



Supra, A Division of UTCFS

Supra eKEY Fob

FCC 15.247:2014 DTS

Report #: SUPR0120.2



Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – www.nwemc.com

California – Minnesota – Oregon – New York – Washington

CERTIFICATE OF TEST

Last Date of Test: May 9, 2014
Supra, A Division of UTCFS
Model: Supra eKEY Fob

Test Description	Specification	Test Method	Pass/Fail
Occupied Bandwidth	FCC 15.247:2014	ANSI C63.10:2009	Pass
Output Power	FCC 15.247:2014	ANSI C63.10:2009	Pass
Power Spectral Density	FCC 15.247:2014	ANSI C63.10:2009	Pass
Band Edge Compliance	FCC 15.247:2014	ANSI C63.10:2009	Pass
Spurious Conducted Emissions	FCC 15.247:2014	ANSI C63.10:2009	Pass
Spurious Radiated Emissions	FCC 15.247:2014	ANSI C63.10:2009	Pass

Deviations From Test Standards

None

Approved By:



Kyle Holgate, Operations Manager



NVLAP Lab Code: 200630-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

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. This Report may only be duplicated in its entirety. 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.

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

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 Guide 65 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

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

Korea

KCC / 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.

Hong Kong

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

Vietnam

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

Russia

GOST – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards.

SCOPE

For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/accreditations/>

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.

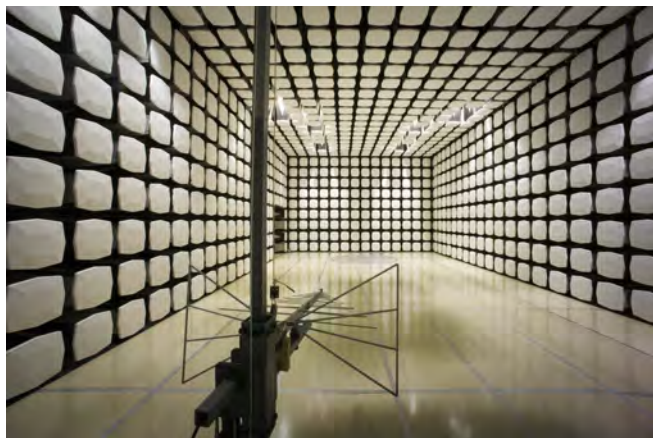
A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is on each data sheet. Our measurement 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 16-4-1 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 (Hz)	0.12	-0.01
Amplitude Accuracy (dB)	0.49	-0.49
Conducted Power (dB)	0.41	-0.41
Radiated Power via Substitution (dB)	0.69	-0.68
Temperature (degrees C)	0.81	-0.81
Humidity (% RH)	2.89	-2.89
Field Strength (dB)	4.00	-4.00
AC Powerline Conducted Emissions (dB)	2.70	-2.70



Oregon Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	California Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	New York Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	Minnesota Labs MN01-08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	Washington Labs NC01-05, SU02, SU07 19201 120 th Ave. NE Bothell, WA 98011 (425) 984-6600
VCCI				
A-0108	A-0029		A-0109	A-0110
Industry Canada				
2834D-1, 2834D-2	2834B-1, 2834B-2, 2834B-3		2834E-1	2834F-1
NVLAP				
NVLAP Lab Code: 200630-0	NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200629-0





PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Supra, A Division of UTCFS
Address:	4001 Fairview Industrial Drive SE
City, State, Zip:	Salem, OR 97302-0167
Test Requested By:	Dean Sinn
Model:	Supra eKEY Fob
First Date of Test:	May 08, 2014
Last Date of Test:	May 09, 2014
Receipt Date of Samples:	May 01, 2014
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
The Supra eKEY Fob is a device used to translate the Bluetooth signal from your eKEY enabled smartphone to an infrared signal that can be recognized by an iBox, iBox BT and iBox BT LE.
Testing Objective:
To demonstrate compliance to FCC 15.247 requirements for the DTS portion.

Configuration SUPR0120- 1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Fob	Supra, A Division of UTCFS	Supra eKEY Fob	0161

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Extended Battery 3v Lithium	Varta Microbattery	Varta CR2/3AH	None

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	5/8/2014	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	5/8/2014	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	5/8/2014	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	5/8/2014	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	5/8/2014	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	5/9/2014	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

DUTY CYCLE

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 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.

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. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used

The test software provided for operation in a fixed, single channel mode allows the EUT to operate continuously at 100% Duty Cycle.

OCCUPIED BANDWIDTH

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.	Interval
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
40GHz DC Block	Miteq	DCB4000	AMD	4/28/2014	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/30/2013	12
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	24

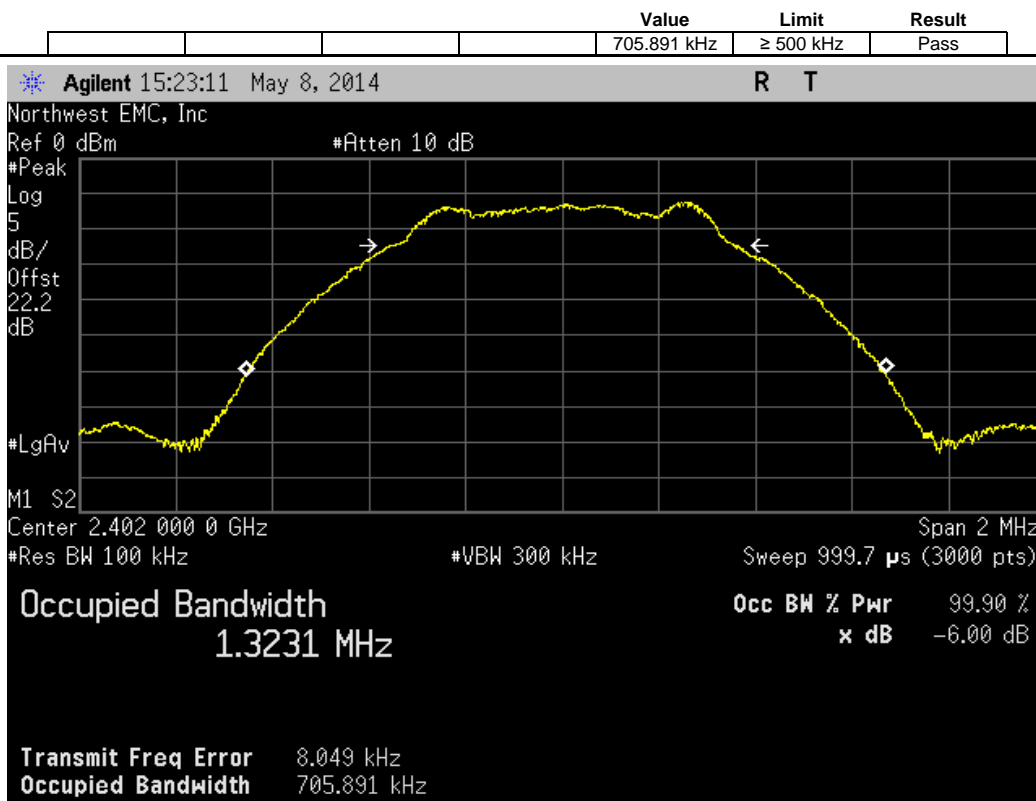
TEST DESCRIPTION

The 6dB occupied bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The 99.9% (approximate 26 dB) emission bandwidth (EBW) was also measured at the same time.

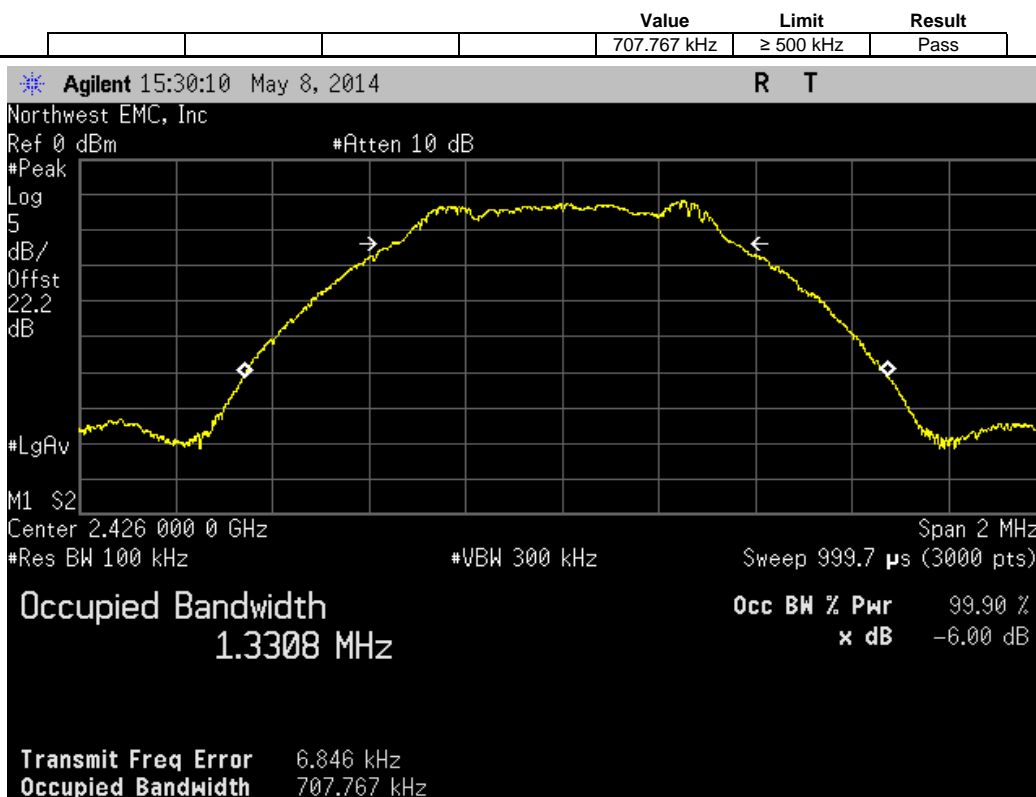
The EUT was set to low, medium and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet.

EUT: Supra eKEY Fob		Work Order: SUPR0120	
Serial Number: 0161		Date: 05/08/14	
Customer: Supra, A Division of UTCFS		Temperature: 22.2°C	
Attendees: None		Humidity: 43%	
Project: eKey Fob4		Barometric Pres.: 1006.7	
Tested by: Jared Ison		Power: Battery	Job Site: EV06
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2014		ANSI C63.10:2009	
COMMENTS			
Mode of operation tested were client provided.			
DEVIATIONS FROM TEST STANDARD			
Configuration #	1		
		Value	Limit
BLE - Advertising			Result
Low Channel, 2402 MHz		705.891 kHz	≥ 500 kHz
Mid Channel, 2426 MHz		707.767 kHz	≥ 500 kHz
High Channel, 2480 MHz		706.459 kHz	≥ 500 kHz
BLE - Data			
Low Channel, 2404 MHz		710.504 kHz	≥ 500 kHz
Mid Channel, 2442 MHz		704.854 kHz	≥ 500 kHz
High Channel, 2478 MHz		708.892 kHz	≥ 500 kHz

BLE - Advertising, Low Channel, 2402 MHz

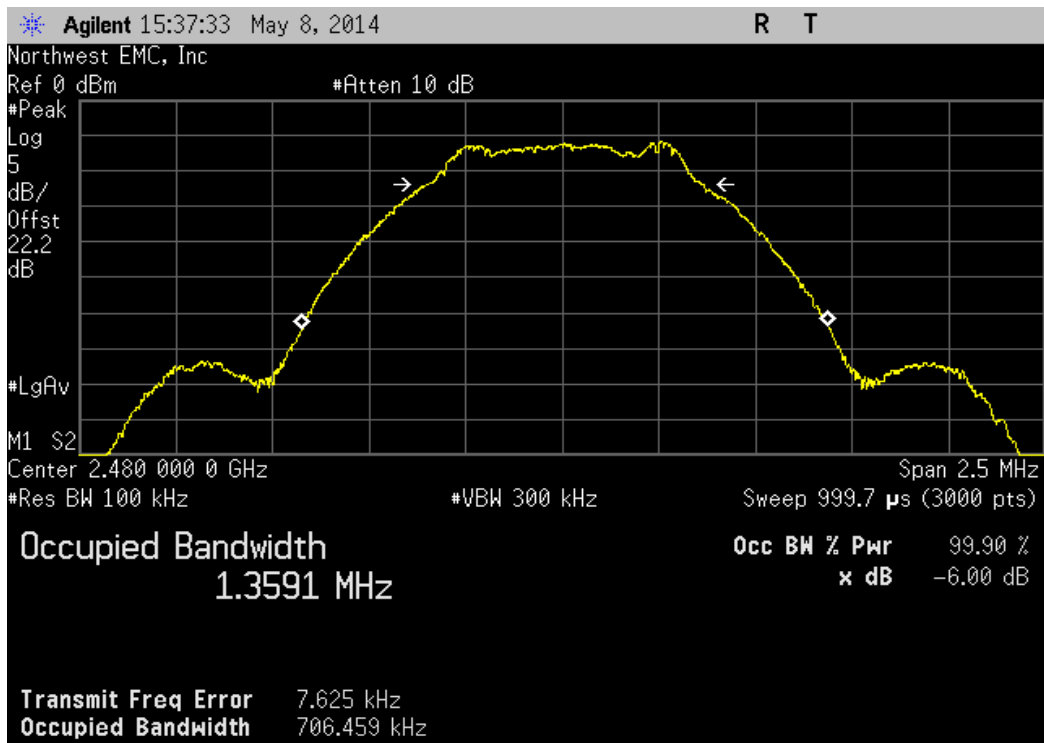


BLE - Advertising, Mid Channel, 2426 MHz



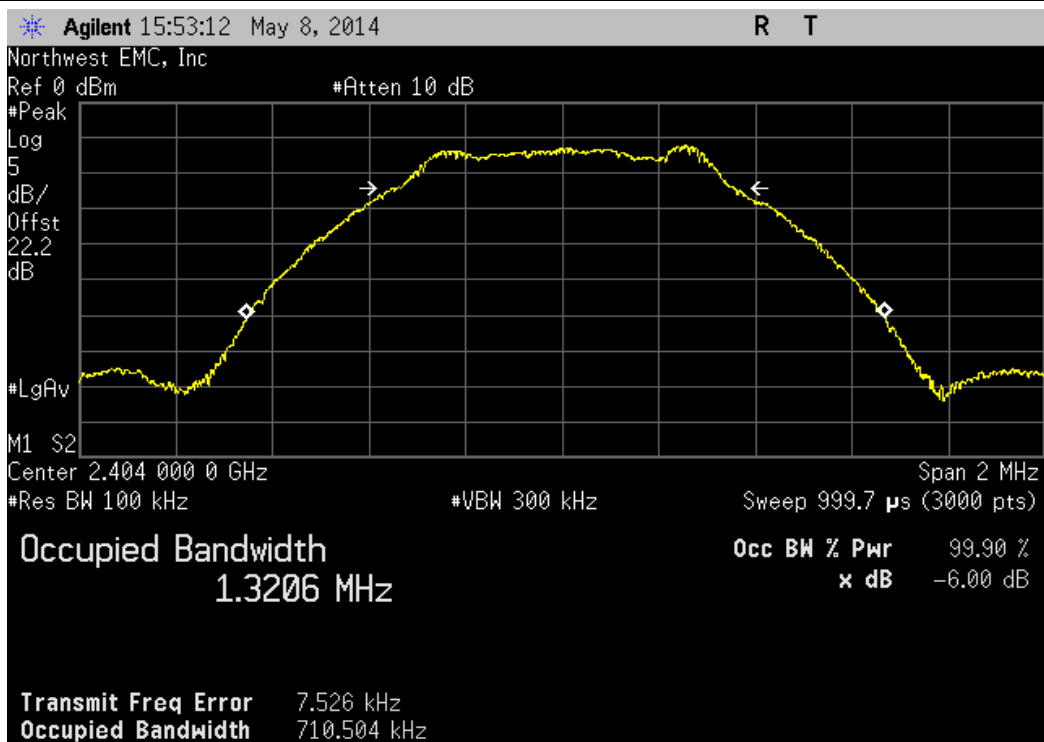
BLE - Advertising, High Channel, 2480 MHz

				Value	Limit	Result
				706.459 kHz	≥ 500 kHz	Pass

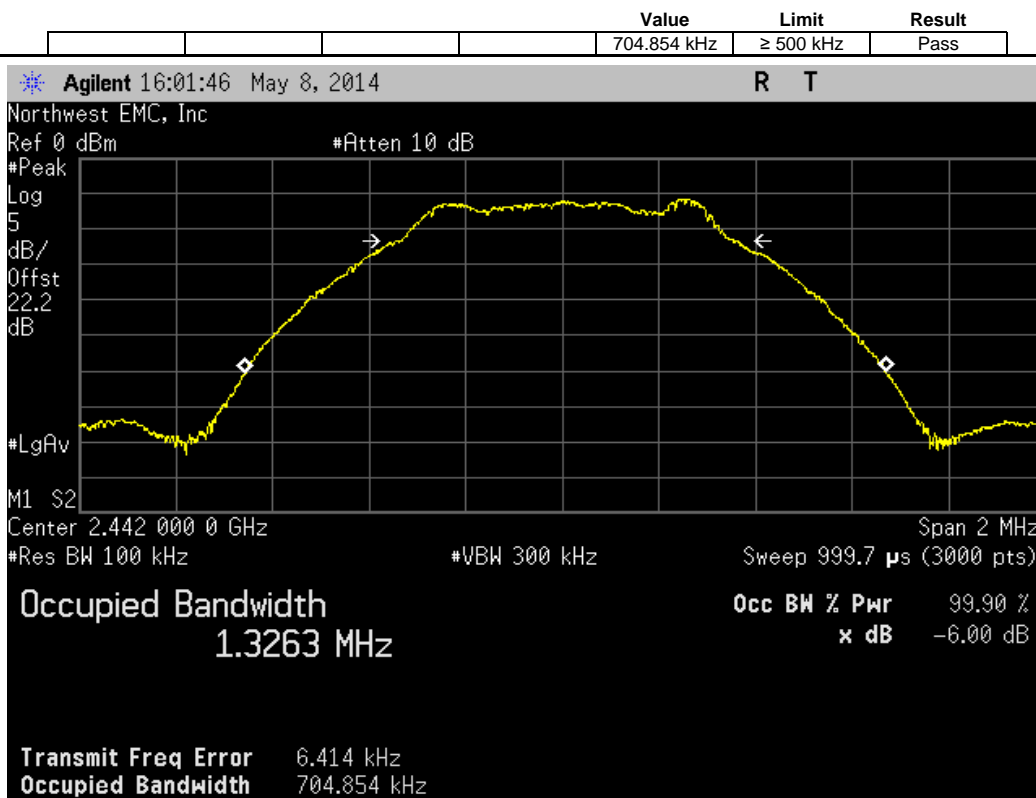


BLE - Data, Low Channel, 2404 MHz

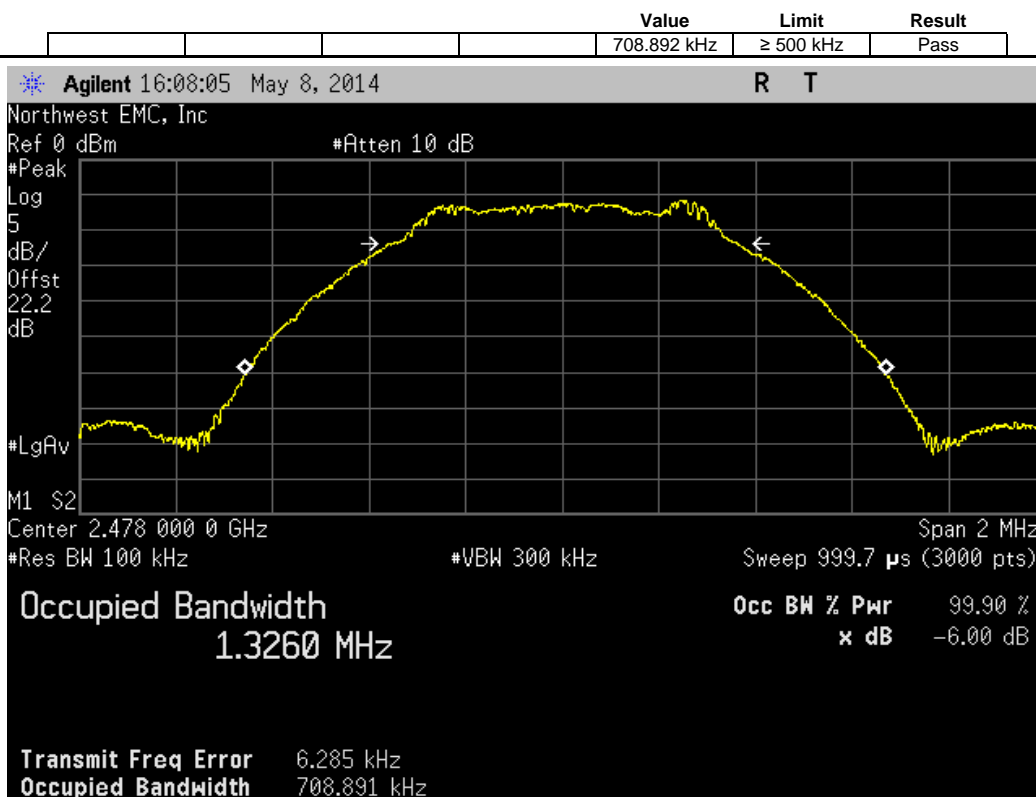
				Value	Limit	Result
				710.504 kHz	≥ 500 kHz	Pass



BLE - Data, Mid Channel, 2442 MHz



BLE - Data, High Channel, 2478 MHz



OUTPUT POWER

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.	Interval
40GHz DC Block	Miteq	DCB4000	AMD	4/28/2014	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/30/2013	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	24

TEST DESCRIPTION

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring peak transmit power the DTS bandwidth (B) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring Maximum Conducted Output Power. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.


The method found in KDB 558074 DTS D01 Measurement Section 9.1.1 was used because the RBW on the analyzer was greater than the DTS bandwidth of the radio.

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36 dBm.



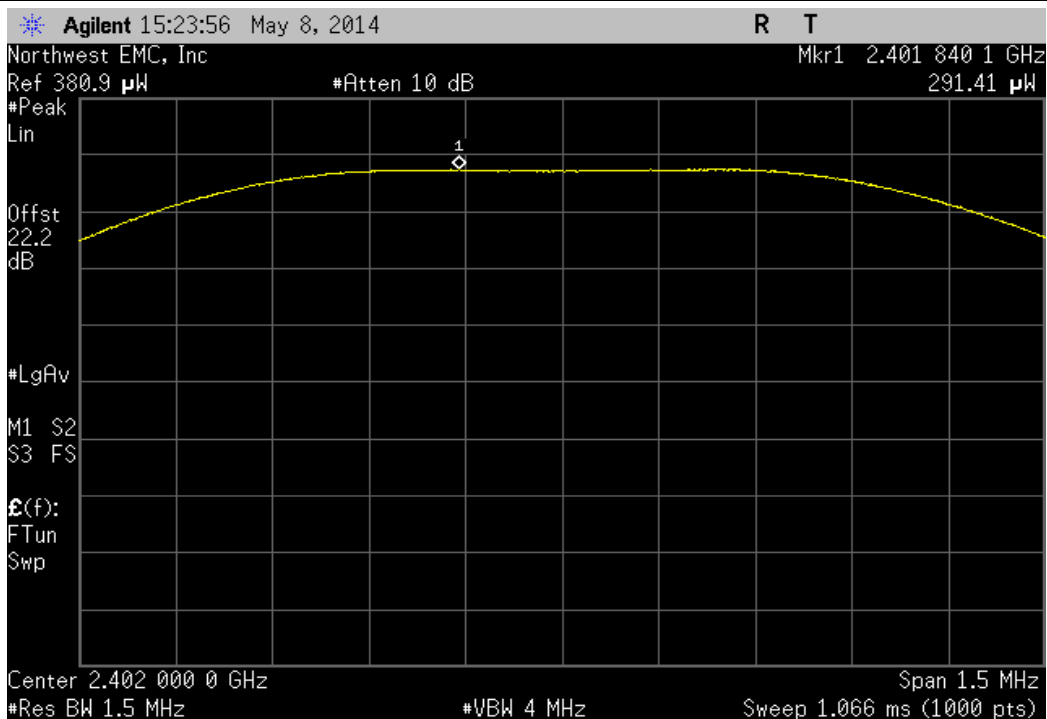
OUTPUT POWER

XMit 2014.02.07
PsaTx 2014.04.01

EUT: Supra eKEY Fob		Work Order: SUPR0120	
Serial Number: 0161		Date: 05/08/14	
Customer: Supra, A Division of UTCFS		Temperature: 22.2°C	
Attendees: None		Humidity: 43%	
Project: eKey Fob4		Barometric Pres.: 1006.7	
Tested by: Jared Ison		Power: Battery	
		Job Site: EV06	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2014		ANSI C63.10:2009	
COMMENTS			
Mode of operation tested were client provided.			
DEVIATIONS FROM TEST STANDARD			
Configuration #	1	Signature 	
		Value	Limit
BLE - Advertising			Result
Low Channel, 2402 MHz		291.407 uW	< 1 W
Mid Channel, 2426 MHz		315.791 uW	< 1 W
High Channel, 2480 MHz		322.626 uW	< 1 W
BLE - Data			
Low Channel, 2404 MHz		298.195 uW	< 1 W
Mid Channel, 2442 MHz		326.062 uW	< 1 W
High Channel, 2478 MHz		322.775 uW	< 1 W

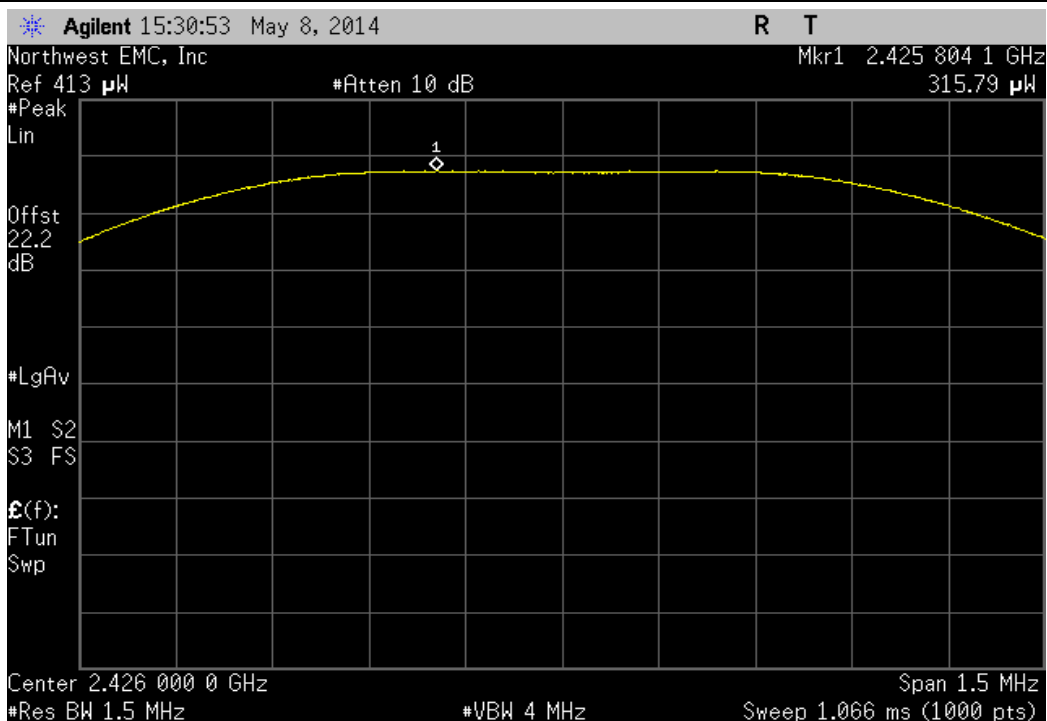
BLE - Advertising, Low Channel, 2402 MHz

	Value	Limit	Result
	291.407 uW	< 1 W	Pass



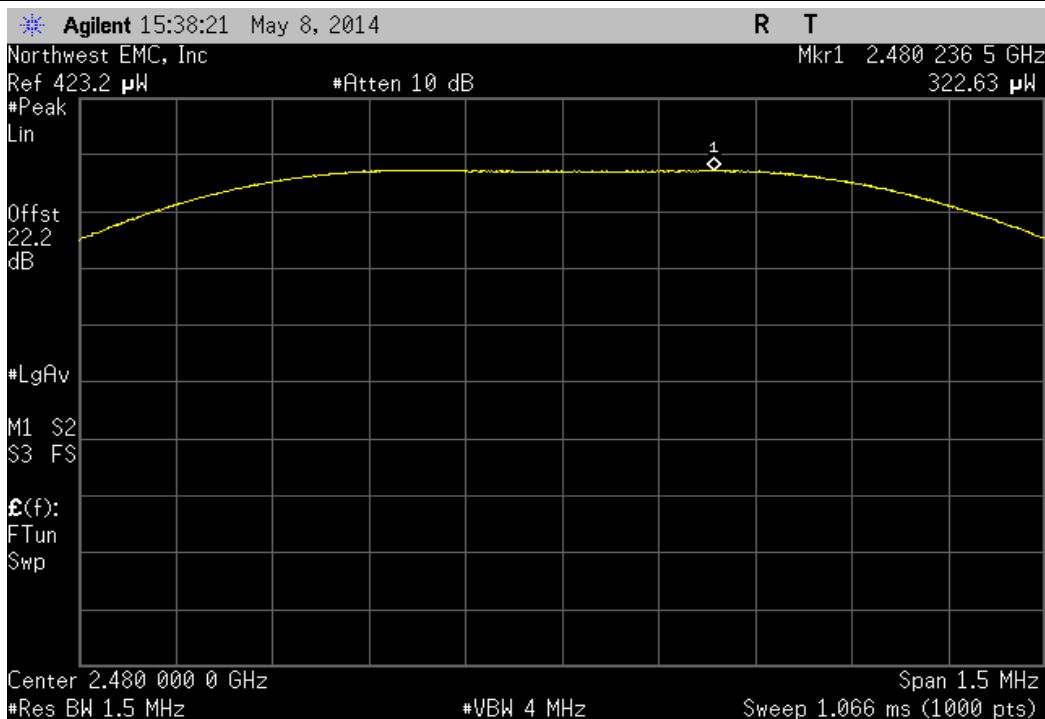
BLE - Advertising, Mid Channel, 2426 MHz

	Value	Limit	Result
	315.791 uW	< 1 W	Pass



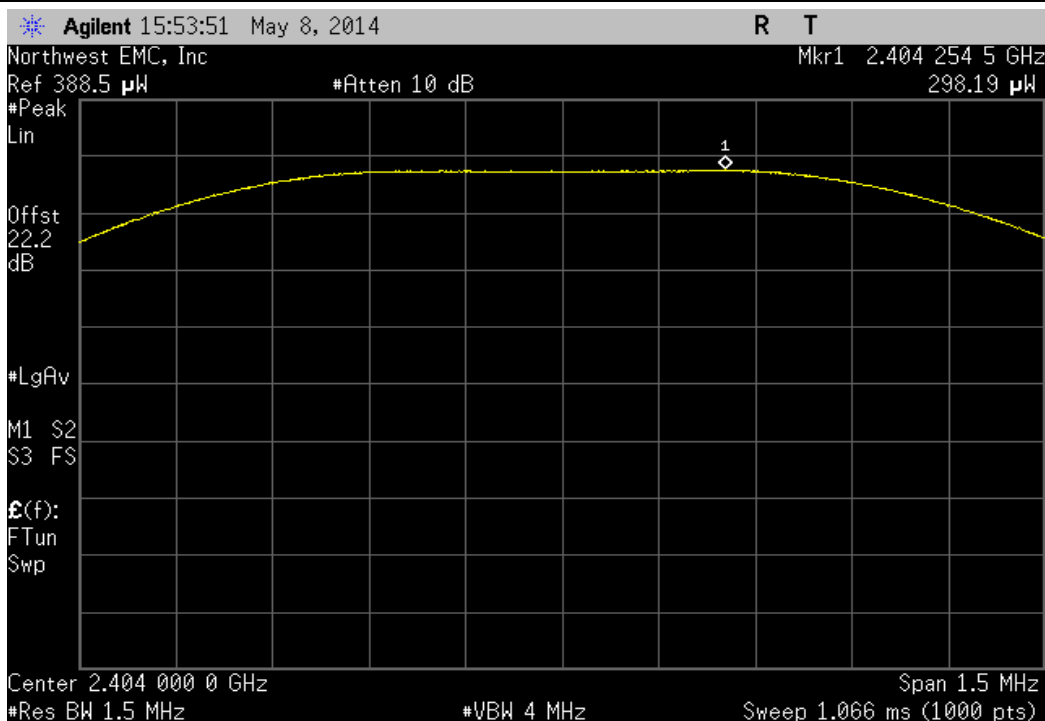
BLE - Advertising, High Channel, 2480 MHz

	Value	Limit	Result
	322.626 μ W	< 1 W	Pass

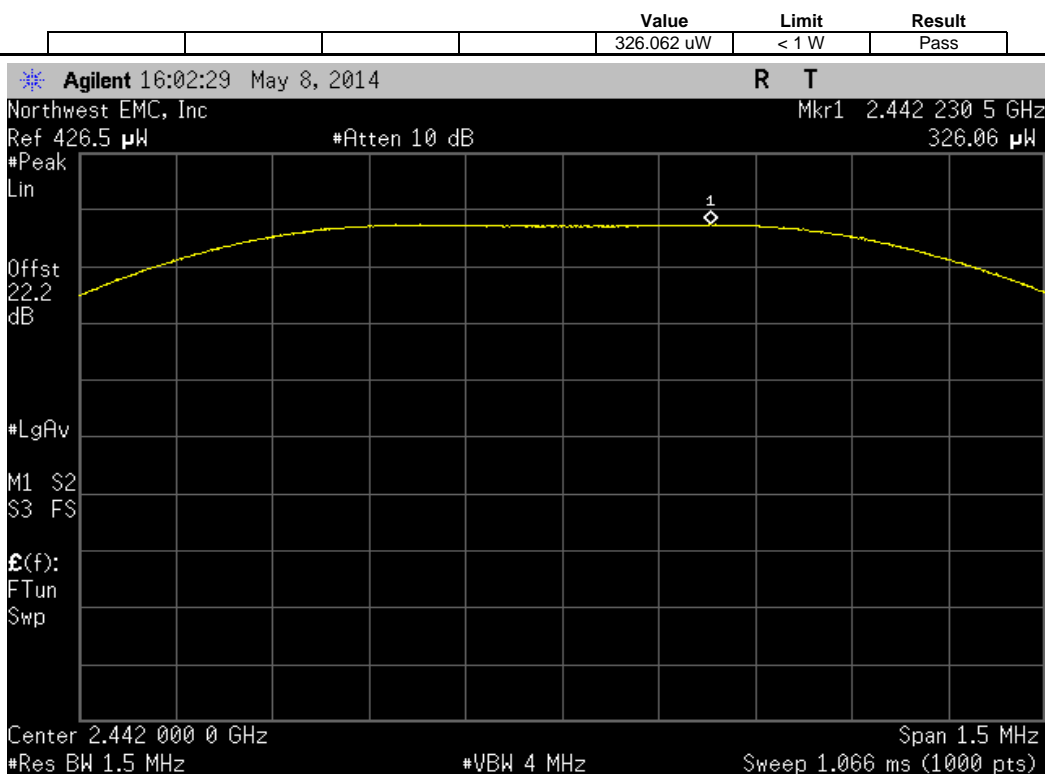


BLE - Data, Low Channel, 2404 MHz

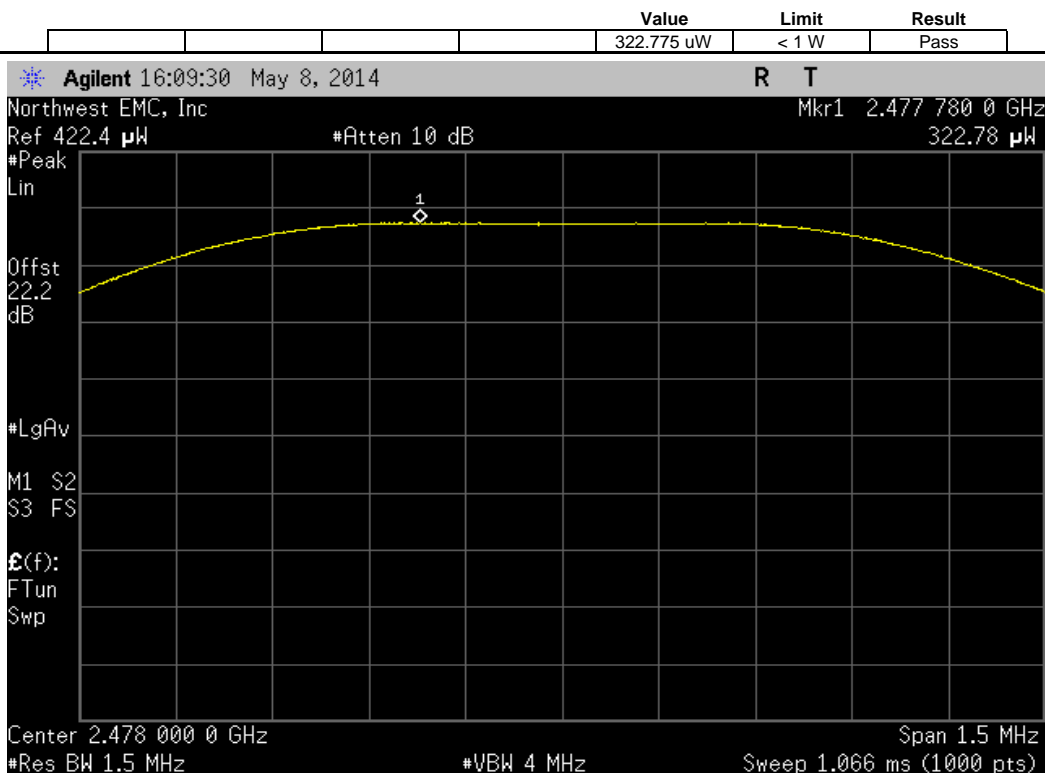
	Value	Limit	Result
	298.195 μ W	< 1 W	Pass



BLE - Data, Mid Channel, 2442 MHz



BLE - Data, High Channel, 2478 MHz



POWER SPECTRAL DENSITY

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.	Interval
40GHz DC Block	Miteq	DCB4000	AMD	4/28/2014	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/30/2013	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	24

TEST DESCRIPTION

The maximum power spectral density measurements were measured with the EUT set to the required transmit frequencies in each band. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the lowest, middle, and maximum data rate for each modulation type available.

Per the procedure outlined in FCC KDB 558074 D01 DTS Measurement Section 5.3.1, the spectrum analyzer was used as follows:

- RBW = 100 kHz
- VBW = 300 kHz
- Detector = Peak (to match method used for power measurement)
- Trace = Max hold


The observed power level is then scaled to an equivalent value in 3 kHz by adding a Bandwidth Correction Factor (BWCF) where:

$$BWCF = 10 \cdot \log(3 \text{ kHz} / 100 \text{ kHz}) = -15.2 \text{ dB}$$

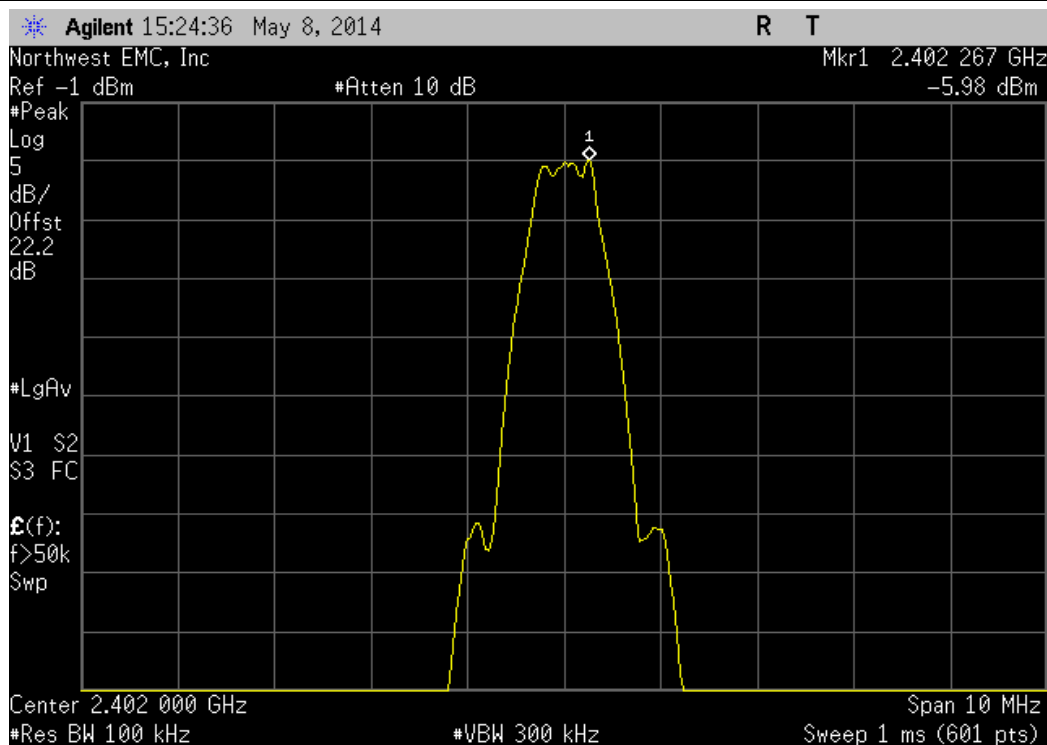


POWER SPECTRAL DENSITY

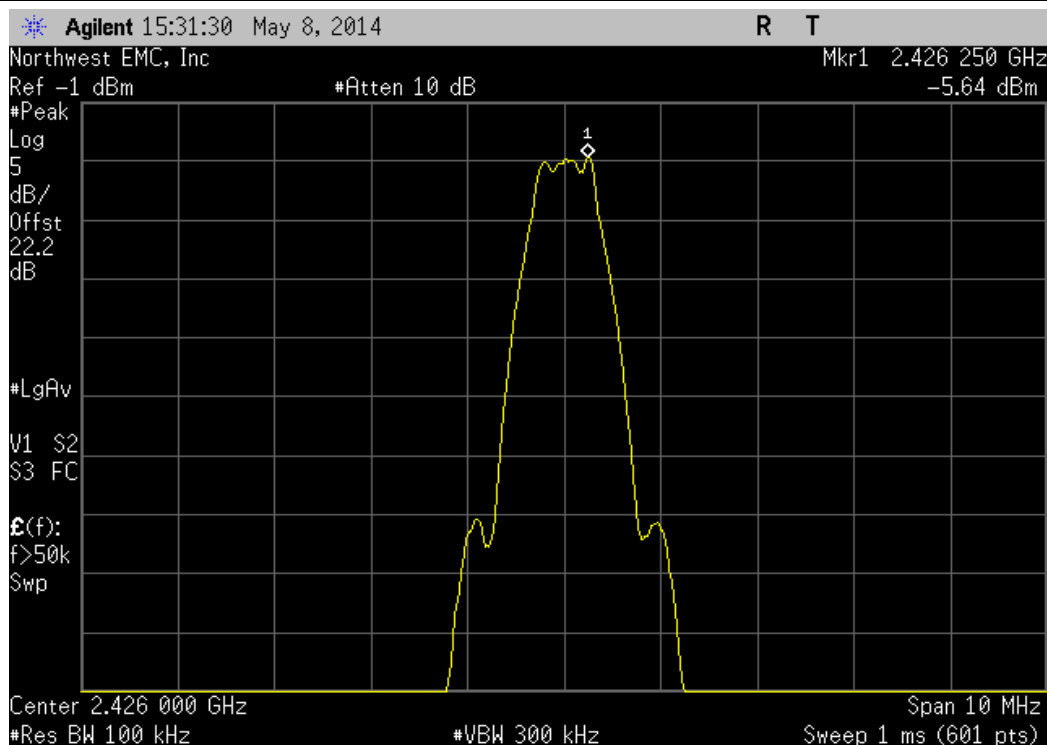
XMit 2014.02.07
PsaTx 2014.04.01

EUT: Supra eKEY Fob		Work Order: SUPR0120				
Serial Number: 0161		Date: 05/08/14				
Customer: Supra, A Division of UTCFS		Temperature: 22.2°C				
Attendees: None		Humidity: 43%				
Project: eKey Fob4		Barometric Pres.: 1006.7				
Tested by: Jared Ison		Power: Battery				
		Job Site: EV06				
TEST SPECIFICATIONS		Test Method				
FCC 15.247:2014		ANSI C63.10:2009				
COMMENTS						
Mode of operation tested were client provided.						
DEVIATIONS FROM TEST STANDARD						
Configuration #	1	Signature 				
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
BLE - Advertising						
	Low Channel, 2402 MHz	-5.976	-15.2	-21.176	8	Pass
	Mid Channel, 2426 MHz	-5.638	-15.2	-20.838	8	Pass
	High Channel, 2480 MHz	-5.562	-15.2	-20.762	8	Pass
BLE - Data						
	Low Channel, 2404 MHz	-5.896	-15.2	-21.096	8	Pass
	Mid Channel, 2442 MHz	-5.502	-15.2	-20.702	8	Pass
	High Channel, 2478 MHz	-5.562	-15.2	-20.762	8	Pass

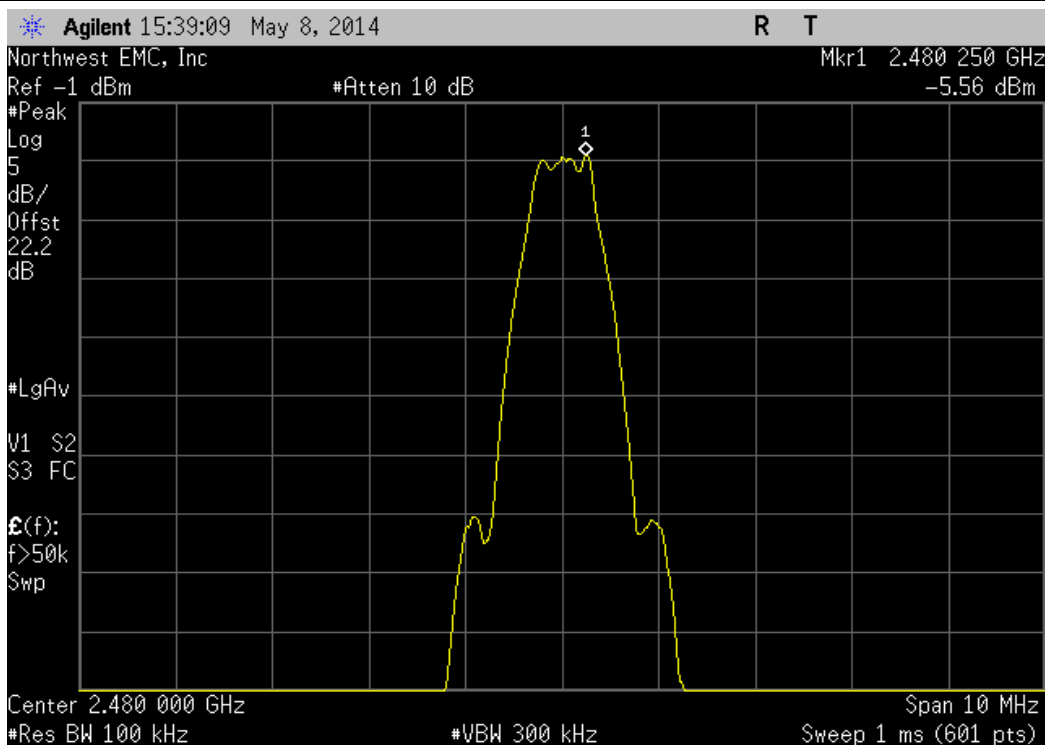
BLE - Advertising, Low Channel, 2402 MHz					
	Value	dBm/100kHz	Value	Limit	Result
	dBm/100kHz	To dBm/3kHz	dBm/3kHz	dBm/3kHz	
	-5.976	-15.2	-21.176	8	Pass



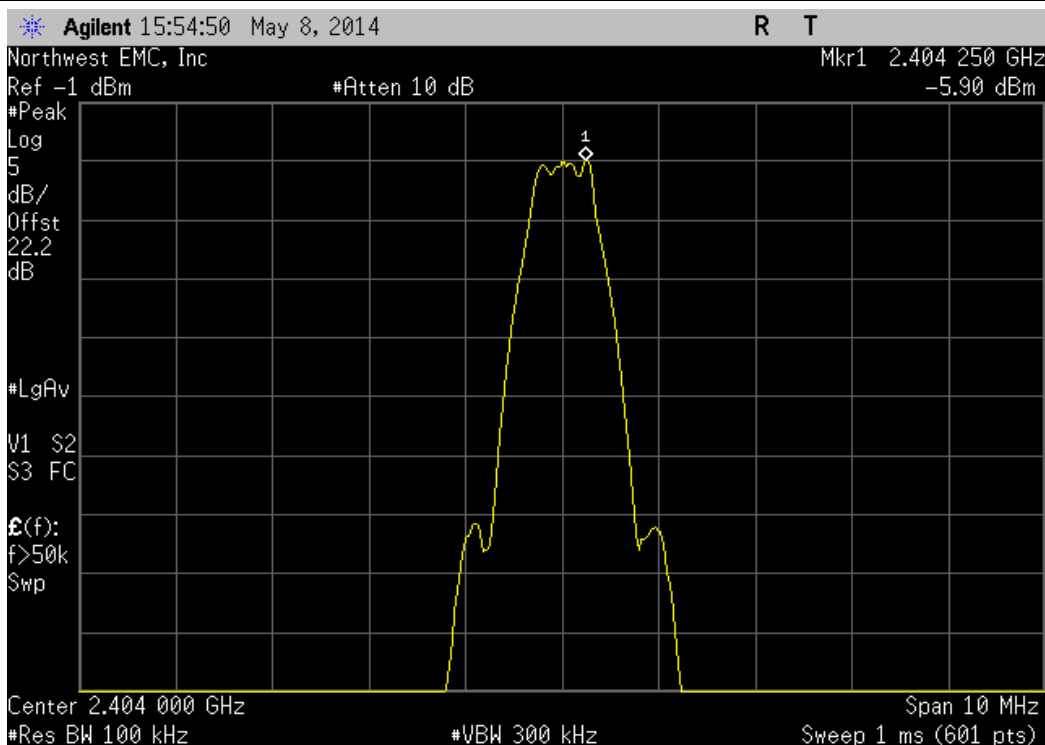
BLE - Advertising, Mid Channel, 2426 MHz					
	Value	dBm/100kHz	Value	Limit	Result
	dBm/100kHz	To dBm/3kHz	dBm/3kHz	dBm/3kHz	
	-5.638	-15.2	-20.838	8	Pass



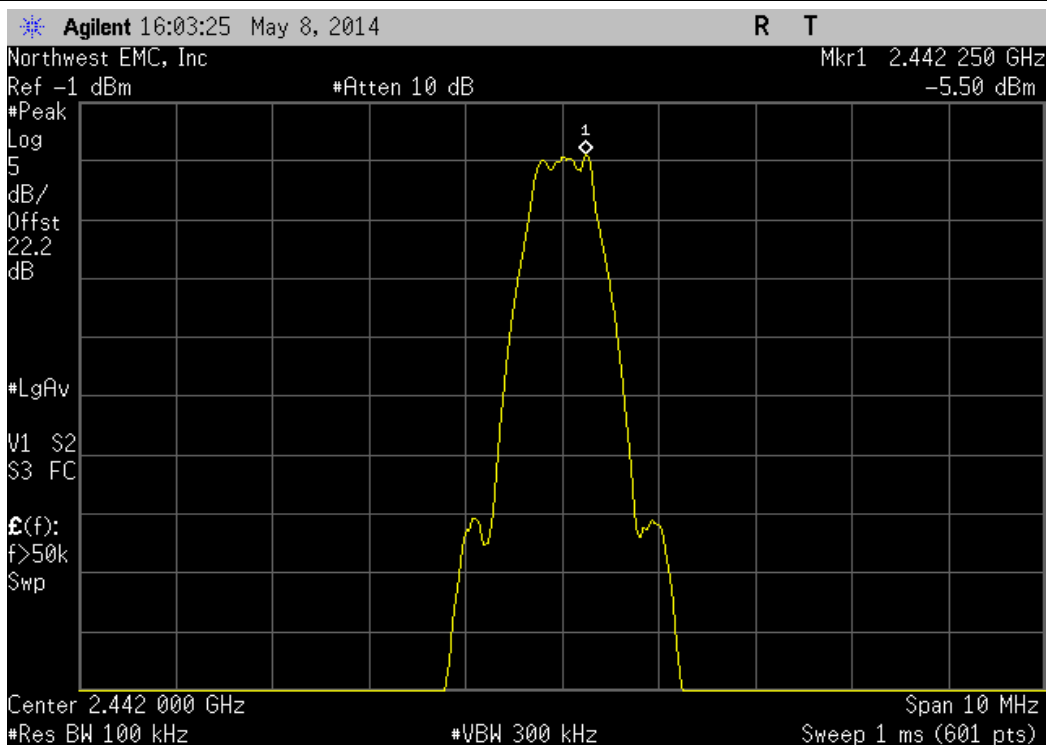
BLE - Advertising, High Channel, 2480 MHz					
	Value	dBm/100kHz	Value	Limit	Result
	dBm/100kHz	To dBm/3kHz	dBm/3kHz	dBm/3kHz	
	-5.562	-15.2	-20.762	8	Pass



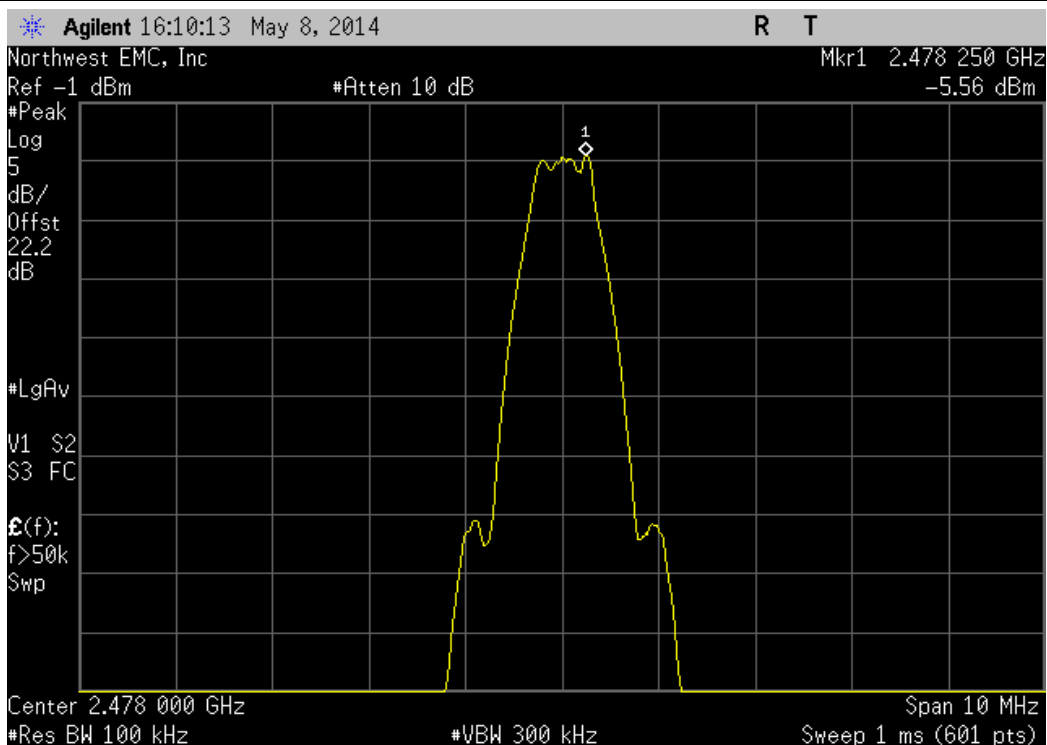
BLE - Data, Low Channel, 2404 MHz					
	Value	dBm/100kHz	Value	Limit	Result
	dBm/100kHz	To dBm/3kHz	dBm/3kHz	dBm/3kHz	
	-5.896	-15.2	-21.096	8	Pass



BLE - Data, Mid Channel, 2442 MHz					
	Value	dBm/100kHz	Value	Limit	Result
	dBm/100kHz	To dBm/3kHz	dBm/3kHz	dBm/3kHz	
	-5.502	-15.2	-20.702	8	Pass



BLE - Data, High Channel, 2478 MHz					
	Value	dBm/100kHz	Value	Limit	Result
	dBm/100kHz	To dBm/3kHz	dBm/3kHz	dBm/3kHz	
	-5.562	-15.2	-20.762	8	Pass



BAND EDGE COMPLIANCE

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.	Interval
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/30/2013	12
40GHz DC Block	Miteq	DCB4000	AMD	4/28/2014	12
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	24

TEST DESCRIPTION


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 measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. 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.

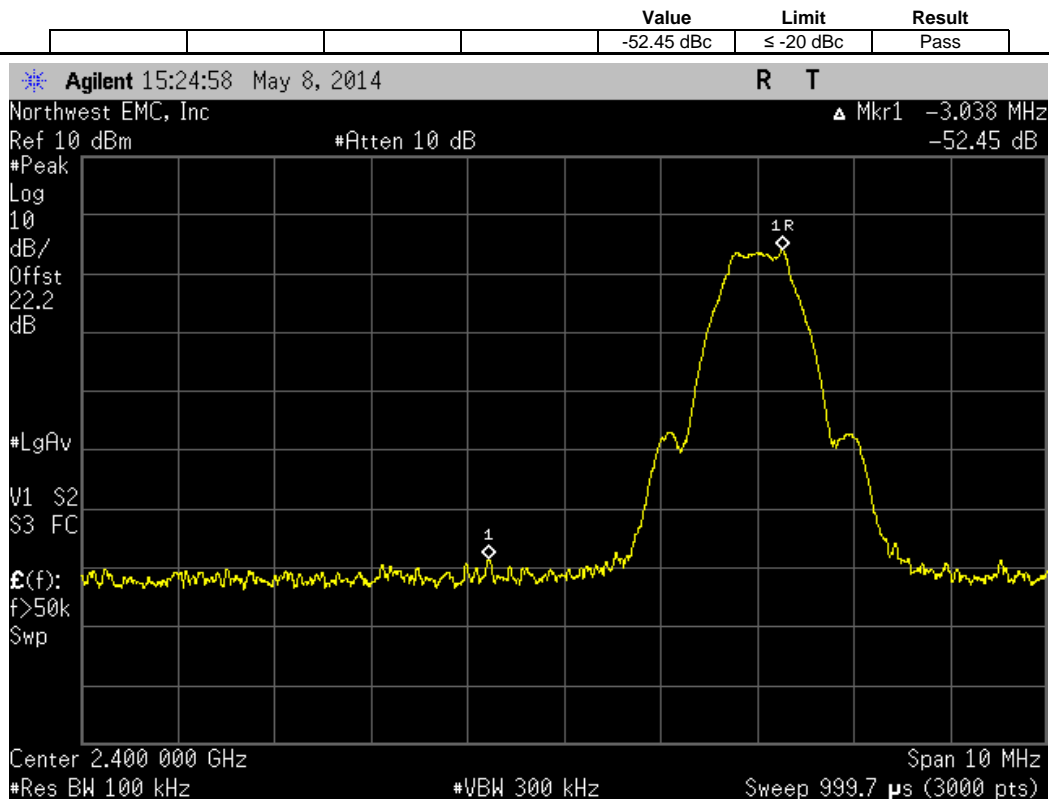


BAND EDGE COMPLIANCE

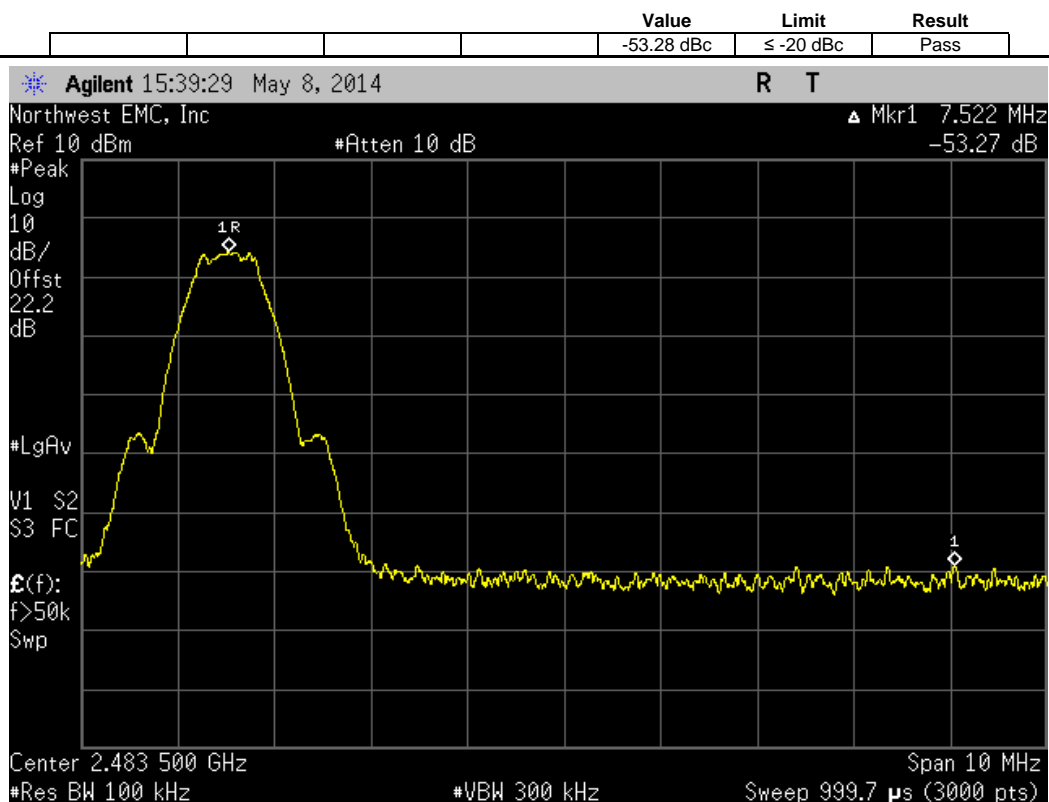
XMit 2014.02.07
PsaTx 2014.04.01

EUT: Supra eKEY Fob		Work Order: SUPR0120	
Serial Number: 0161		Date: 05/08/14	
Customer: Supra, A Division of UTCFS		Temperature: 22.2°C	
Attendees: None		Humidity: 43%	
Project: eKey Fob4		Barometric Pres.: 1006.7	
Tested by: Jared Ison		Power: Battery	
		Job Site: EV06	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2014		ANSI C63.10:2009	
COMMENTS			
Mode of operation tested were client provided.			
DEVIATIONS FROM TEST STANDARD			
Configuration #	1	Signature 	
		Value	Limit
BLE - Advertising			Result
Low Channel, 2402 MHz		-52.45 dBc	≤ -20 dBc
High Channel, 2480 MHz		-53.28 dBc	≤ -20 dBc
BLE - Data			Result
Low Channel, 2404 MHz		-52.26 dBc	≤ -20 dBc
High Channel, 2478 MHz		-53.95 dBc	≤ -20 dBc

BLE - Advertising, Low Channel, 2402 MHz

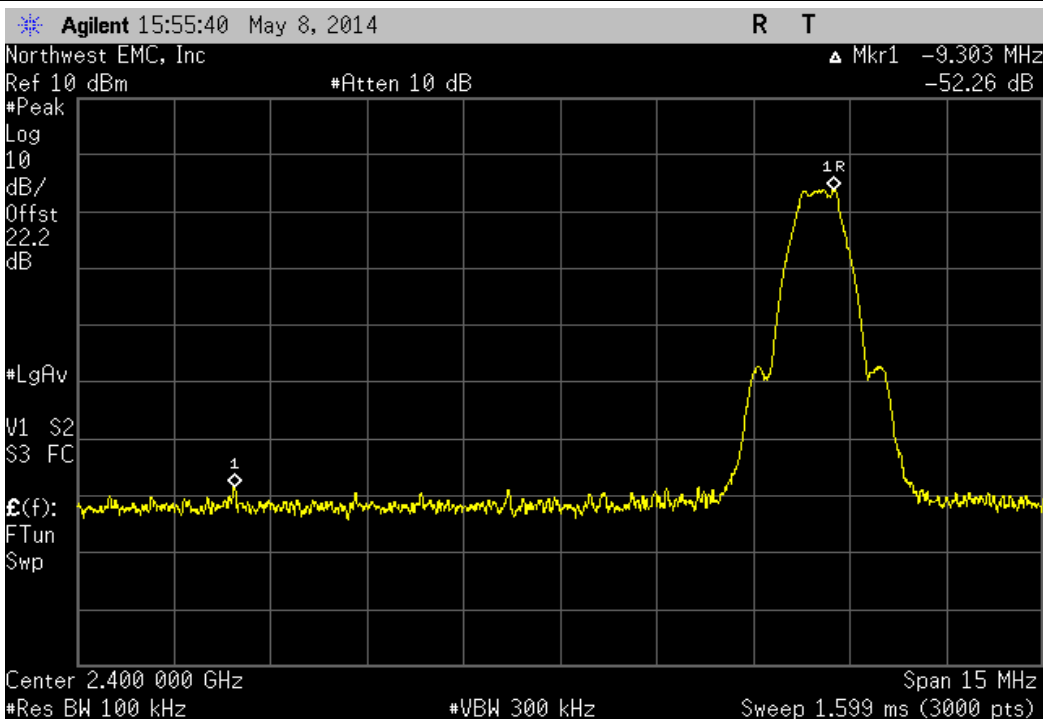


BLE - Advertising, High Channel, 2480 MHz



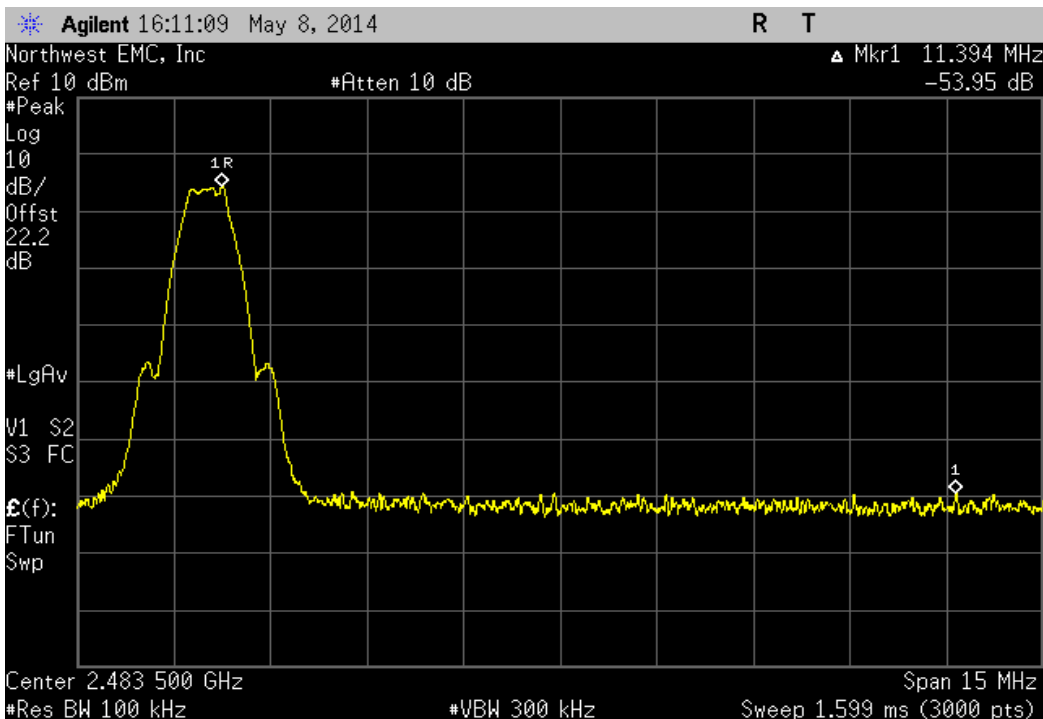
BLE - Data, Low Channel, 2404 MHz

	Value	Limit	Result
	-52.26 dBc	≤ -20 dBc	Pass



BLE - Data, High Channel, 2478 MHz

	Value	Limit	Result
	-53.95 dBc	≤ -20 dBc	Pass



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.	Interval
40GHz DC Block	Miteq	DCB4000	AMD	4/28/2014	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/30/2013	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	24


TEST DESCRIPTION

The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. 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.

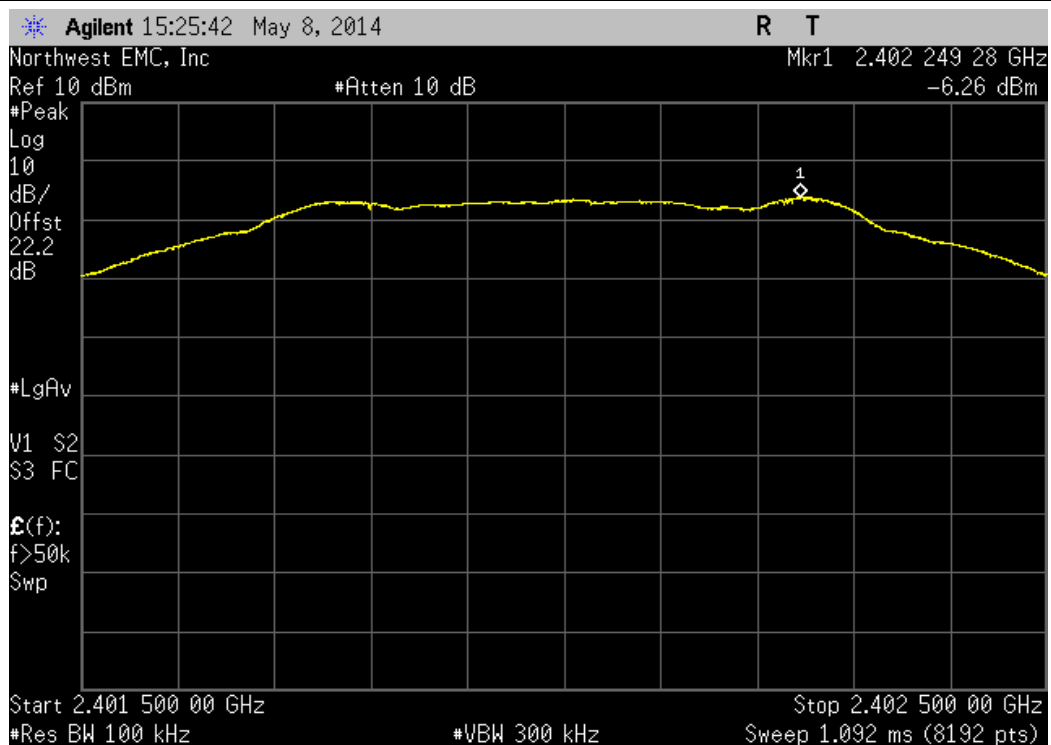


SPURIOUS CONDUCTED EMISSIONS

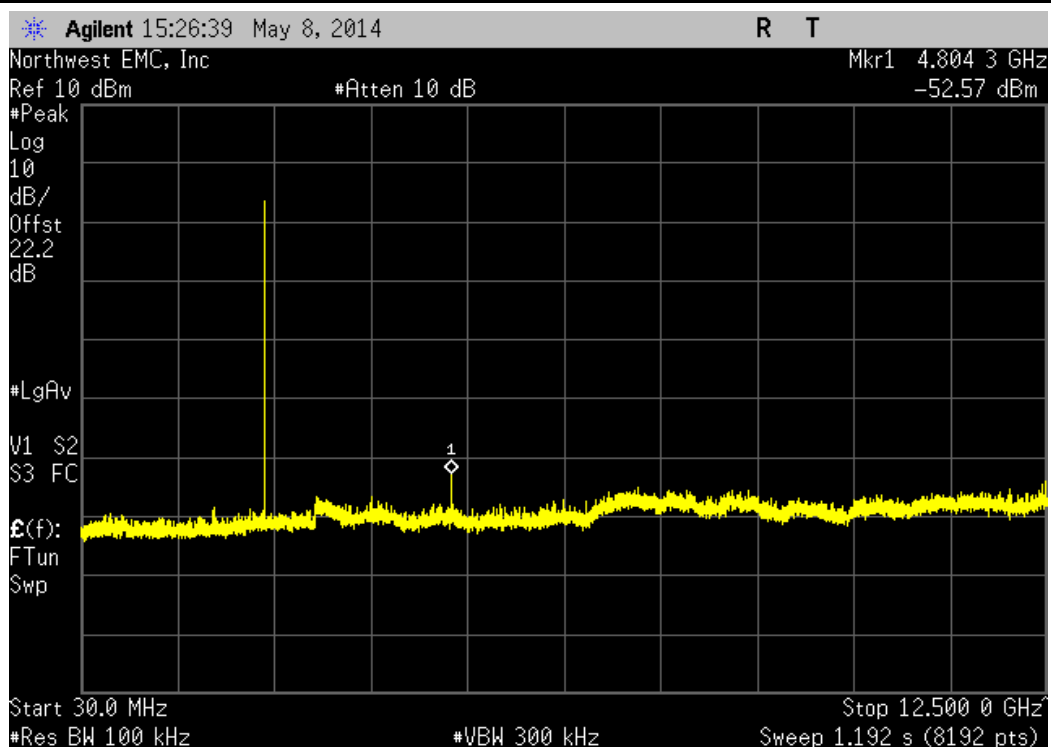
XMit 2014.02.07
PsaTx 2014.04.01

EUT: Supra eKEY Fob		Work Order: SUPR0120		
Serial Number: 0161		Date: 05/08/14		
Customer: Supra, A Division of UTCFS		Temperature: 22.2°C		
Attendees: None		Humidity: 43%		
Project: eKey Fob4		Barometric Pres.: 1006.7		
Tested by: Jared Ison		Power: Battery		
		Job Site: EV06		
TEST SPECIFICATIONS		Test Method		
FCC 15.247:2014		ANSI C63.10:2009		
COMMENTS				
Mode of operation tested were client provided.				
DEVIATIONS FROM TEST STANDARD				
Configuration #	1	Signature 		
	Frequency Range	Value	Limit	Result
BLE - Advertising				
Low Channel, 2402 MHz	Fundamental	N/A	N/A	N/A
Low Channel, 2402 MHz	30 MHz - 12.5 GHz	-46.31 dBc	≤ -20 dBc	Pass
Low Channel, 2402 MHz	12.5 GHz - 25 GHz	-40.41 dBc	≤ -20 dBc	Pass
Mid Channel, 2426 MHz	Fundamental	N/A	N/A	N/A
Mid Channel, 2426 MHz	30 MHz - 12.5 GHz	-47.72 dBc	≤ -20 dBc	Pass
Mid Channel, 2426 MHz	12.5 GHz - 25 GHz	-41.02 dBc	≤ -20 dBc	Pass
High Channel, 2480 MHz	Fundamental	N/A	N/A	N/A
High Channel, 2480 MHz	30 MHz - 12.5 GHz	-48.61 dBc	≤ -20 dBc	Pass
High Channel, 2480 MHz	12.5 GHz - 25 GHz	-41.62 dBc	≤ -20 dBc	Pass
BLE - Data				
Low Channel, 2404 MHz	Fundamental	N/A	N/A	N/A
Low Channel, 2404 MHz	30 MHz - 12.5 GHz	-47.89 dBc	≤ -20 dBc	Pass
Low Channel, 2404 MHz	12.5 GHz - 25 GHz	-41.81 dBc	≤ -20 dBc	Pass
Mid Channel, 2442 MHz	Fundamental	N/A	N/A	N/A
Mid Channel, 2442 MHz	30 MHz - 12.5 GHz	-47.74 dBc	≤ -20 dBc	Pass
Mid Channel, 2442 MHz	12.5 GHz - 25 GHz	-42.52 dBc	≤ -20 dBc	Pass
High Channel, 2478 MHz	Fundamental	N/A	N/A	N/A
High Channel, 2478 MHz	30 MHz - 12.5 GHz	-48.71 dBc	≤ -20 dBc	Pass
High Channel, 2478 MHz	12.5 GHz - 25 GHz	-41.37 dBc	≤ -20 dBc	Pass

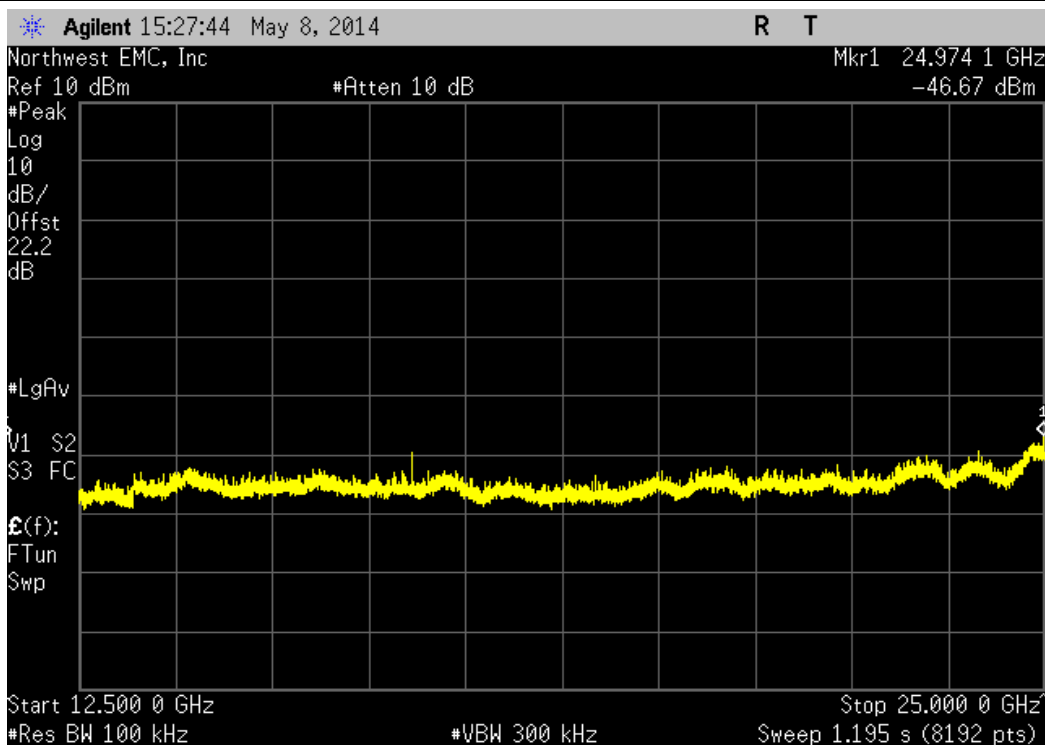
BLE - Advertising, Low Channel, 2402 MHz						
Frequency Range		Value	Limit	Result		
	Fundamental	N/A	N/A	N/A		



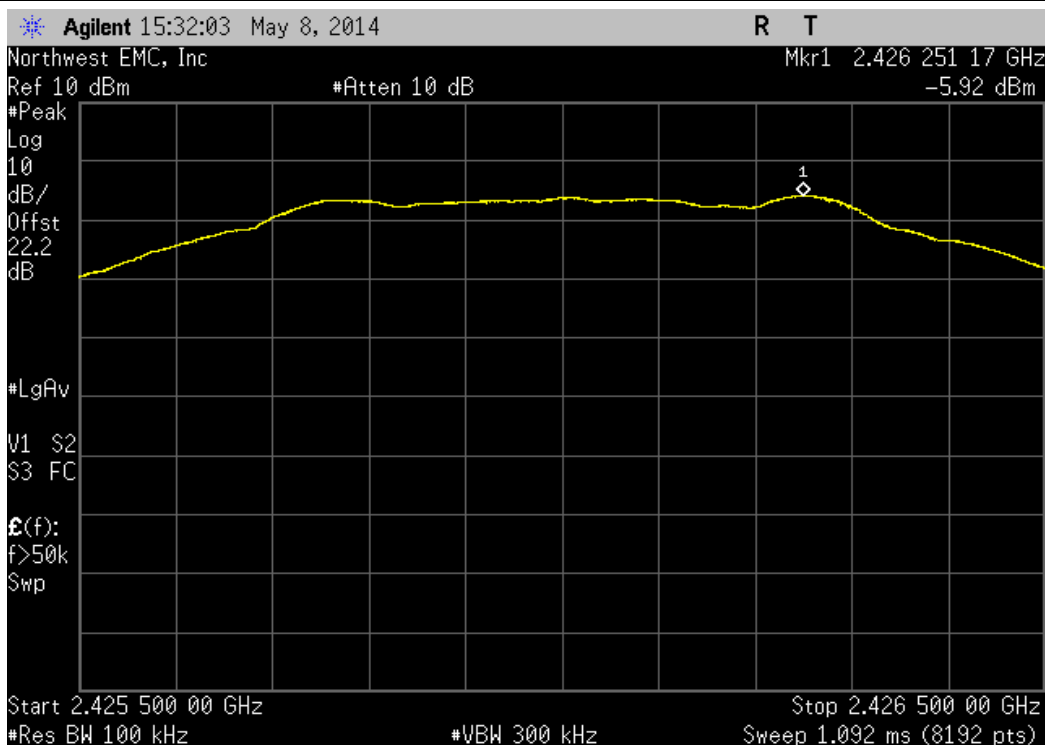
BLE - Advertising, Low Channel, 2402 MHz						
Frequency Range		Value	Limit	Result		
	30 MHz - 12.5 GHz	-46.31 dBc	≤ -20 dBc	Pass		



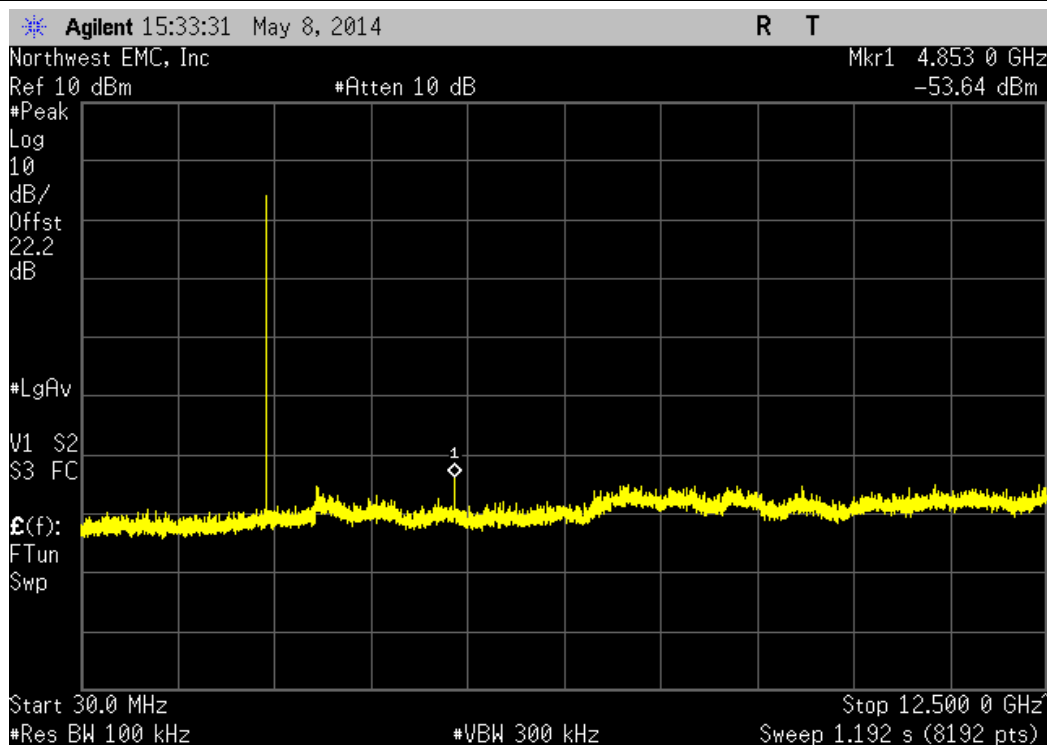
BLE - Advertising, Low Channel, 2402 MHz						
Frequency Range			Value	Limit	Result	
12.5 GHz - 25 GHz			-40.41 dBc	≤ -20 dBc	Pass	



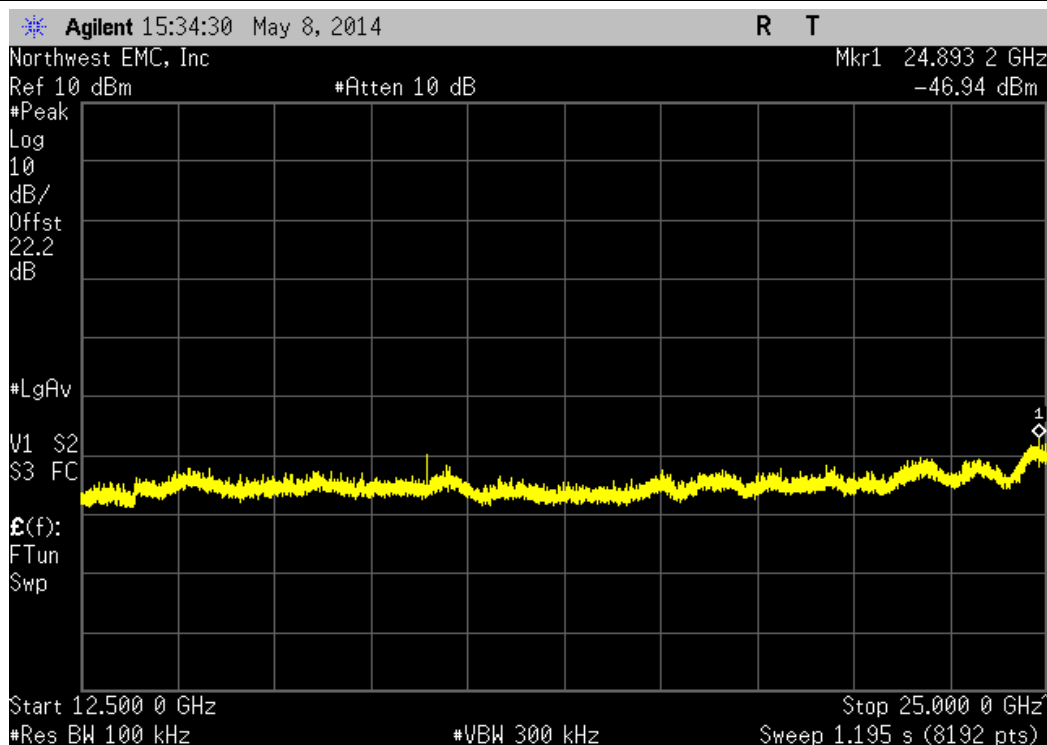
BLE - Advertising, Mid Channel, 2426 MHz						
Frequency Range			Value	Limit	Result	
Fundamental			N/A	N/A	N/A	



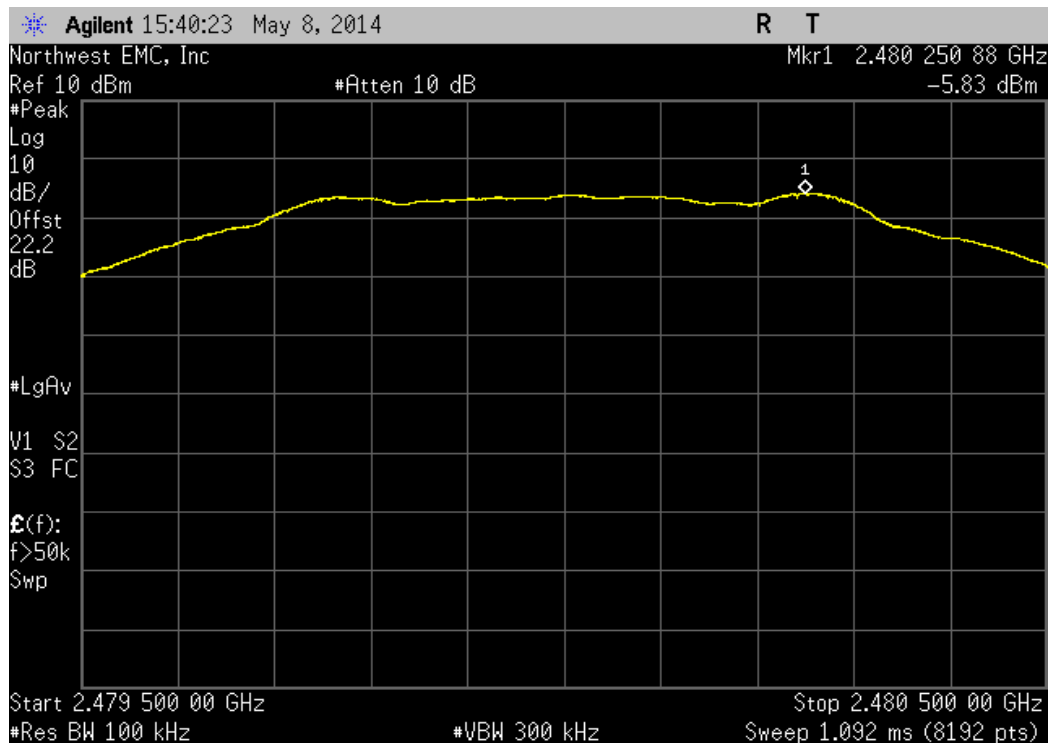
BLE - Advertising, Mid Channel, 2426 MHz				
Frequency Range	Value	Limit	Result	
30 MHz - 12.5 GHz	-47.72 dBc	≤ -20 dBc	Pass	



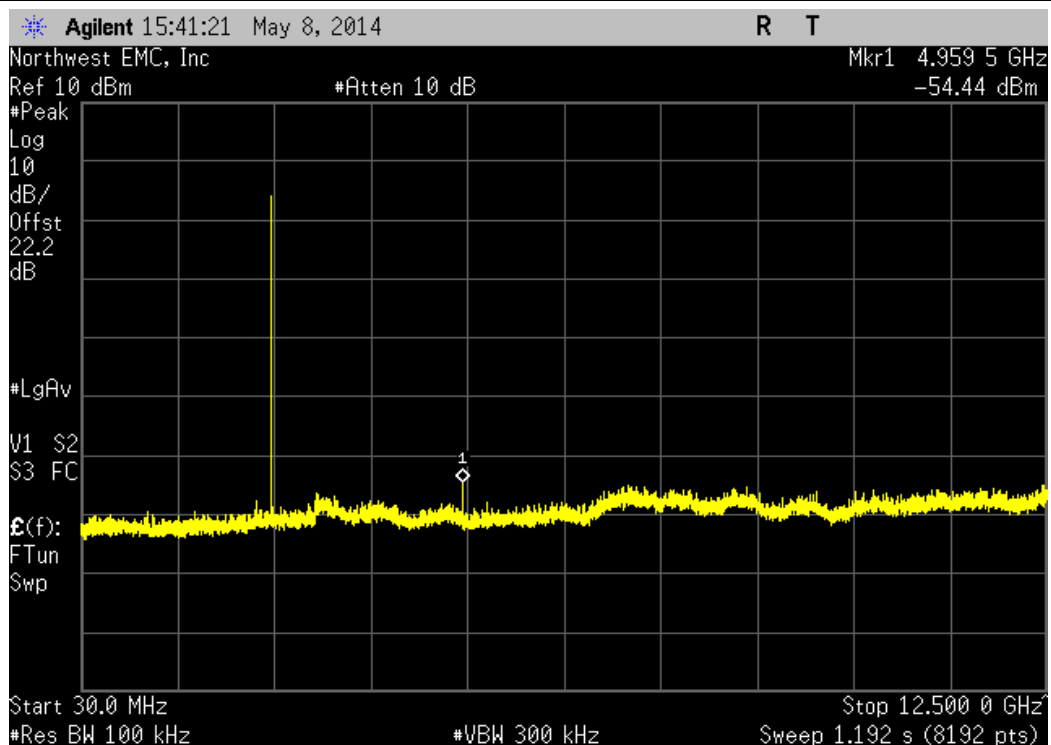
BLE - Advertising, Mid Channel, 2426 MHz				
Frequency Range	Value	Limit	Result	
12.5 GHz - 25 GHz	-41.02 dBc	≤ -20 dBc	Pass	



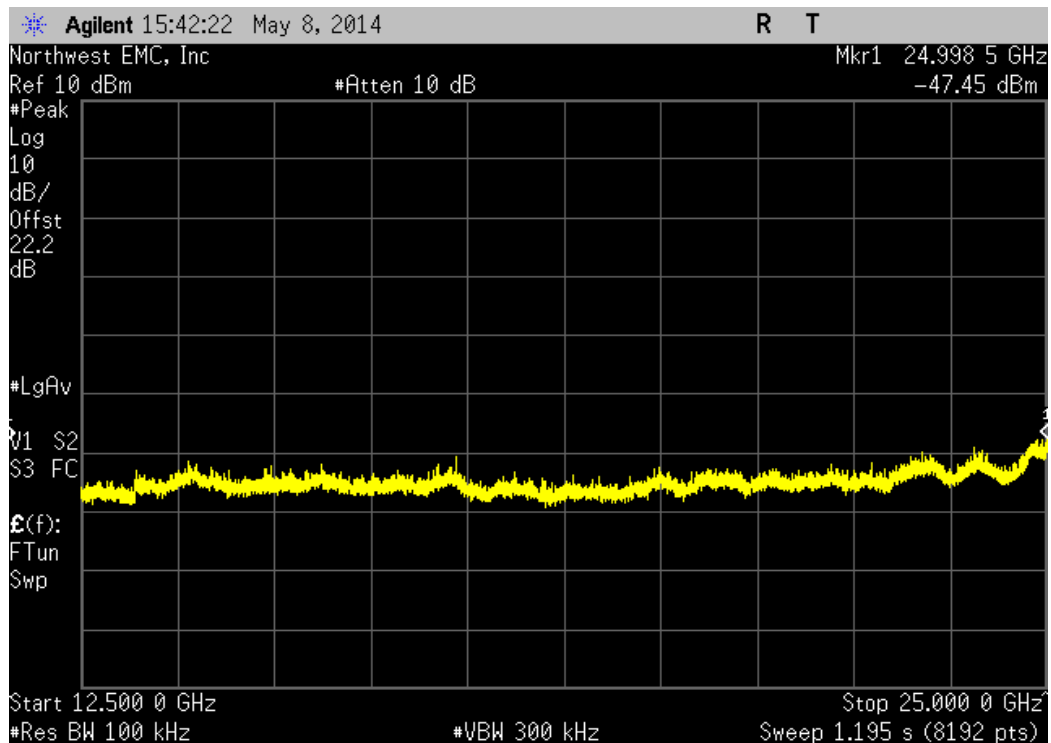
BLE - Advertising, High Channel, 2480 MHz						
Frequency Range		Value	Limit	Result		
	Fundamental	N/A	N/A	N/A		



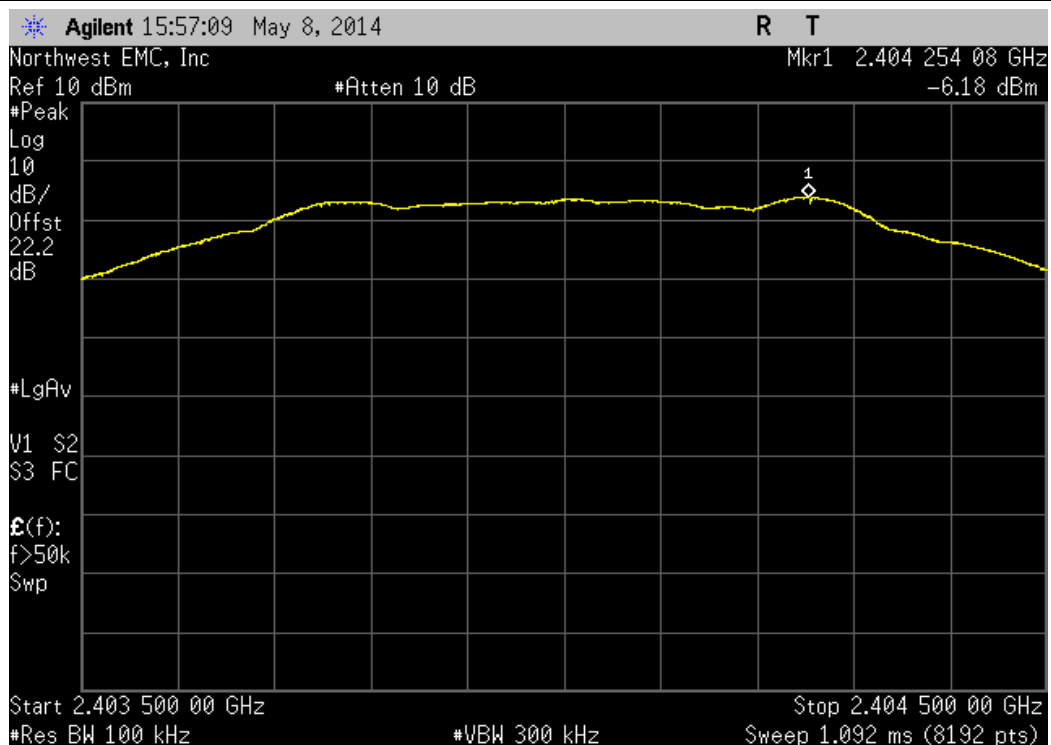
BLE - Advertising, High Channel, 2480 MHz						
Frequency Range		Value	Limit	Result		
	30 MHz - 12.5 GHz	-48.61 dBc	≤ -20 dBc	Pass		



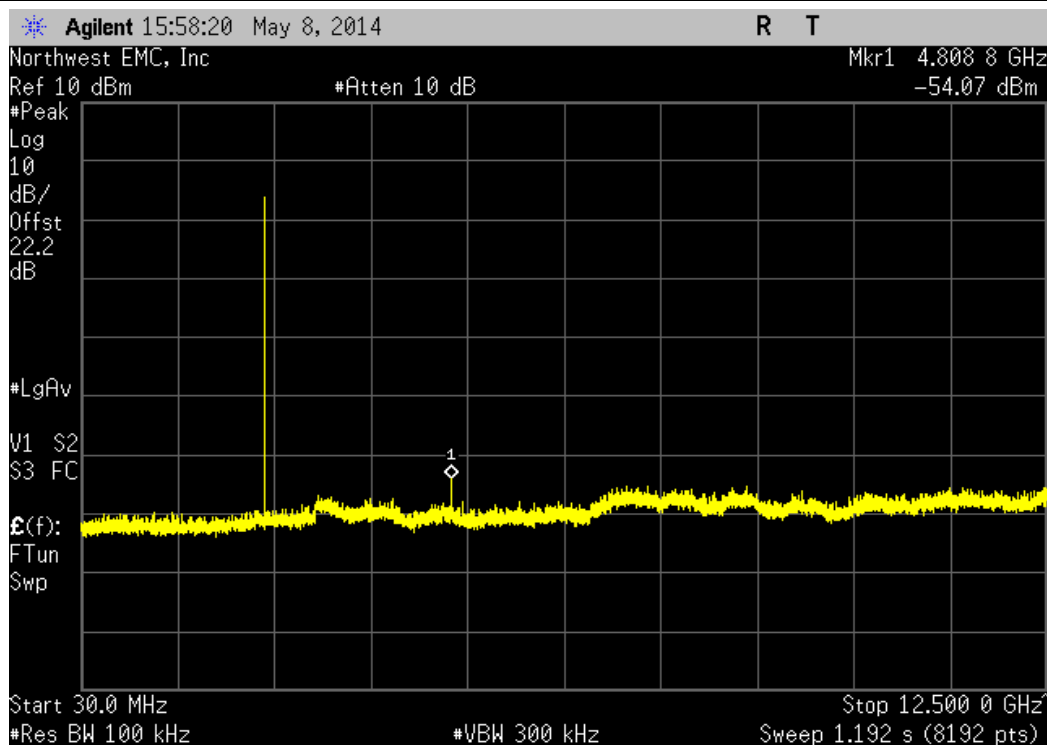
BLE - Advertising, High Channel, 2480 MHz						
Frequency Range		Value	Limit	Result		
12.5 GHz - 25 GHz		-41.62 dBc	≤ -20 dBc	Pass		



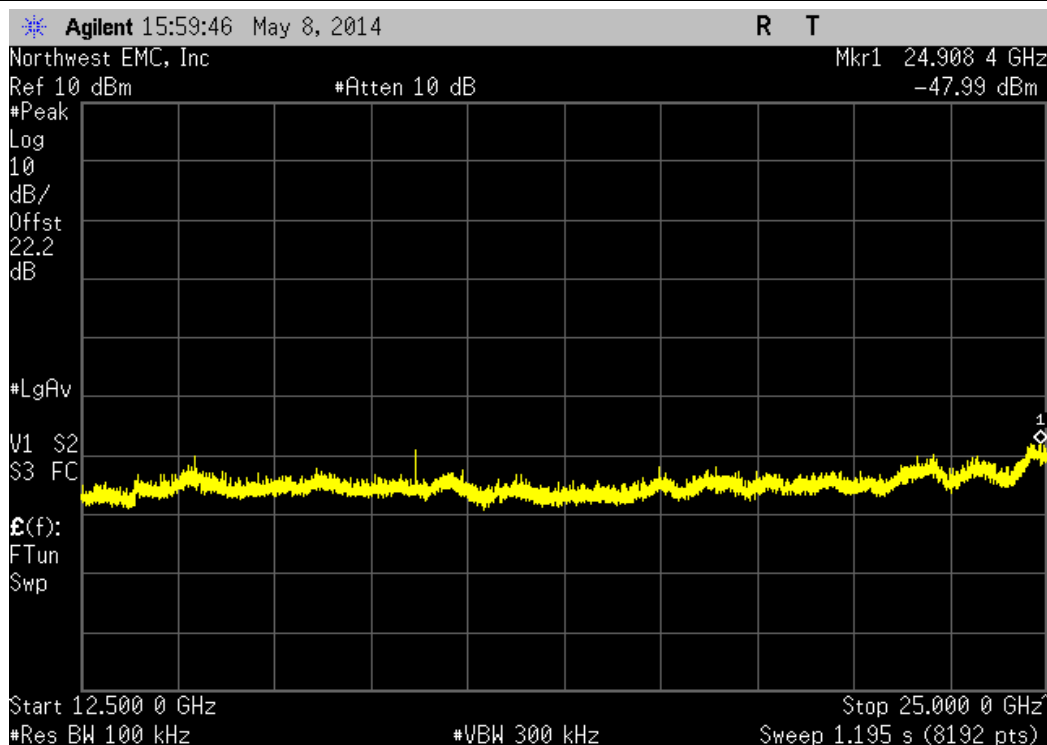
BLE - Data, Low Channel, 2404 MHz						
Frequency Range		Value	Limit	Result		
Fundamental		N/A	N/A	N/A		



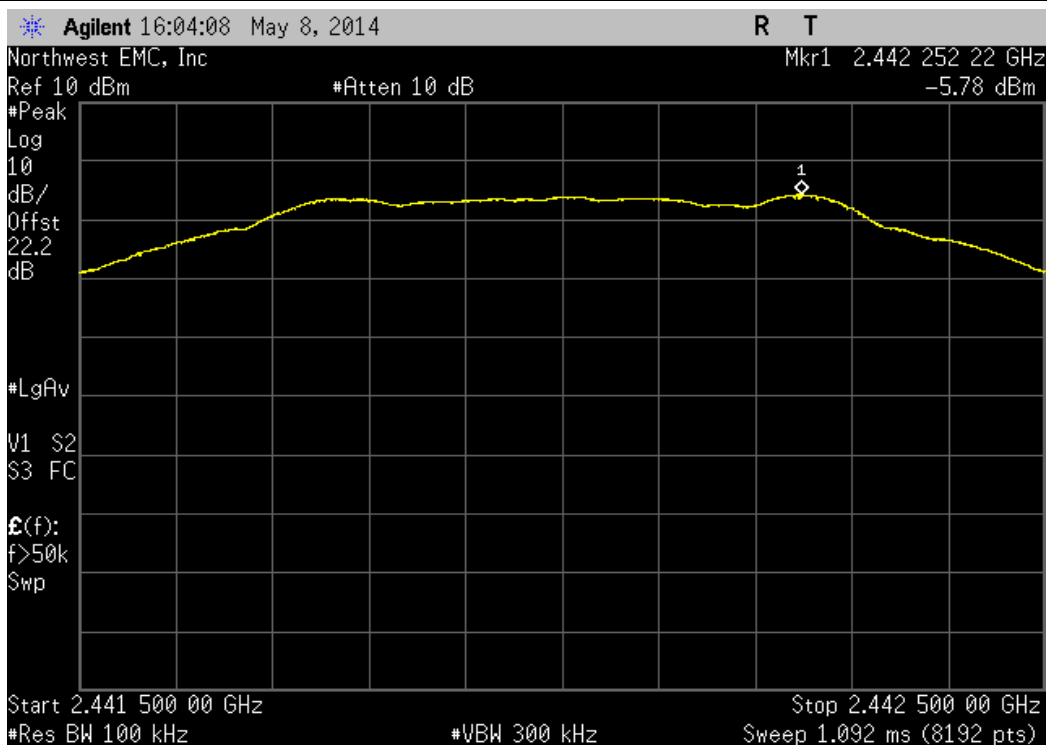
BLE - Data, Low Channel, 2404 MHz				
Frequency Range	Value	Limit	Result	
30 MHz - 12.5 GHz	-47.89 dBc	≤ -20 dBc	Pass	



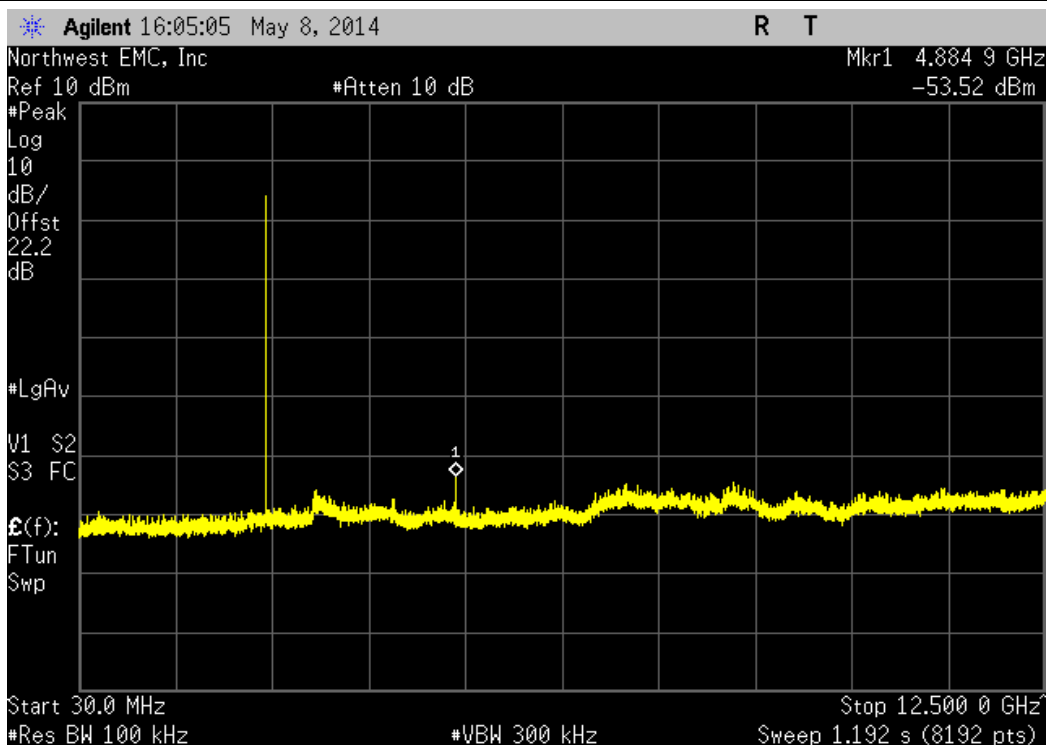
BLE - Data, Low Channel, 2404 MHz				
Frequency Range	Value	Limit	Result	
12.5 GHz - 25 GHz	-41.81 dBc	≤ -20 dBc	Pass	



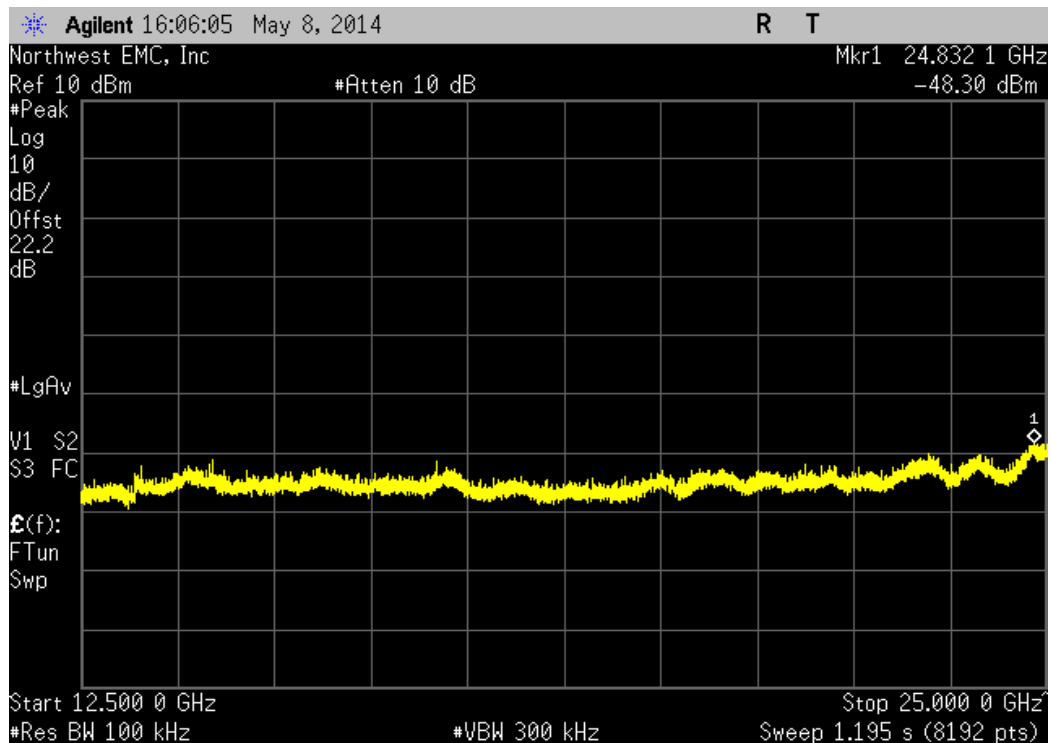
BLE - Data, Mid Channel, 2442 MHz						
Frequency Range		Value	Limit	Result		
	Fundamental	N/A	N/A	N/A		



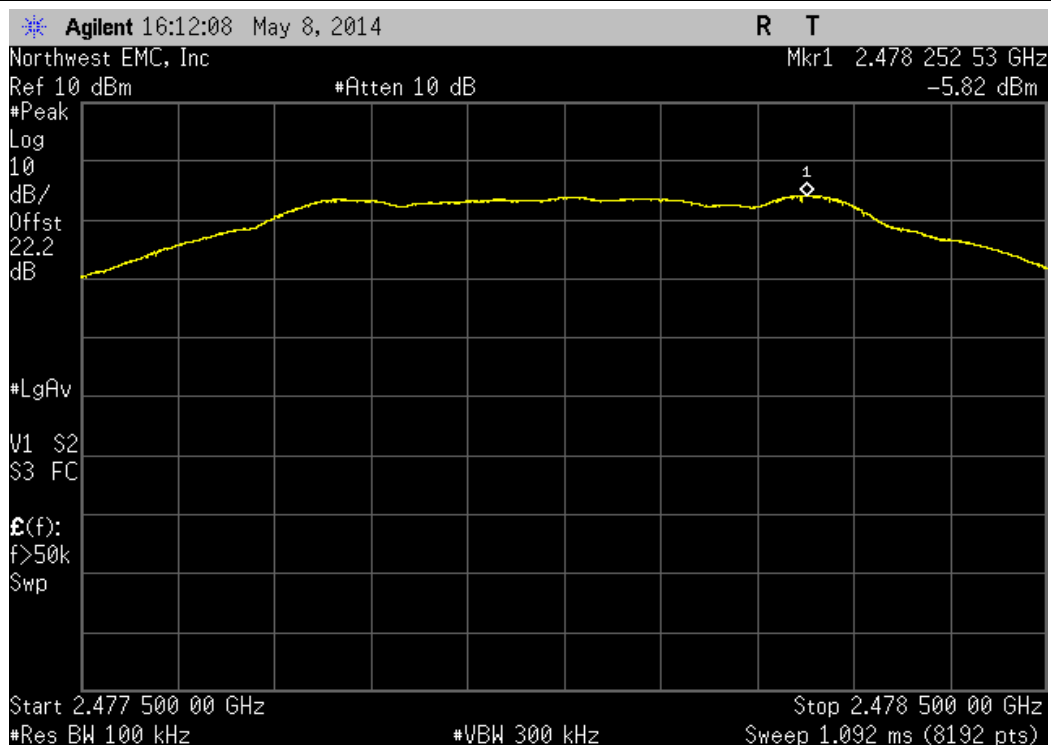
BLE - Data, Mid Channel, 2442 MHz						
Frequency Range		Value	Limit	Result		
	30 MHz - 12.5 GHz	-47.74 dBc	≤ -20 dBc	Pass		



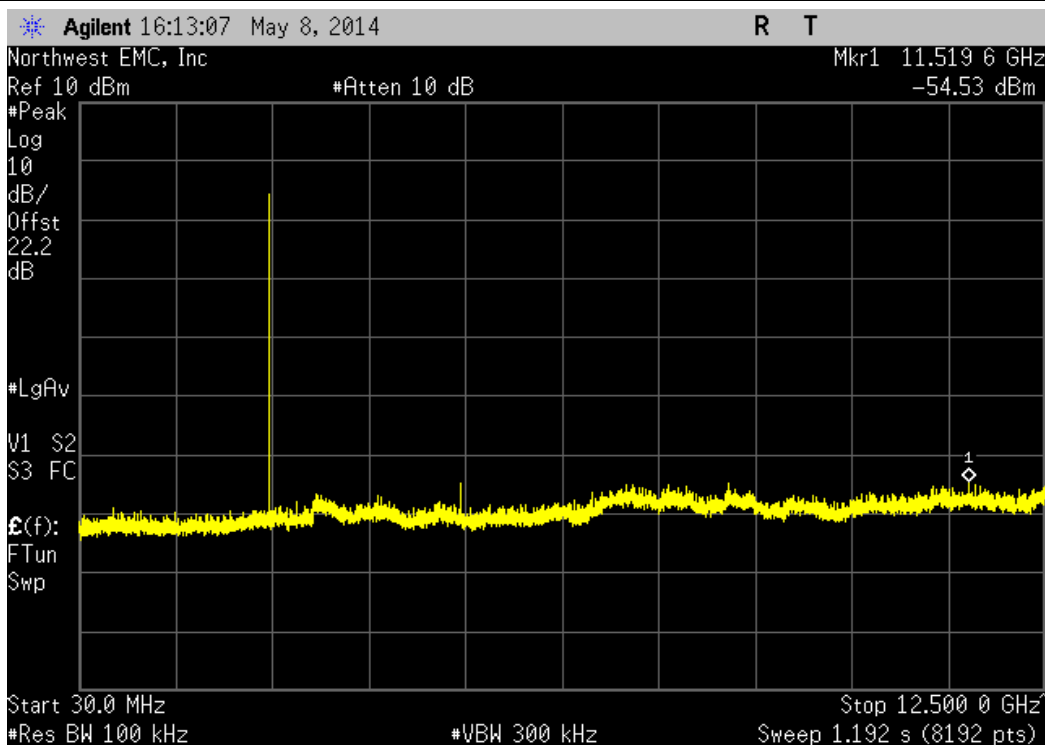
BLE - Data, Mid Channel, 2442 MHz						
Frequency Range		Value	Limit	Result		
12.5 GHz - 25 GHz		-42.52 dBc	≤ -20 dBc	Pass		



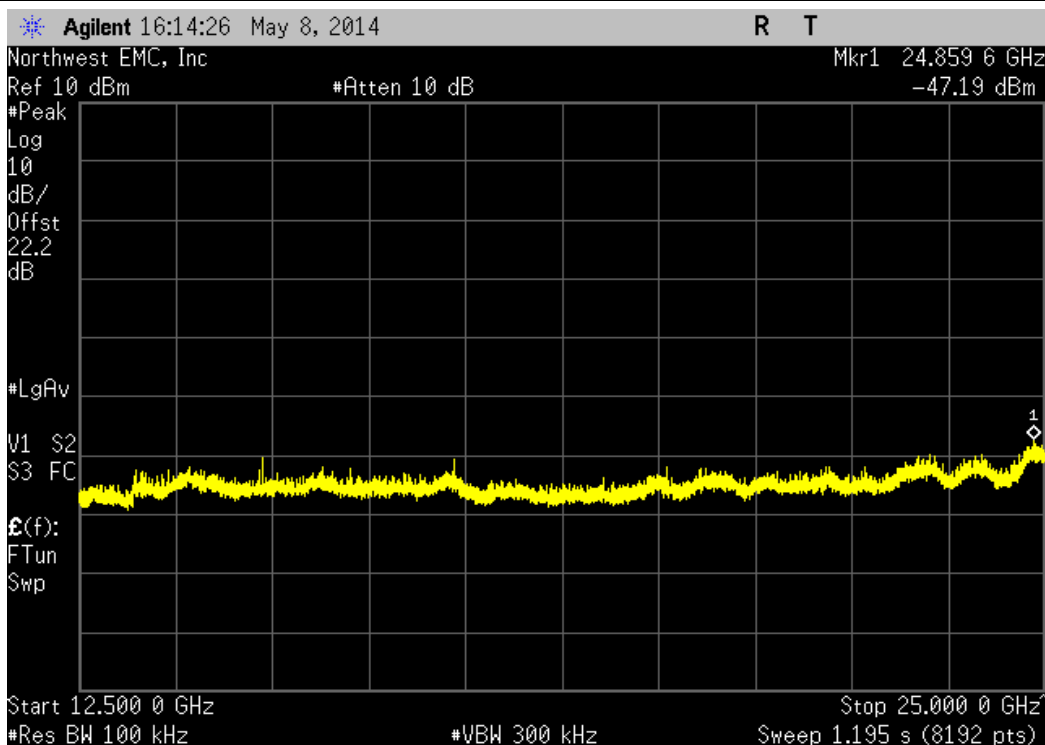
BLE - Data, High Channel, 2478 MHz						
Frequency Range		Value	Limit	Result		
Fundamental		N/A	N/A	N/A		



BLE - Data, High Channel, 2478 MHz				
Frequency Range	Value	Limit	Result	
30 MHz - 12.5 GHz	-48.71 dBc	≤ -20 dBc	Pass	



BLE - Data, High Channel, 2478 MHz				
Frequency Range	Value	Limit	Result	
12.5 GHz - 25 GHz	-41.37 dBc	≤ -20 dBc	Pass	



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.

CHANNELS OF OPERATION

Continuous TX, Low Channel 2402 MHz, Adv
Continuous TX, Mid Channel 2426 MHz, Adv
Continuous TX, High Channel 2480 MHz, Adv
Continuous TX, Low Channel 2404 MHz, Data
Continuous TX, Mid Channel 2442 MHz, Data
Continuous TX, High Channel 2478 MHz, Data

POWER SETTINGS INVESTIGATED

Internal Battery

CONFIGURATIONS INVESTIGATED

SUPR0120 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26 GHz
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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
Cable	ESM Cable Corp.	KMKM-72	EVY	9/10/2013	12 mo
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	9/10/2013	12 mo
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/18/2014	12 mo
Antenna, Horn	ETS	3160-08	AHV	NCR	0 mo
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	2/18/2014	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	2/18/2014	12 mo
Antenna, Horn	ETS	3160-07	AHU	NCR	0 mo
LP Filter	Micro-Tronics	LPM50004	LFD	7/6/2012	24 mo
HP Filter	Micro-Tronics	HPM50111	HFO	7/6/2013	24 mo
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	2/18/2014	12 mo
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	2/18/2014	12 mo
Antenna, Horn	ETS	3115	AIZ	1/27/2014	36 mo
EV01 Cables	N/A	Bilog Cables	EVA	2/18/2014	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/18/2014	12 mo
Antenna, Biconilog	EMCO	3141	AXG	4/10/2012	36 mo
Spectrum Analyzer	Agilent	E4440	AFE	11/4/2013	24 mo

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

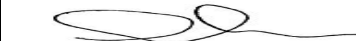
TEST DESCRIPTION

The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization. A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.



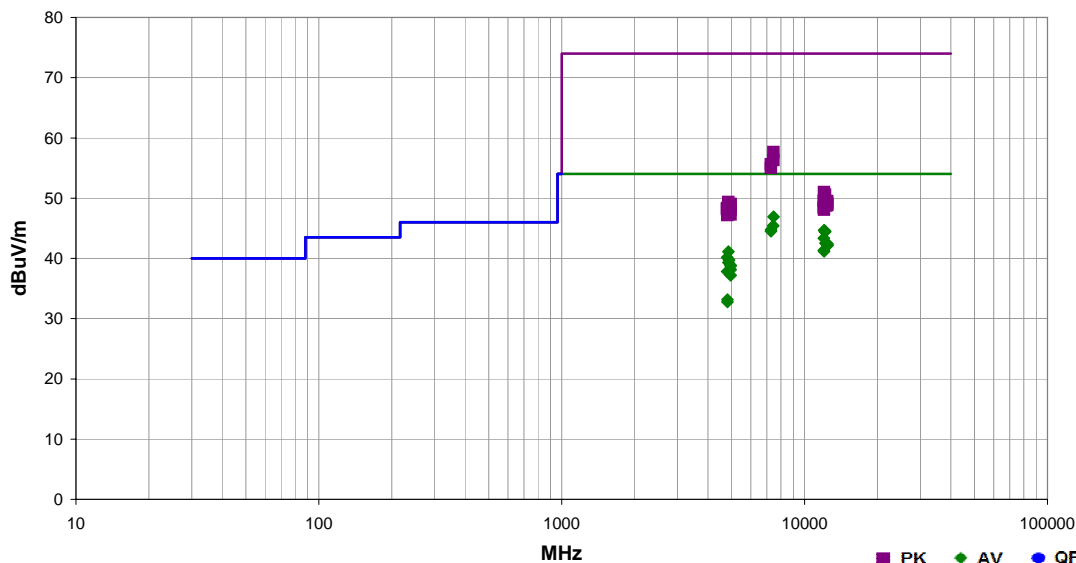
SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2014.02.19
EmiR5 2014.02.04

Work Order:	SUPR0120	Date:	05/09/14		
Project:	Supra eKEY Fob	Temperature:	20.5 °C		
Job Site:	EV01	Humidity:	47.3% RH		
Serial Number:	0161	Barometric Pres.:	1015 mbar	Tested by:	Jared Ison
EUT:	Supra eKEY Fob				
Configuration:	1				
Customer:	Supra, A Division of UTCFS				
Attendees:	None				
EUT Power:	Internal Battery				
Operating Mode:	Continous transmit, BT LE				
Deviations:	None				
Comments:	Reference data comments for EUT channel and oreintation.				

Test Specifications	N/A	Test Method
FCC 15.247:2014		ANSI C63.10:2009

Run #	18	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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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
7440.525	26.8	20.1	1.8	53.0	3.0	0.0	Horz	AV	0.0	46.9	54.0	-7.1	High Ch. 2480 MHz, Adv, EUT On Side
7439.040	25.3	20.1	1.0	184.0	3.0	0.0	Vert	AV	0.0	45.4	54.0	-8.6	High Ch. 2480 MHz, Adv, EUT Vert
7277.800	25.6	19.1	1.0	184.0	3.0	0.0	Horz	AV	0.0	44.7	54.0	-9.3	Mid Ch. 2426 MHz, Adv, EUT On Side
12021.150	46.8	-2.1	1.0	130.0	3.0	0.0	Vert	AV	0.0	44.7	54.0	-9.3	Low Ch. 2404 MHz, Data, EUT Vert
7279.667	25.4	19.1	1.0	5.0	3.0	0.0	Vert	AV	0.0	44.5	54.0	-9.5	Mid Ch. 2426 MHz, Adv, EUT Vert
12131.170	46.0	-1.5	1.0	134.0	3.0	0.0	Vert	AV	0.0	44.5	54.0	-9.5	Mid Ch. 2426 MHz, Adv, EUT Vert
12129.060	45.9	-1.5	1.4	164.0	3.0	0.0	Horz	AV	0.0	44.4	54.0	-9.6	Mid Ch. 2426 MHz, Adv, EUT On Side
12011.210	45.5	-2.2	1.0	317.0	3.0	0.0	Vert	AV	0.0	43.3	54.0	-10.7	Low Ch. 2402 MHz, Adv, EUT Vert
12211.160	43.6	-1.0	1.0	135.0	3.0	0.0	Vert	AV	0.0	42.6	54.0	-11.4	Mid Ch. 2442 MHz, Data, EUT Vert
12211.180	43.5	-1.0	1.1	134.0	3.0	0.0	Horz	AV	0.0	42.5	54.0	-11.5	Mid Ch. 2442 MHz, Data, EUT On Side
12391.140	43.3	-0.9	1.0	87.0	3.0	0.0	Vert	AV	0.0	42.4	54.0	-11.6	High Ch. 2478 MHz, Data, EUT Vert
12398.990	43.3	-0.9	1.0	75.0	3.0	0.0	Vert	AV	0.0	42.4	54.0	-11.6	High Ch. 2480 MHz, Adv, EUT Vert
12399.000	43.1	-0.9	1.3	353.0	3.0	0.0	Horz	AV	0.0	42.2	54.0	-11.8	High Ch. 2480 MHz, Adv, EUT On Side
12388.980	43.0	-0.9	1.1	128.0	3.0	0.0	Horz	AV	0.0	42.1	54.0	-11.9	High Ch. 2478 MHz, Data, EUT On Side
12011.160	43.5	-2.2	1.4	344.0	3.0	0.0	Horz	AV	0.0	41.3	54.0	-12.7	Low Ch. 2402 MHz, Adv, EUT On Side
12019.010	43.3	-2.1	1.4	215.0	3.0	0.0	Horz	AV	0.0	41.2	54.0	-12.8	Low Ch. 2404 MHz, Data, EUT On Side
4852.117	30.3	10.8	1.7	60.0	3.0	0.0	Vert	AV	0.0	41.1	54.0	-12.9	Mid Ch. 2426 MHz, Adv, EUT Vert
4804.008	29.6	10.5	1.2	79.0	3.0	0.0	Vert	AV	0.0	40.1	54.0	-13.9	Low Ch. 2402 MHz, Adv, EUT Vert
4884.050	28.7	11.0	1.2	54.0	3.0	0.0	Vert	AV	0.0	39.7	54.0	-14.3	Mid Ch. 2442 MHz, Data, EUT Vert
4852.125	28.5	10.8	1.0	10.0	3.0	0.0	Horz	AV	0.0	39.3	54.0	-14.7	Mid Ch. 2426 MHz, Adv, EUT On Side
4960.042	27.3	11.5	1.0	45.0	3.0	0.0	Vert	AV	0.0	38.8	54.0	-15.2	High Ch. 2480 MHz, Adv, EUT Vert
4955.983	27.3	11.5	1.0	50.0	3.0	0.0	Vert	AV	0.0	38.8	54.0	-15.2	High Ch. 2478 MHz, Data, EUT Vert
4960.092	26.6	11.5	1.0	203.0	3.0	0.0	Horz	AV	0.0	38.1	54.0	-15.9	High Ch. 2480 MHz, Adv, EUT On Side
4884.167	26.9	11.0	1.8	355.0	3.0	0.0	Horz	AV	0.0	37.9	54.0	-16.1	Mid Ch. 2442 MHz, Data, EUT On Side
4804.067	27.3	10.5	1.9	332.0	3.0	0.0	Horz	AV	0.0	37.8	54.0	-16.2	Low Ch. 2402 MHz, Adv, EUT On Side
7440.775	37.5	20.1	1.8	53.0	3.0	0.0	Horz	PK	0.0	57.6	74.0	-16.4	High Ch. 2480 MHz, Adv, EUT On Side
4956.042	25.7	11.5	1.0	67.0	3.0	0.0	Horz	AV	0.0	37.2	54.0	-16.8	High Ch. 2478 MHz, Data, EUT On Side
7440.970	36.2	20.1	1.0	184.0	3.0	0.0	Vert	PK	0.0	56.3	74.0	-17.7	High Ch. 2480 MHz, Adv, EUT Vert
7279.183	36.5	19.1	1.0	184.0	3.0	0.0	Horz	PK	0.0	55.6	74.0	-18.4	Mid Ch. 2426 MHz, Adv, EUT On Side
7279.908	35.9	19.1	1.0	5.0	3.0	0.0	Vert	PK	0.0	55.0	74.0	-19.0	Mid Ch. 2426 MHz, Adv, EUT Vert
4808.125	22.6	10.6	1.0	41.0	3.0	0.0	Vert	AV	0.0	33.2	54.0	-20.8	Low Ch. 2404 MHz, Data, EUT Vert
4808.075	22.2	10.6	1.0	6.0	3.0	0.0	Horz	AV	0.0	32.8	54.0	-21.2	Low Ch. 2404 MHz, Data, EUT On Side
12018.990	53.1	-2.1	1.0	130.0	3.0	0.0	Vert	PK	0.0	51.0	74.0	-23.0	Low Ch. 2404 MHz, Data, EUT Vert
12131.300	52.0	-1.5	1.4	164.0	3.0	0.0	Horz	PK	0.0	50.5	74.0	-23.5	Mid Ch. 2426 MHz, Adv, EUT On Side

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
12128.980	52.0	-1.5	1.0	134.0	3.0	0.0	Vert	PK	0.0	50.5	74.0	-23.5	Mid Ch. 2426 MHz, Adv, EUT Vert
12008.750	51.7	-2.2	1.0	317.0	3.0	0.0	Vert	PK	0.0	49.5	74.0	-24.5	Low Ch. 2402 MHz, Adv,EUT Vert
12399.050	50.4	-0.9	1.0	75.0	3.0	0.0	Vert	PK	0.0	49.5	74.0	-24.5	High Ch. 2480 MHz, Adv, EUT Vert
4852.050	38.5	10.8	1.7	60.0	3.0	0.0	Vert	PK	0.0	49.3	74.0	-24.7	Mid Ch. 2426 MHz, Adv, EUT Vert
12388.730	50.1	-0.9	1.0	87.0	3.0	0.0	Vert	PK	0.0	49.2	74.0	-24.8	High Ch. 2478 MHz, Data, EUT Vert
12208.870	50.1	-1.0	1.0	135.0	3.0	0.0	Vert	PK	0.0	49.1	74.0	-24.9	Mid Ch. 2442 MHz, Data, EUT Vert
4962.433	37.5	11.5	1.0	203.0	3.0	0.0	Horz	PK	0.0	49.0	74.0	-25.0	High Ch. 2480 MHz, Adv, EUT On Side
12399.080	49.9	-0.9	1.3	353.0	3.0	0.0	Horz	PK	0.0	49.0	74.0	-25.0	High Ch. 2480 MHz, Adv, EUT On Side
4960.583	37.3	11.5	1.0	45.0	3.0	0.0	Vert	PK	0.0	48.8	74.0	-25.2	High Ch. 2480 MHz, Adv, EUT Vert
4851.325	38.0	10.8	1.0	10.0	3.0	0.0	Horz	PK	0.0	48.8	74.0	-25.2	Mid Ch. 2426 MHz, Adv, EUT On Side
12388.870	49.7	-0.9	1.1	128.0	3.0	0.0	Horz	PK	0.0	48.8	74.0	-25.2	High Ch. 2478 MHz, Data, EUT On Side
12211.250	49.8	-1.0	1.1	134.0	3.0	0.0	Horz	PK	0.0	48.8	74.0	-25.2	Mid Ch. 2442 MHz, EUT On Side
4884.275	37.5	11.0	1.2	54.0	3.0	0.0	Vert	PK	0.0	48.5	74.0	-25.5	Mid Ch. 2442 MHz, Data, EUT Vert
12008.960	50.6	-2.2	1.4	344.0	3.0	0.0	Horz	PK	0.0	48.4	74.0	-25.6	Low Ch. 2402 MHz, Adv,EUT On Side
4803.600	37.8	10.5	1.2	79.0	3.0	0.0	Vert	PK	0.0	48.3	74.0	-25.7	Low Ch. 2402 MHz, Adv,EUT Vert
4803.683	37.6	10.5	1.9	332.0	3.0	0.0	Horz	PK	0.0	48.1	74.0	-25.9	Low Ch. 2402 MHz, Adv,EUT On Side
4955.058	36.6	11.5	1.0	50.0	3.0	0.0	Vert	PK	0.0	48.1	74.0	-25.9	High Ch. 2478 MHz, Data, EUT Vert
12018.930	50.2	-2.1	1.4	215.0	3.0	0.0	Horz	PK	0.0	48.1	74.0	-25.9	Low Ch. 2404 MHz, Data, EUT On Side
4885.092	36.4	11.0	1.8	355.0	3.0	0.0	Horz	PK	0.0	47.4	74.0	-26.6	Mid Ch. 2442 MHz, Data, EUT On Side
4807.792	36.8	10.6	1.0	41.0	3.0	0.0	Vert	PK	0.0	47.4	74.0	-26.6	Low Ch. 2404 MHz, Data, EUT Vert
4955.675	35.8	11.5	1.0	67.0	3.0	0.0	Horz	PK	0.0	47.3	74.0	-26.7	High Ch. 2478 MHz, Data, EUT On Side
4807.900	36.6	10.6	1.0	6.0	3.0	0.0	Horz	PK	0.0	47.2	74.0	-26.8	Low Ch. 2404 MHz, Data, EUT On Side



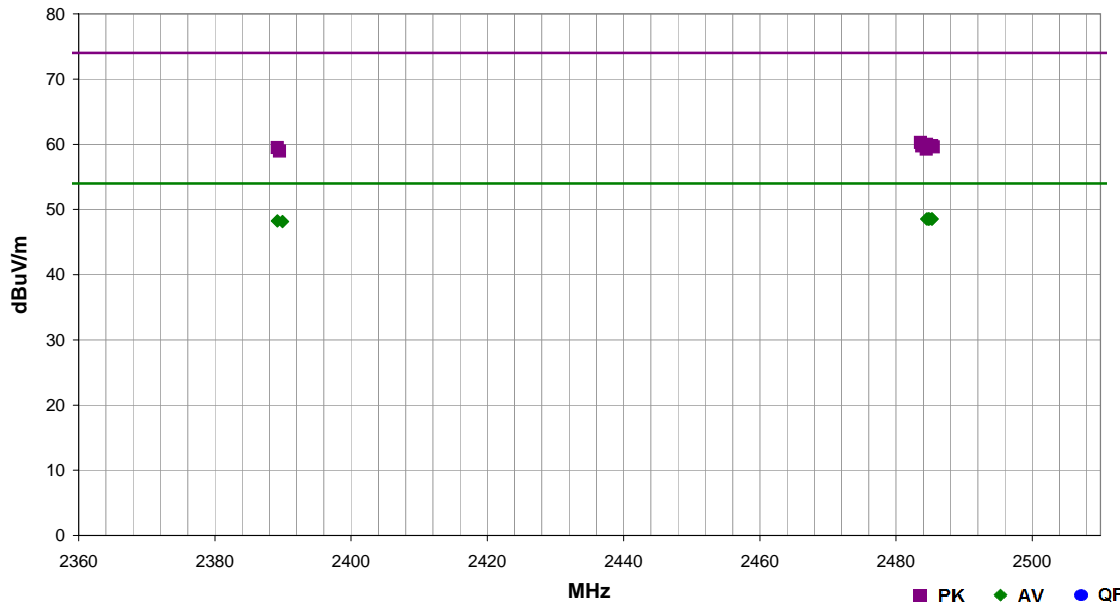
SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2014.02.19
EmiR5 2014.02.04

Work Order:	SUPR0120	Date:	05/09/14	
Project:	Supra eKEY Fob	Temperature:	20.5 °C	
Job Site:	EV01	Humidity:	47.3% RH	
Serial Number:	0161	Barometric Pres.:	1015 mbar	
EUT:	Supra eKEY Fob			
Configuration:	1			
Customer:	Supra, A Division of UTCFS			
Attendees:	None			
EUT Power:	Internal Battery			
Operating Mode:	Continous transmit			
Deviations:	None			
Comments:	Reference data comments for EUT channel and oreintation.			

Test Specifications	N/A	Test Method
FCC 15.247:2014		ANSI C63.10:2009

Run #	21	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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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
2485.287	25.9	2.7	1.0	308.0	3.0	20.0	Vert	AV	0.0	48.6	54.0	-5.4	High Ch. 2480 MHz, Adv, On Side
2485.243	25.9	2.7	2.7	290.0	3.0	20.0	Horz	AV	0.0	48.6	54.0	-5.4	High Ch. 2480 MHz, Adv, Vert
2484.897	25.9	2.7	3.1	38.0	3.0	20.0	Horz	AV	0.0	48.6	54.0	-5.4	High Ch. 2480 MHz, Adv, On Side
2484.703	25.9	2.7	1.0	22.0	3.0	20.0	Vert	AV	0.0	48.6	54.0	-5.4	High Ch. 2480 MHz, Adv, Vert
2484.710	25.9	2.7	1.0	8.0	3.0	20.0	Horz	AV	0.0	48.6	54.0	-5.4	High Ch. 2480 MHz, Adv, EUT Horz
2484.473	25.9	2.7	1.0	130.0	3.0	20.0	Vert	AV	0.0	48.6	54.0	-5.4	High Ch. 2480 MHz, Adv, EUT Horz
2389.180	26.0	2.3	1.3	4.0	3.0	20.0	Horz	AV	0.0	48.3	54.0	-5.7	Low Ch. 2402 MHz, Adv, EUT On Side
2389.903	25.9	2.3	1.0	201.0	3.0	20.0	Vert	AV	0.0	48.2	54.0	-5.8	Low Ch. 2402 MHz, Adv, EUT On Side
2483.577	37.6	2.7	1.0	130.0	3.0	20.0	Vert	PK	0.0	60.3	74.0	-13.7	High Ch. 2480 MHz, Adv, EUT Horz
2484.493	37.3	2.7	3.1	38.0	3.0	20.0	Horz	PK	0.0	60.0	74.0	-14.0	High Ch. 2480 MHz, Adv, On Side
2485.263	37.1	2.7	2.7	290.0	3.0	20.0	Horz	PK	0.0	59.8	74.0	-14.2	High Ch. 2480 MHz, Adv, Vert
2483.770	37.1	2.7	1.0	22.0	3.0	20.0	Vert	PK	0.0	59.8	74.0	-14.2	High Ch. 2480 MHz, Adv, Vert
2485.483	36.9	2.7	1.0	8.0	3.0	20.0	Horz	PK	0.0	59.6	74.0	-14.4	High Ch. 2480 MHz, Adv, EUT Horz
2389.173	37.2	2.3	1.3	4.0	3.0	20.0	Horz	PK	0.0	59.5	74.0	-14.5	Low Ch. 2402 MHz, Adv, EUT On Side
2484.433	36.6	2.7	1.0	308.0	3.0	20.0	Vert	PK	0.0	59.3	74.0	-14.7	High Ch. 2480 MHz, Adv, On Side
2389.510	36.7	2.3	1.0	201.0	3.0	20.0	Vert	PK	0.0	59.0	74.0	-15.0	Low Ch. 2402 MHz, Adv, EUT On Side