	Horz	PK	807.5E-6	-0.9	36.0	-36.9	Mid Ch. BLE 1 Mbps, EUT Horz
	2440.333	1.35	142.0	Vert	PK	585.0E-6	-2.3	36.0	-38.3	Mid Ch. BLE 1 Mbps, EUT on Side
	2440.217	1.5	203.0	Horz	PK	414.1E-6	-3.8	36.0	-39.8	Mid Ch, BLE 1 Mbos, EUT Vert
	2440.400	1.45	196.0	Vert	PK	238.3E-6	-6.2	36.0	-42.2	Mid Ch, BLE 1 Mbos, EUT Vert
	2440.175	1.46	215.0	Vert	PK	122.2E-6	-9.1	36.0	-45.1	Mid Ch. BLE 1 Mbps, EUT Horz
	2480.367	1.17	141.0	Vert	PK	198.2E-6	-7.0	36.0	-43.0	High Ch, BLE 1 Mbps, EUT on Side
	2480.025	1.33	156.0	Horz	PK	140.3E-6	-8.5	36.0	-44.5	High Ch, BLE 1 Mbps, EUT on Side

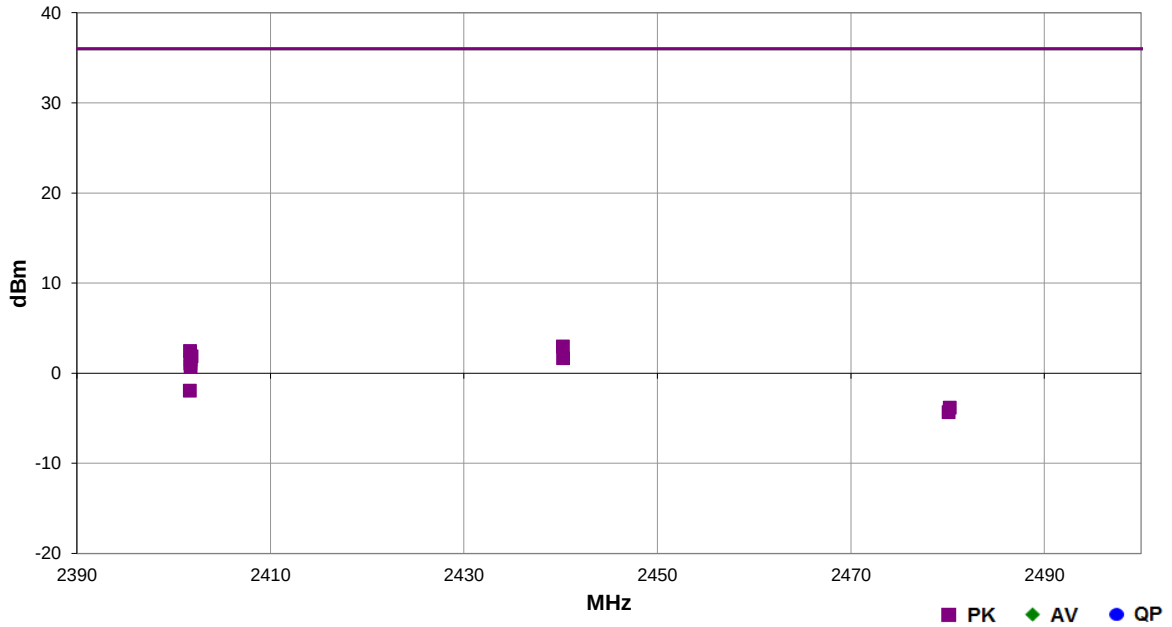
EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

EmiR5 2021.01.08.0 PSA-ESCI 2021.03.17.0

Work Order:	ONMS0003	**Date:**	2021-04-14		
Project:	None	**Temperature:**	22.2 °C		
Job Site:	EV01	**Humidity:**	27.3% RH		
Serial Number:	See Configuration	**Barometric Pres.:**	1025 mbar	**Tested by:**	Jeff Alcoke
EUT:	RCKF2B				
Configuration:	1				
Customer:	Continental Automotive Systems Inc.				
Attendees:	None				
EUT Power:	12 VDC				
Operating Mode:	BLE LR 125kbps, Low Ch = 2402 MHz, Mid Ch = 2440 MHz, High Ch = 2480 MHz. Power Setting = High Power 31				
Deviations:	None				
Comments:	Testing performed using power setting = High Power 31				

Test Specifications	**Test Method**
FCC 15.247:2021	ANSI C63.10:2013

Run #	39	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	2440.233	1.34	215.0	Horz	PK	2.0E-3	3.0	36.0	-33.0	Mid Ch, BLE LR 125kbps, EUT Horz
	2401.700	1.37	215.0	Horz	PK	1.8E-3	2.5	36.0	-33.5	Low Ch, BLE LR 125kbps, EUT Horz
	2401.842	3.02	196.0	Vert	PK	1.5E-3	1.9	36.0	-34.1	Low Ch, BLE LR 125kbps, EUT Vert
	2440.242	2.89	194.0	Vert	PK	1.5E-3	1.7	36.0	-34.3	Mid Ch, BLE LR 125kbps, EUT Vert
	2401.750	1.0	214.0	Vert	PK	1.4E-3	1.5	36.0	-34.5	Low Ch, BLE LR 125kbps, EUT on Side
	2401.725	1.56	216.0	Horz	PK	1.3E-3	1.1	36.0	-34.9	Low Ch, BLE LR 125kbps, EUT on Side
	2401.758	1.83	216.0	Horz	PK	1.2E-3	0.8	36.0	-35.2	Low Ch, BLE LR 125kbps, EUT Vert
	2401.667	1.43	231.0	Vert	PK	641.4E-6	-1.9	36.0	-37.9	Low Ch, BLE LR 125kbps, EUT Horz
	2480.208	1.53	216.0	Horz	PK	414.1E-6	-3.8	36.0	-39.8	High Ch, BLE LR 125kbps, EUT Horz
	2480.092	2.78	196.0	Vert	PK	369.1E-6	-4.3	36.0	-40.3	High Ch, BLE LR 125kbps, EUT Vert

POWER SPECTRAL DENSITY

XMit 2020.03.25.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Power Supply - DC	Topward	TPS-2000	TPD	NCR	NCR
Cable	N/A	Double Ridge Horn Cables	EVB	18-Nov-19	18-Nov-20
Antenna - Double Ridge	EMCO	3115	AHC	1-Jul-20	1-Jul-22
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	13-Dec-19	13-Dec-20
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFO	25-Jun-20	25-Jun-21

TEST DESCRIPTION

The measurement was made in a radiated configuration of the fundamental with the carrier fully maximized for its highest radiated power.

The maximum power spectral density measurements were measured with the EUT set to the required transmit frequencies in each band. The EUT was transmitting at the lowest, middle, and maximum data rate for each modulation type available.

Per the procedure outlined in ANSI C63.10:2013 Section 11.10.2, the peak power spectral density was measured.

The final data was converted from a field strength to a radiated power value by applying the following relationship:

$$P = \frac{4\pi d^2 E^2}{Z_0}$$

Where the power, P, is determined by the measurement distance, d = 3m, the impedance of free space in air, Z_0, and the measured field strength, E. The amplitude offset in the spectrum analyzer includes the antenna factor and cable loss. A factor of 11.77 dB is added to the marker amplitude to convert from field strength to EIRP. The antenna gain was subtracted from the EIRP value in the datasheet.

POWER SPECTRAL DENSITY

TbtTx 2019.08.30.0 XMit 2020.12.30.0

EUT:	RCKF2B			Work Order:	ONMS0003
Serial Number:	See configuration			Date:	14-Apr-21
Customer:	Continental Intelligent Transportation Systems			Temperature:	22.9 °C
Attendees:	None			Humidity:	26.7% RH
Project:	None			Barometric Pres.:	1024 mbar
Tested by:	Jeff Alcoke	Power:	12 VDC	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247:2021	ANSI C63.10:2013

COMMENTS

Spectrum analyzer AFO was used for BLE LR measurements.

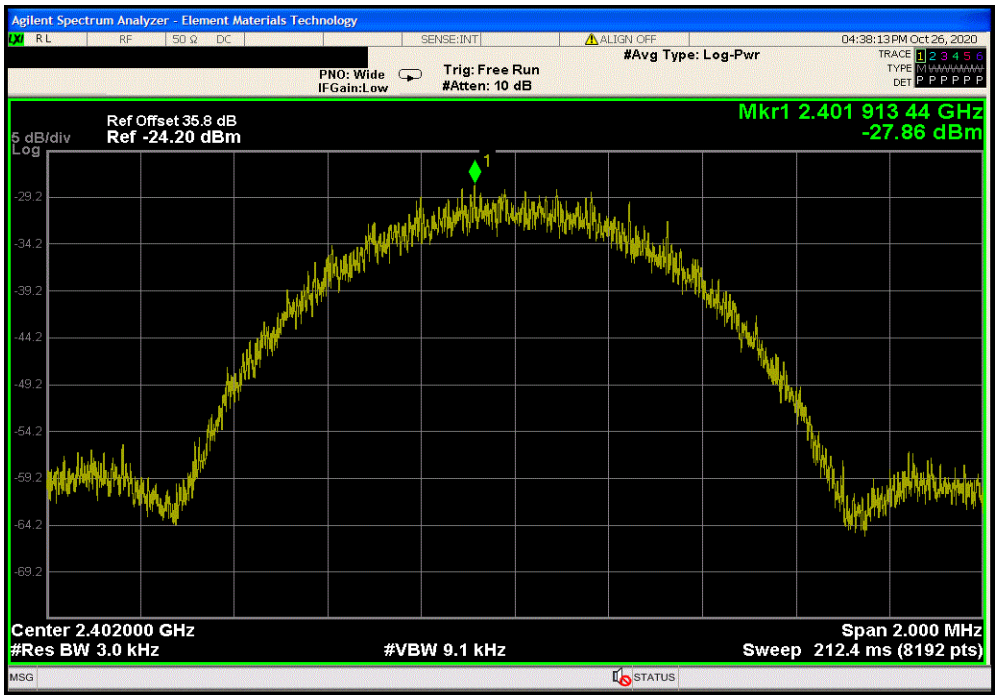
DEVIATIONS FROM TEST STANDARD

None

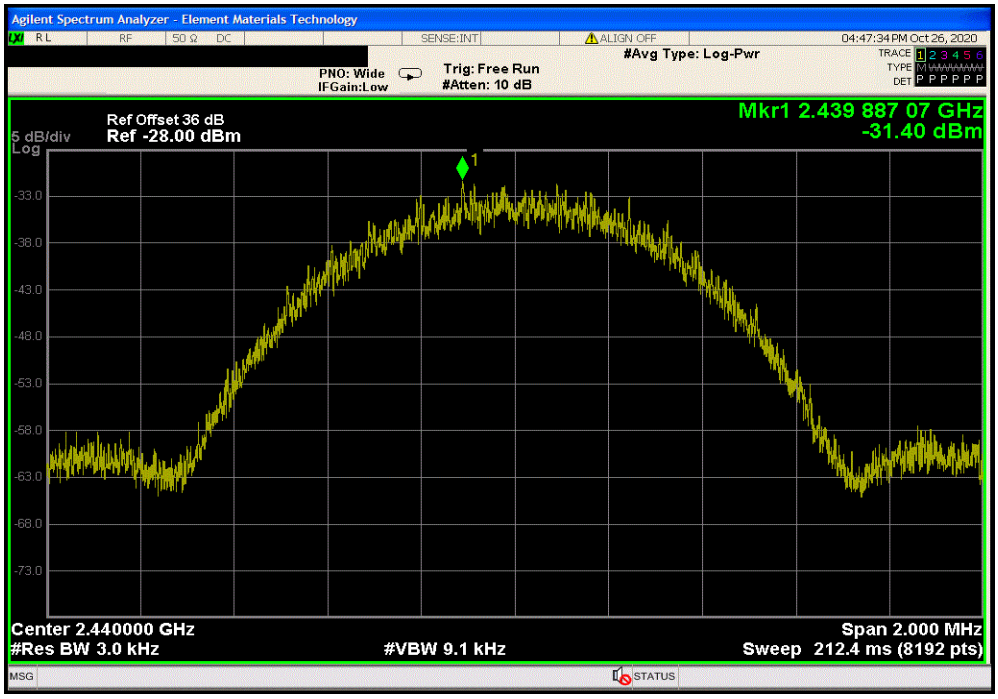
Configuration #	1	Signature

	Value dBm/3kHz	Correction Factor	Antenna Gain	PSD dBm/3kHz	Limit < dBm/3kHz	Results
BLE 1 Mbps Low Channel, 2402 MHz	-27.859	11.77	-1	-15.09	8	Pass
BLE 1 Mbps Mid Channel, 2440 MHz	-31.404	11.77	-1	-18.63	8	Pass
BLE 1 Mbps High Channel, 2480 MHz	-37.326	11.77	-1	-24.56	8	Pass
BLE LR 125 kbps Low Channel, 2402 MHz	-15.205	11.77	-1	-2.44	8	Pass
BLE LR 125 kbps Mid Channel, 2440 MHz	-15.030	11.77	-1	-2.26	8	Pass
BLE LR 125 kbps High Channel, 2480 MHz	-22.700	11.77	-1	-9.93	8	Pass

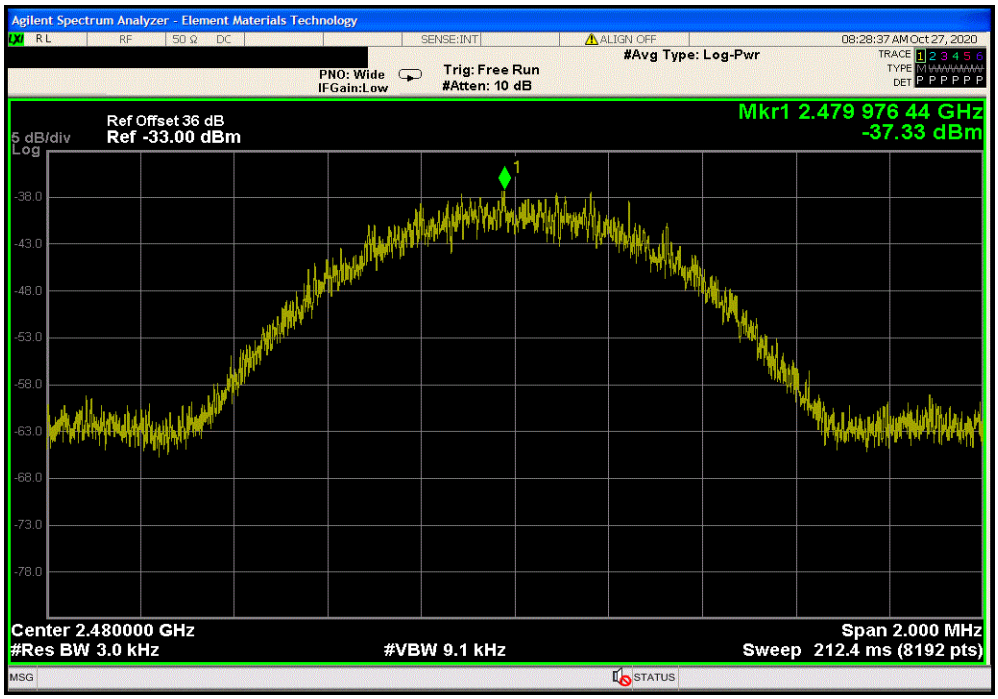
BLE 1 Mbps Low Channel, 2402 MHz						
	Value dBm/3kHz	Correction Factor	Antenna Gain	PSD dBm/3kHz	Limit < dBm/3kHz	Results
	-27.859	11.77	-1	-15.089	8	Pass



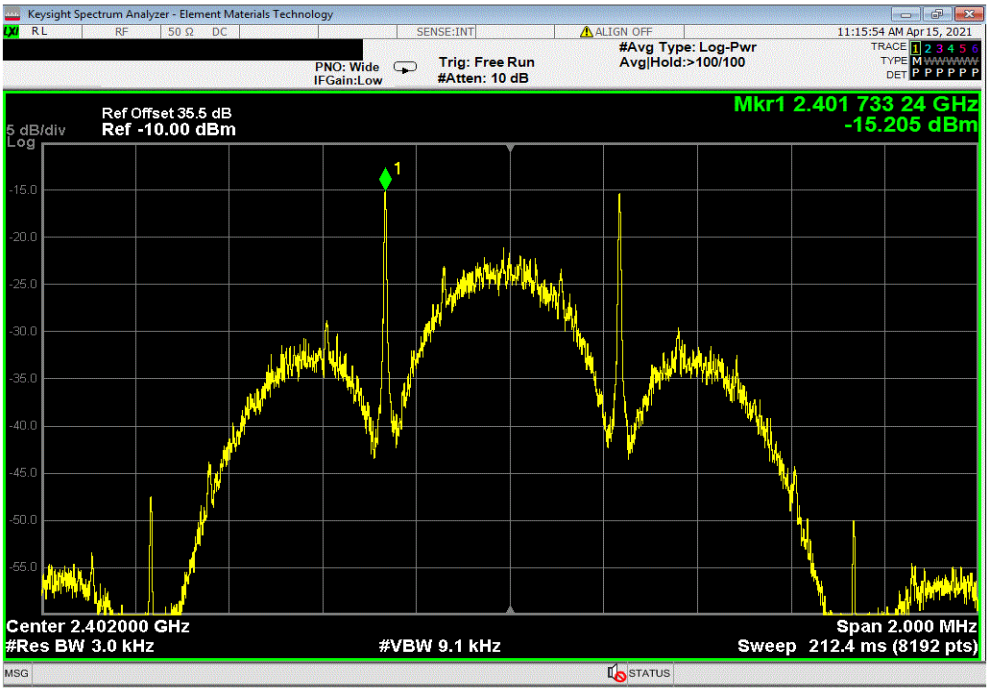
BLE 1 Mbps Mid Channel, 2440 MHz						
	Value dBm/3kHz	Correction Factor	Antenna Gain	PSD dBm/3kHz	Limit < dBm/3kHz	Results
	-31.404	11.77	-1	-18.634	8	Pass



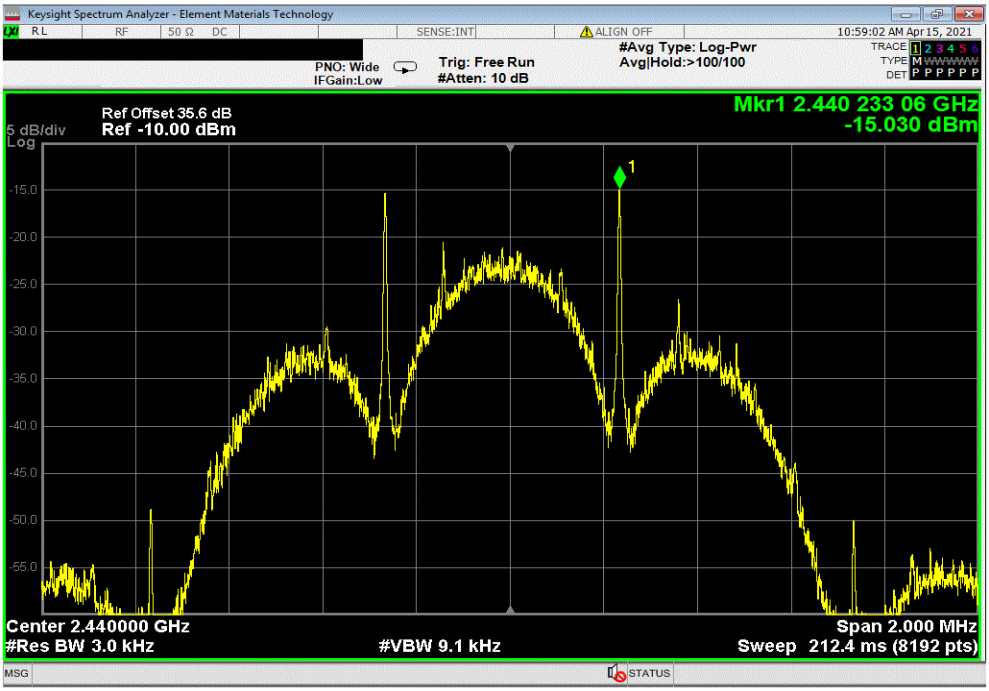
BLE 1 Mbps High Channel, 2480 MHz						
	Value dBm/3kHz	Correction Factor	Antenna Gain	PSD dBm/3kHz	Limit < dBm/3kHz	Results
	-37.326	11.77	-1	-24.556	8	Pass



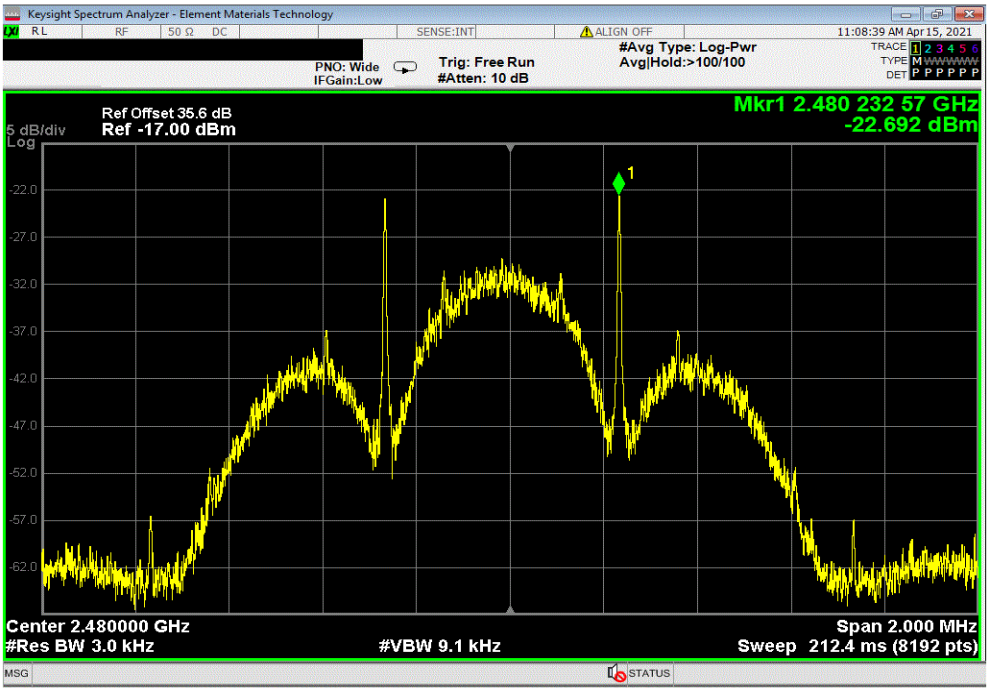
BLE LR 125 kbps Low Channel, 2402 MHz						
	Value dBm/3kHz	Correction Factor	Antenna Gain	PSD dBm/3kHz	Limit < dBm/3kHz	Results
	-15.205	11.77	-1	-2.435	8	Pass



BLE LR 125 kbps Mid Channel, 2440 MHz						
	Value dBm/3kHz	Correction Factor	Antenna Gain	PSD dBm/3kHz	Limit < dBm/3kHz	Results
	-15.03	11.77	-1	-2.26	8	Pass



BLE LR 125 kbps High Channel, 2480 MHz						
	Value dBm/3kHz	Correction Factor	Antenna Gain	PSD dBm/3kHz	Limit < dBm/3kHz	Results
	-22.7	11.77	-1	-9.93	8	Pass



BAND EDGE COMPLIANCE

XMit 2020.12.30.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Power Supply - DC	Topward	TPS-2000	TPD	NCR	NCR
Attenuator	Coaxicom	3910-20	AXZ	2021-02-15	2022-02-15
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	2020-12-08	2021-12-08
Amplifier - Pre-Amplifier	Miteq	F-3D-00100800-32-	PAG	2020-11-17	2021-11-17
Antenna - Double Ridge	EMCO	3115	AHC	2020-07-01	2022-07-01
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	2020-06-25	2021-06-25

TEST DESCRIPTION

The measurement was made in a radiated configuration of the fundamental with the carrier fully maximized for its highest radiated power.

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

BAND EDGE COMPLIANCE

TbtTx 2019.08.30.0 XMit 2020.12.30.0

EUT:	RCKF2B			Work Order:	ONMS0003
Serial Number:	See configuration			Date:	14-Apr-21
Customer:	Continental Automotive Systems Inc			Temperature:	22.9 °C
Attendees:	None			Humidity:	26.5% RH
Project:	None			Barometric Pres.:	1024 mbar
Tested by:	Jeff Alcoke	Power:	12 VDC	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247:2021	ANSI C63.10:2013

COMMENTS

Analyzer AFO was used for the BLE LR measurements.

DEVIATIONS FROM TEST STANDARD

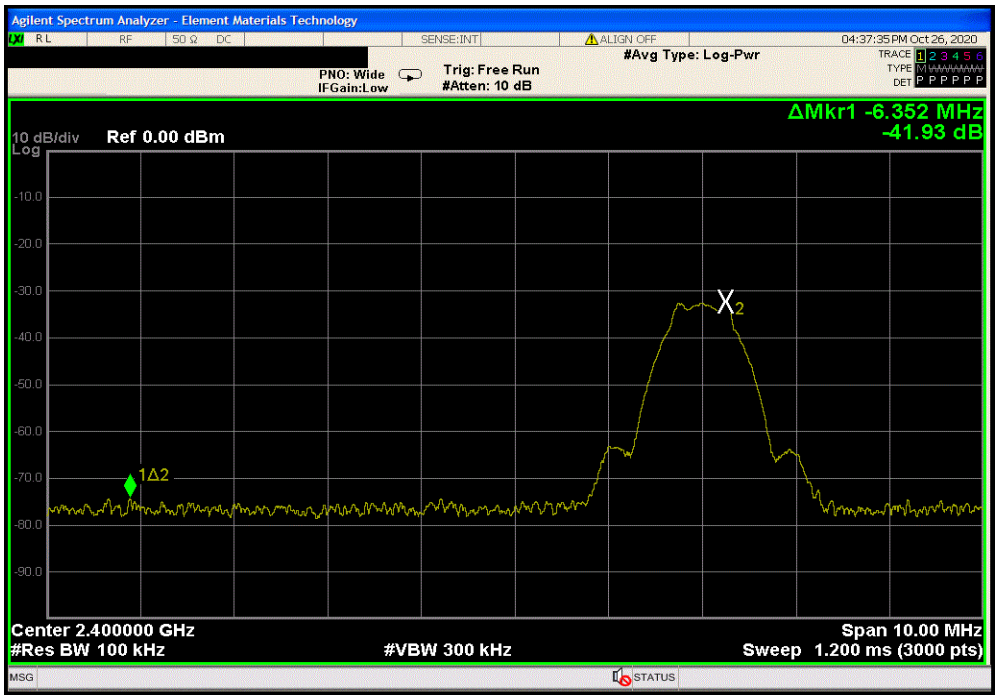
None

Configuration #	1	Signature

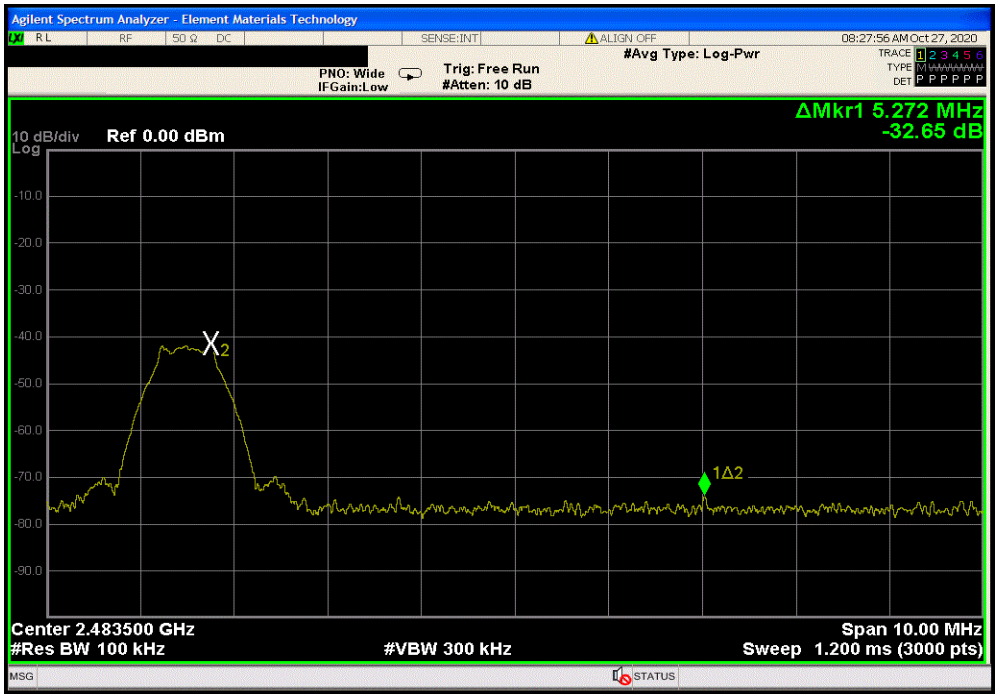
	Value (dBc)	Limit ≤ (dBc)	Result
BLE 1 Mbps Low Channel, 2402 MHz	-41.93	-20	Pass
BLE 1 Mbps High Channel, 2480 MHz	-32.65	-20	Pass
BLE LR 125 kbps Low Channel, 2402 MHz	-34.47	-20	Pass
BLE LR 125 kbps High Channel, 2480 MHz	-27.83	-20	Pass

BAND EDGE COMPLIANCE

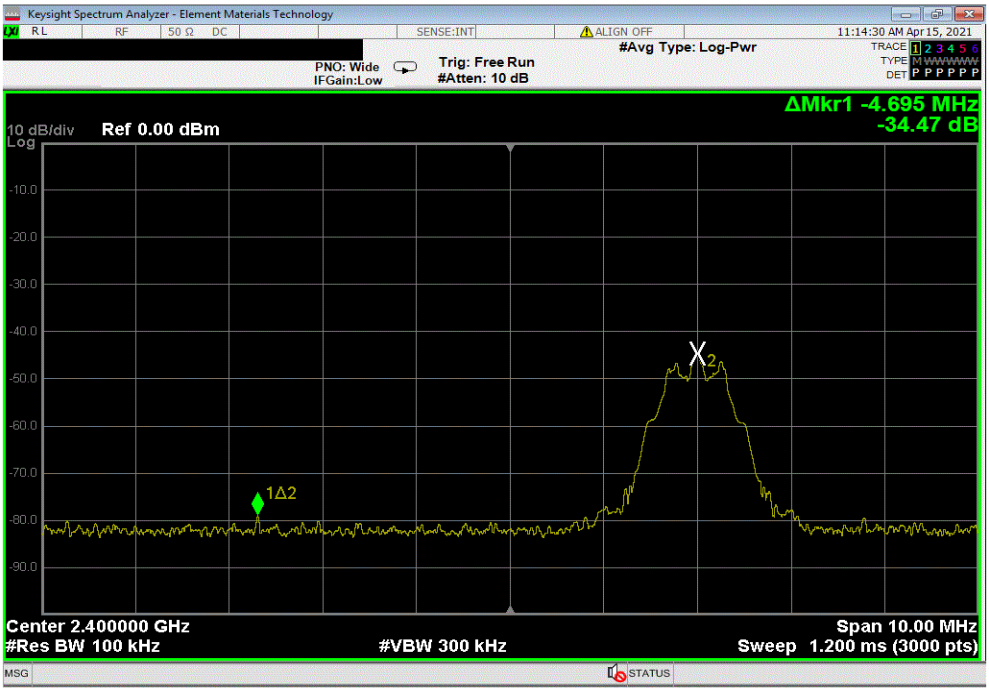
BLE 1 Mbps Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-41.93	-20	Pass



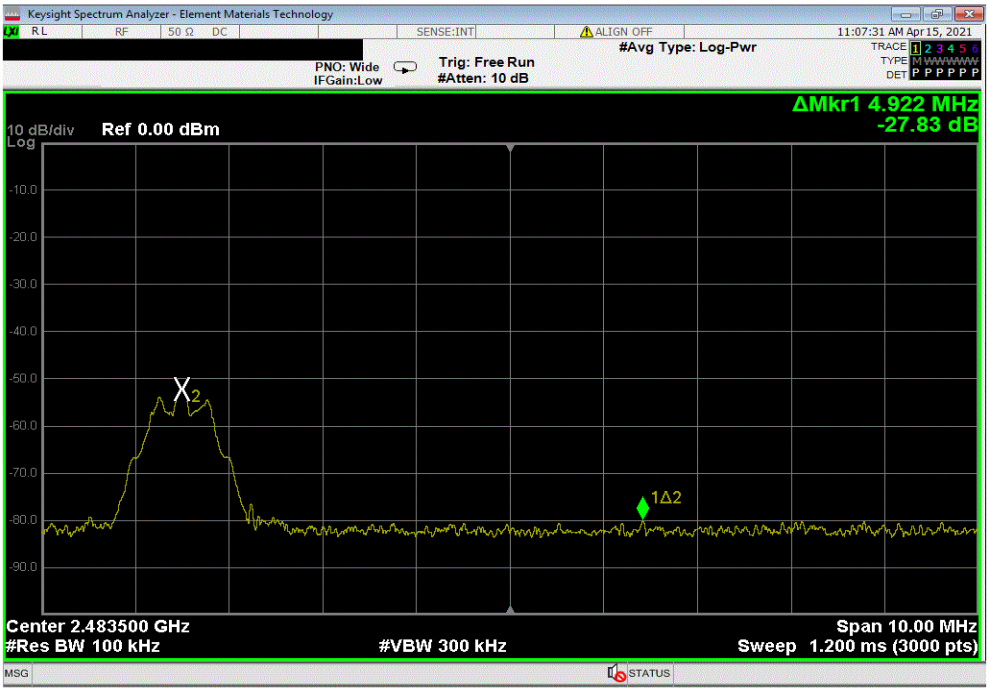
BLE 1 Mbps High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-32.65	-20	Pass



BLE LR 125 kbps Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-34.47	-20	Pass



BLE LR 125 kbps High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-27.83	-20	Pass



SPURIOUS CONDUCTED EMISSIONS

PSA-ESCI 2020.06.24.2

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Continuous Tx BLE, Low Ch = 2402 MHz, Mid Ch = 2440 MHz, High Ch = 2480 MHz. Power Setting = High Power 31

BLE LR 125kbps, Low Ch = 2402 MHz, Mid Ch = 2440 MHz, High Ch = 2480 MHz. Power Setting = High Power 31

POWER SETTINGS INVESTIGATED

12 VDC

CONFIGURATIONS INVESTIGATED

ONMS0003-1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26500 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Filter - Low Pass	Micro-Tronics	LPM50004	LFD	2020-02-15	12 mo
Cable	ESM Cable Corp.	TTBJ141-KMKM-72	EVY	2020-07-25	12 mo
Cable	None	Standard Gain Horns Cable	EVF	2019-11-19	12 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2019-11-18	12 mo
Cable	N/A	Bilog Cables	EVA	2019-11-18	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	2020-07-25	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2019-11-19	12 mo
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-08001200-30-10P	PAO	2019-11-19	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	2019-11-18	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	2019-11-18	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AIV	NCR	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHV	NCR	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHU	NCR	0 mo
Antenna - Double Ridge	EMCO	3115	AHC	2020-07-01	24 mo
Antenna - Biconilog	EMCO	3141	AXG	2019-07-23	24 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFO	2019-06-24	12 mo
Power Supply - DC	Topward	TPS-2000	TPD	NCR	NCR

TEST DESCRIPTION

The measurement was made in a radiated configuration of the fundamental with the carrier fully maximized for its highest radiated power.

The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

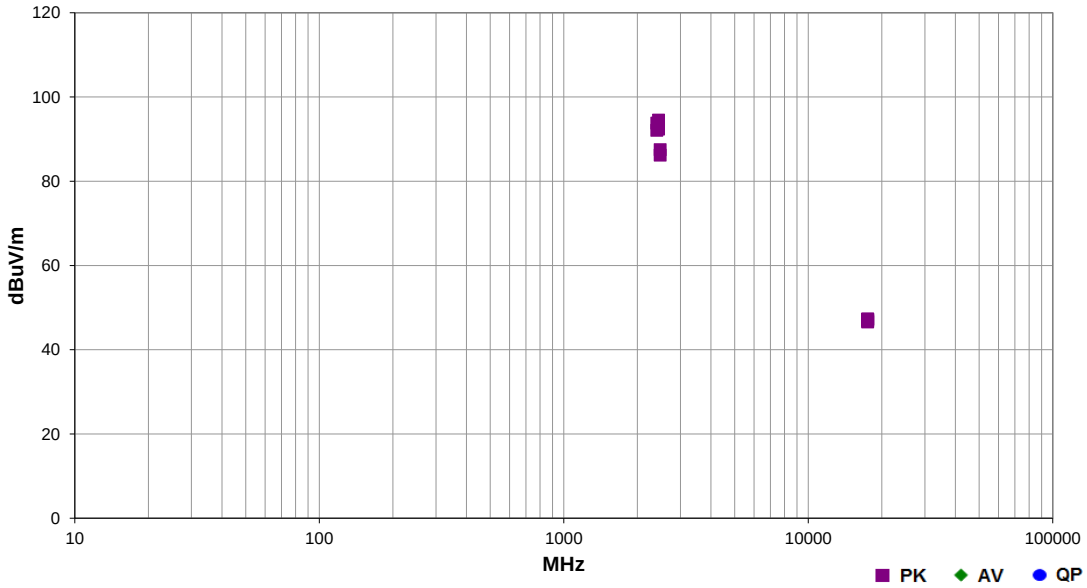
SPURIOUS CONDUCTED EMISSIONS

EmiR5 2021.01.08.0 PSA-ESCI 2021.03.17.0

Work Order:	ONMS0003	**Date:**	2021-04-16		
Project:	None	**Temperature:**	22.3 °C		
Job Site:	EV01	**Humidity:**	33.9% RH		
Serial Number:	See configuration	**Barometric Pres.:**	1024 mbar	**Tested by:**	Jeff Alcoke
EUT:	RCKF2B				
Configuration:	1				
Customer:	Continental Automotive Systems Inc				
Attendees:	Jim O'brien				
EUT Power:	12 VDC				
Operating Mode:	Continuous Tx, BLE, Low Channel = 2402 MHz, Mid Channel = 2440 MHz, High Channel = 2480 MHz. Power Setting = High power 31				
Deviations:	None				
Comments:	Please reference data comments below for Channel, data rate, and EUT orientation.				

Test Specifications	**Test Method**
FCC 15.247:2021	ANSI C63.10:2013

Run #	36	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBc)	Compared to Spec. (dB)	Comments
2402.233	75.6	-3.5	1.5	200.0	3.0	20.0	Horz	PK	0.0	92.1	N/A		Low Ch, BLE 1Mbps, EUT on Side
17498.910	26.3	20.7	1.5	200.0	3.0	0.0	Horz	PK	0.0	47.0	-20.0	-45.1	Low Ch, BLE 1Mbps, EUT on Side
2440.242	75.9	-3.5	2.3	194.0	3.0	20.0	Horz	PK	0.0	92.4	N/A		Mid Ch, BLE 1Mbps, EUT on Side
17501.880	25.9	20.7	2.3	194.0	3.0	0.0	Horz	PK	0.0	46.6	-20.0	-45.8	Mid Ch, BLE 1Mbps EUT on side
2480.233	69.8	-3.6	2.0	195.0	3.0	20.0	Horz	PK	0.0	86.2	N/A		High Ch, BLE 1Mbps, EUT on side
17499.650	26.5	20.7	2.0	195.0	3.0	0.0	Horz	PK	0.0	47.2	-20.0	-39.0	High Ch, BLE 1Mbps, EUT on Side
2402.000	77.3	-3.5	1.5	200.0	3.0	20.0	Horz	PK	0.0	93.8	N/A		Low Ch, BLE LR 125kbps, EUT on Side
17500.230	26.6	20.7	1.5	200.0	3.0	0.0	Horz	PK	0.0	47.3	-20.0	-46.5	Low Ch, BLE LR 125kbps, EUT on Side
2439.992	78.0	-3.5	2.3	194.0	3.0	20.0	Horz	PK	0.0	94.5	N/A		Mid Ch, BLE LR 125kbps, EUT on Side
17500.600	26.1	20.7	2.3	194.0	3.0	0.0	Horz	PK	0.0	46.8	-20.0	-47.7	Mid Ch, BLE LR 125kbps, EUT on Side
2479.967	71.1	-3.6	2.0	195.0	3.0	20.0	Horz	PK	0.0	87.5	N/A		High Ch, BLE LR 125kbps, EUT on side
17502.240	26.5	20.7	2.0	195.0	3.0	0.0	Horz	PK	0.0	47.2	-20.0	-40.3	High Ch, BLE LR 125kbps, EUT on Side