

Prüfbericht - Nr.: <i>Test Report No.:</i>	50213031 001	Auftrags-Nr.: <i>Order No.:</i>	1160054277	Seite 1 von 38 <i>Page 1 of 38</i>
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	27.12.2018	
Auftraggeber: <i>Client:</i>	Ring LLC 1523 26th St, Santa Monica, CA 90404, USA			
Prüfgegenstand: <i>Test item:</i>	Floodlight Battery			
Bezeichnung / Typ-Nr. : <i>Identification / Type No. :</i>	5B21S8			
Auftrags-Inhalt: <i>Order content:</i>	TÜV Rheinland – FCC Service			
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.247			
Wareneingangsdatum: <i>Date of receipt:</i>	21.12.2018			
Prüfmuster-Nr.: <i>Test sample No.:</i>	A000860702-001 A000860702-002			
Prüfzeitraum: <i>Testing period:</i>	21.12.2018-27.12.2018			
Ort der Prüfung: <i>Place of testing:</i>	Refer to section 1.1.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland / CCIC (Ningbo) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von / tested by: Caidong Xie/Trainee 29.12.2018 Season Yang/PE		kontrolliert von / reviewed by: Feng Liang/TC 29.12.2018		
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>
Sonstiges/ Other				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery :</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
*Legende: 1= Sehr gut 2 = gut 3= befriedigend 4= ausreichend 5 = mangelhaft P(ass) =entspricht o.g. Prüfgrundlage(n) F(ail)= entspricht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T =nicht getestet Legend: 1= very good 2 = good 3= satisfactory 4= sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail)= failed a.m. test specification(s) N/A = not applicable N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i>				

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TEST SUMMARY

4.1.1 ANTENNA REQUIREMENT

Result:

Pass

4.1.2 6dB BANDWIDTH MEASUREMENT

Result:

Pass

4.1.3 MAXIMUM CONDUCTED OUTPUT POWER

Result:

Pass

4.1.4 POWER SPECTRAL DENSITY

Result:

Pass

4.1.5 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 kHz BANDWIDTH

Result:

Pass

4.1.6 RADIATED SPURIOUS EMISSION

Result:

Pass

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1 Test Sites

1.1 Test Facilities

Laboratory: TÜV Rheinland /CCIC(Ningbo) Co., Ltd.

**1st Floor, Building 11, Scholar Innovation Park, No.1188 Zhongguan Road,
Zhenhai District, Ningbo 315200 P.R. China.**

The used test equipment is in accordance with CISPR 16-1 series standards for measurement of radio interference.

1.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

No.	Equipment	Model	Inventory no.	Last cal. date	Cal. due date
1.	EMI test receiver	ESR7	101929	2018.11.26	2019.11.25
2.	Spectrum analyzer	FSV40	101412	2018.11.26	2019.11.25
3.	Pre-amplifier	SCU-18F	180051	2018.11.26	2019.11.25
4.	Horn antenna	HF907	102653	2017.08.03	2020.08.02
5.	Bilog Antenna	CBL6112D	49033	2018.04.13	2021.04.12

1.3 Measurement Uncertainty

Test Item	Expanded Measurement Uncertainty (k=2)
Conducted Emission (9-150kHz)	3.70dB
Conducted Emission (150k-30MHz)	3.30dB
Radiated Emission (30-1000MHz)	4.52dB
Radiated Emission (1-18GHz)	4.37dB

2 General Product Information

2.1 Product Function and Intended Use

The EUT(equipment under test) is a Floodlight Battery which support Bluetooth and 902-928MHz Wireless function operated at 2.4GHz and 915MHz respectively. For the further information, refer to the user's manual.

2.2 Ratings and System Details

Operating Voltage	:	DC 6V
Testing Voltage	:	DC 6V
Rated power	:	Max. 9.5W
Protection Class	:	Class III

Refer to the user's manual for further information.

Technical Specification of Bluetooth (BLE)

Technical Specification	Value
Operating Frequency band	2402 – 2480 MHz
Bluetooth Core Version	Bluetooth Low Energy 4.2
Channel separation	2MHz
Extreme Temperature Range	-20°C ~ 55°C
Modulation	GFSK
Antenna Type	Internal Antenna
Antenna Gain	2dBi
Channel	0~39

Technical Specification of 902-928MHz Wireless

Technical Specification	Value
Operating Frequency band	902 – 928 MHz
902-928MHz Wireless Core Version	
Channel separation	500KHz
Extreme Temperature Range	-20°C ~ 55°C
Modulation	GFSK, LoRa without HFSS
Antenna Type	Internal Antenna
Antenna Gain	-5.7dBi
Channel	902.5MHz, 903.3MHz, 908MHz, 913.7MHz 916MHz, 922.5MHz, 923.3MHz, 924.1MHz, 924.9MHz, 925.7MHz, 926.5MHz, 927.3MHz Remark: The product will be set to work at one of the above frequency point (channel) in user's software.

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2.3 Independent Operation Modes

The basic operation modes are:

On, BLE, 902-928MHz Wireless

1. Transmitting on low channel
2. Transmitting on middle channel
3. Transmitting on high channel

2.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit diagram for further information.

2.5 Submitted Documents

Circuit diagram, PCB layout, Labels, user's manual, etc.

3 Test Set-up and Operation Modes

3.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power level. The test modes were adapted accordingly in reference to the instructions for use.

3.2 Test Operation and Test Software

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power was selected according to the instruction given by the manufacturer. The setting of the RF output power expected by the customer shall be fixed on the firmware of the final end product.

All testing were performed according to the procedures in ANSI C63.10: 2013.

Test Software EMC32 V10.30 was used in the radiated emission test.

3.3 Special Accessories and Auxiliary Equipment

Description	Manufacturer	Model No.
notebook	Lenovo	T420

3.4 Countermeasures to achieve EMC Compliance

The tested sample contained noise suppression components as specified in the circuit diagram. No special measure is employed to achieve the requirement.

3.5 Test set-up

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

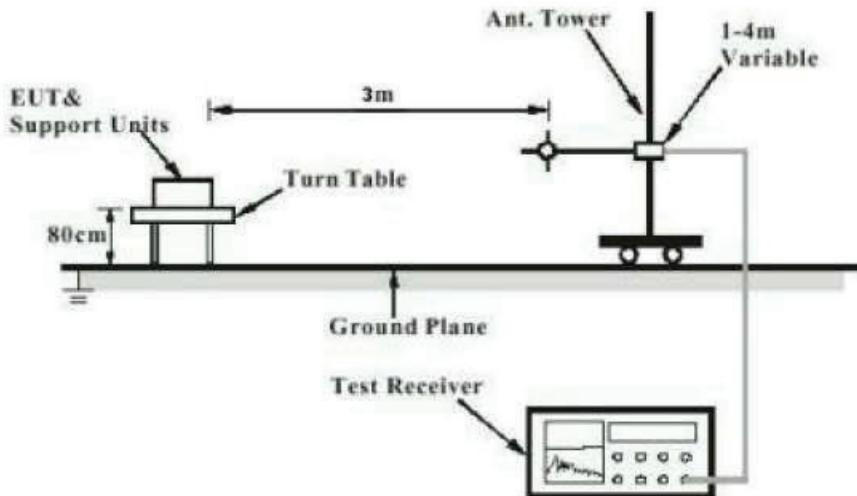


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

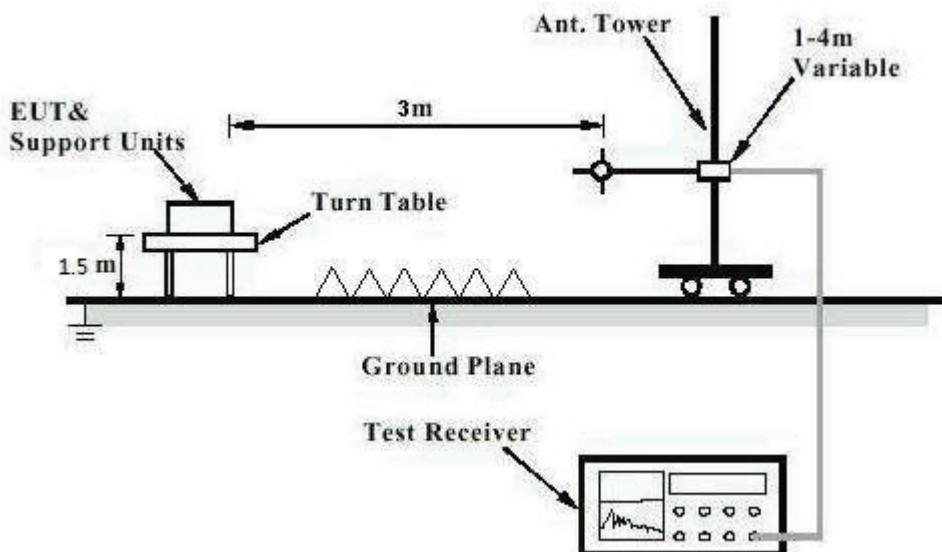
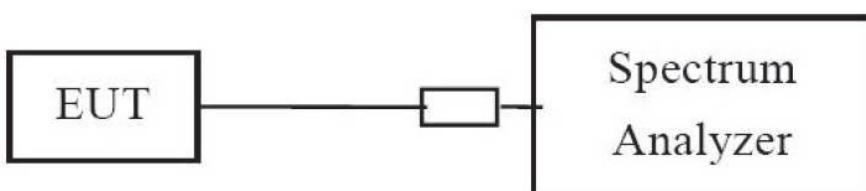


Diagram of Measurement Configuration for Conducted Transmitter Measurement



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4 Test Results

4.1 Transmitter Requirement & Test Suites

4.1.1 Antenna Requirement

Result:

Pass

Test Specification

Test standard

: FCC Part 15.247(b)(4) and Part 15.203

Limits

: the use of antennas with directional gains that do not exceed 6dBi

According to the manufacturer declared, the EUT has two internal antennas, the maximum directional gain of antennas is 2dBi, and the antennas connector are designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision. For more details, refer to EUT photo.

4.1.2 6dB Bandwidth Measurement

Result:

Pass

Test Specification

Test standard

: FCC Part 15.247(a)(2)

Basic standard

: ANSI C63.10: 2013

Limits

: At least 500kHz

Kind of test site

: Shielded Room

Test Setup

Date of testing : 2018.12.24

Input voltage : Powered by battery

Operational mode : On, BLE, 902-928MHz Wireless

Test channel : Lo, Mi, Hi

Temperature : 20.5°C

Relative humidity : 53.6%

Atmospheric pressure : 101 kPa

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Table 2a: Test result of 6dB Bandwidth, BLE

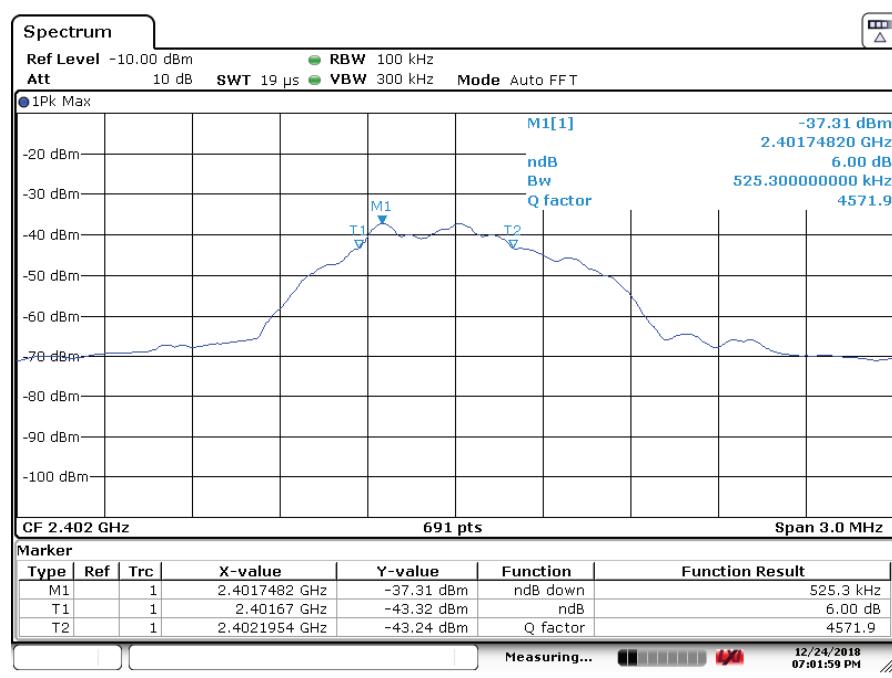
Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low Channel	2402	525.3	500	Pass
Mid Channel	2440	525.3	500	Pass
High Channel	2480	529.7	500	Pass

Table 3b: Test result of 6dB Bandwidth, 902-928MHz Wireless

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low Channel	902.5	620.8	500	Pass
Mid Channel	913.7	625.2	500	Pass
High Channel	927.3	625.2	500	Pass

Figure 1: 6dB Bandwidth Measurement

Low Channel: 2402MHz

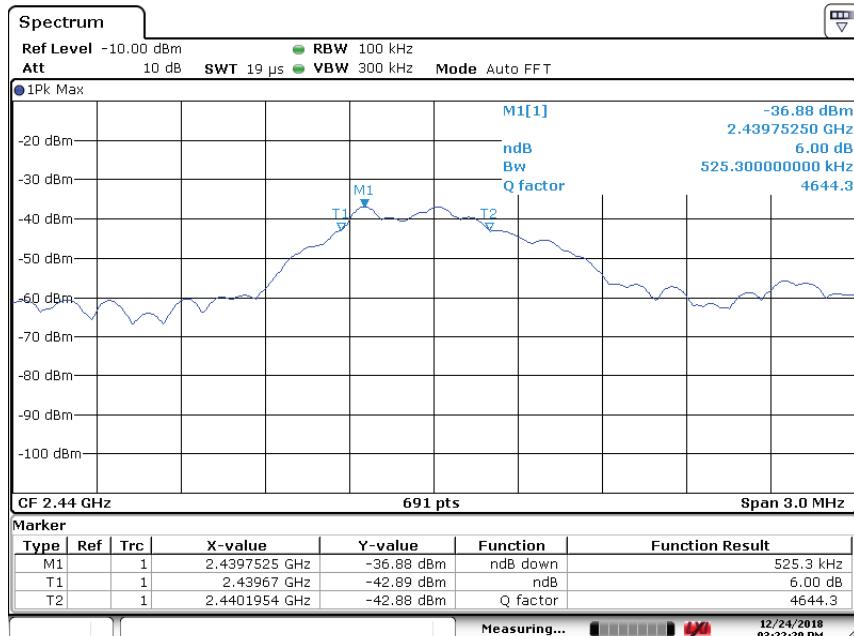


Date: 24.DEC.2018 19:01:59

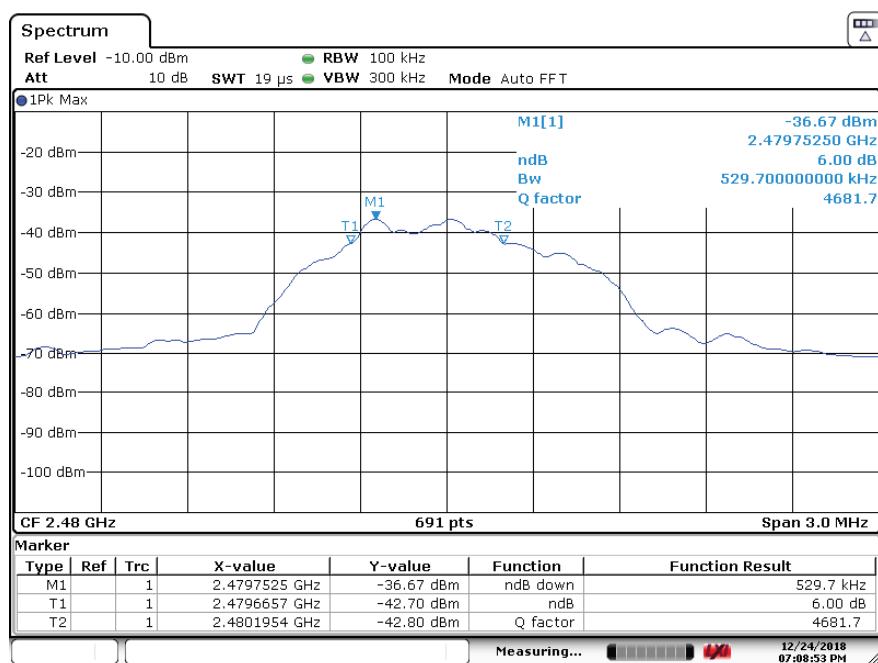
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Mid Channel: 2440MHz



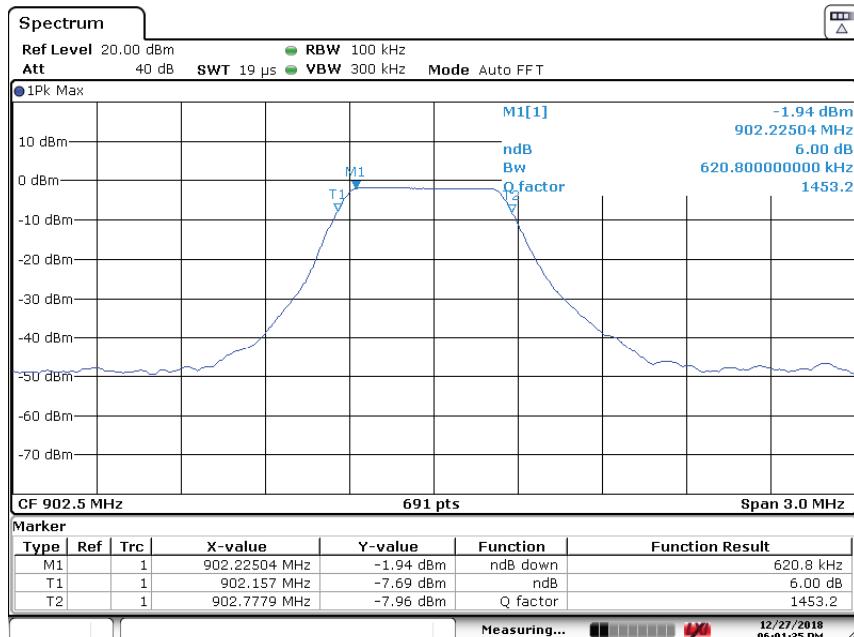
High Channel: 2480MHz



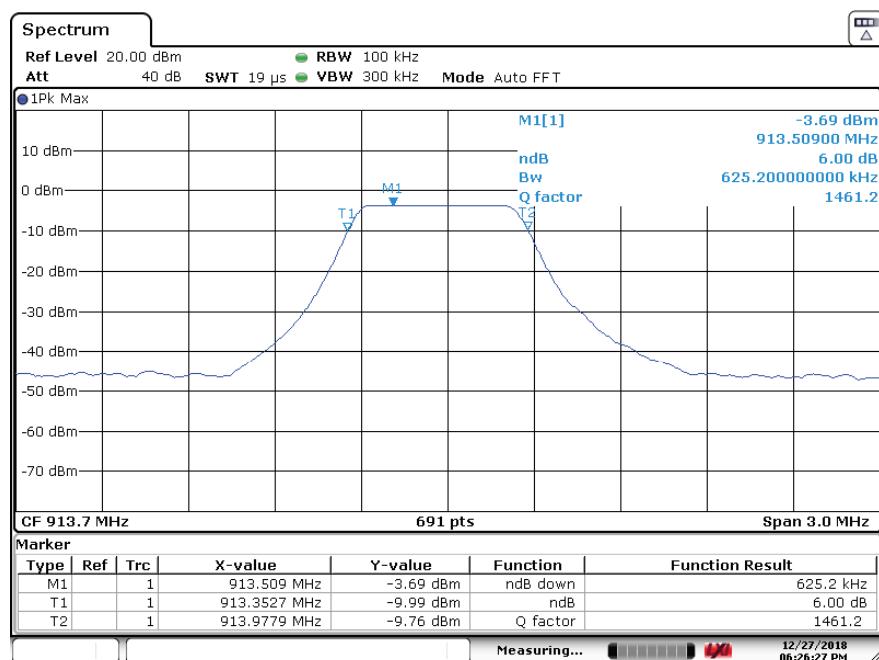
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Low Channel: 902.5MHz



Mid Channel: 913.7MHz



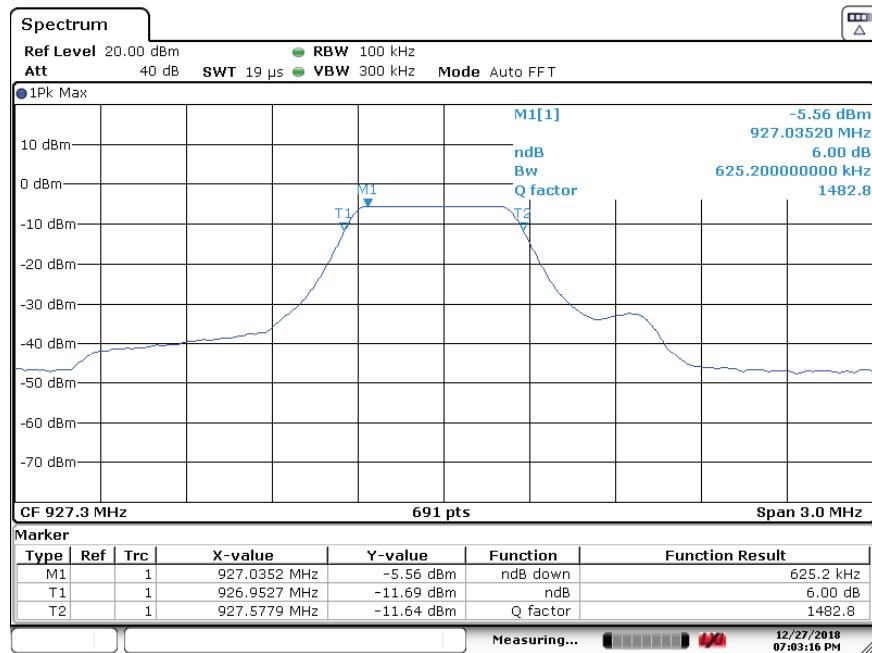
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High Channel: 927.3MHz



4.1.3 Maximum Conducted Output Power

Result:

Pass

Test Specification	:	FCC Part 15.247(b)(3)
Test standard	:	ANSI C63.10: 2013
Basic standard	:	
Limits	:	For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850MHz bands: 1 Watt (30dBm)
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2018.12.24
Input voltage	:	Powered by battery
Operational mode	:	On, BLE, 902-928MHz Wireless
Test channel	:	Lo, Mi, Hi
Temperature	:	20.5°C
Relative humidity	:	53.6%
Atmospheric pressure	:	101 kPa

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Table 4a: Test result of Peak Output Power, BLE

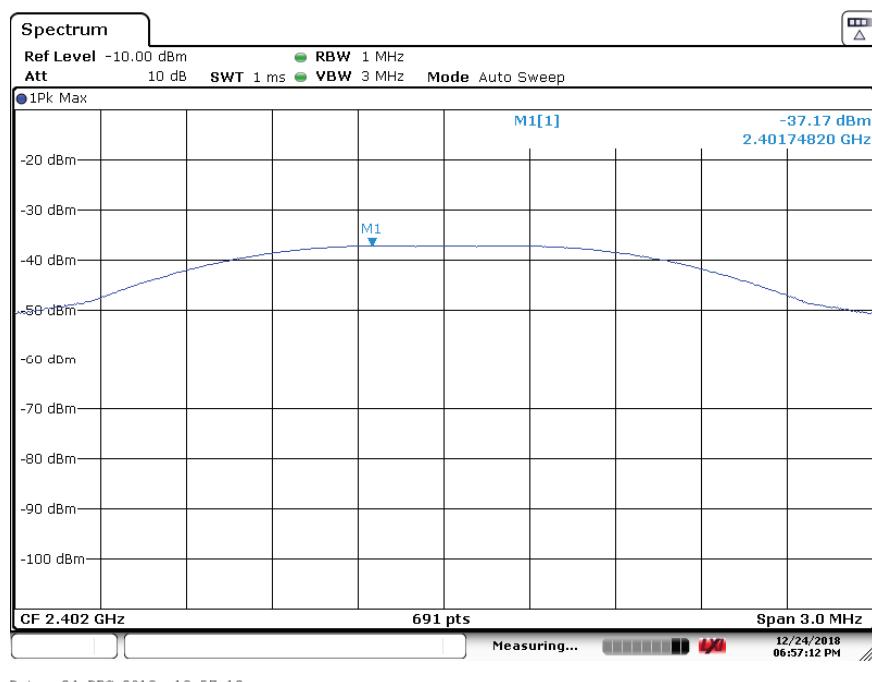
Channel	Channel Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)
Low Channel	2402	-37.17	30
Mid Channel	2440	-36.67	30
High Channel	2480	-36.6	30

Table 5b: Test result of Peak Output Power, 902-928MHz Wireless

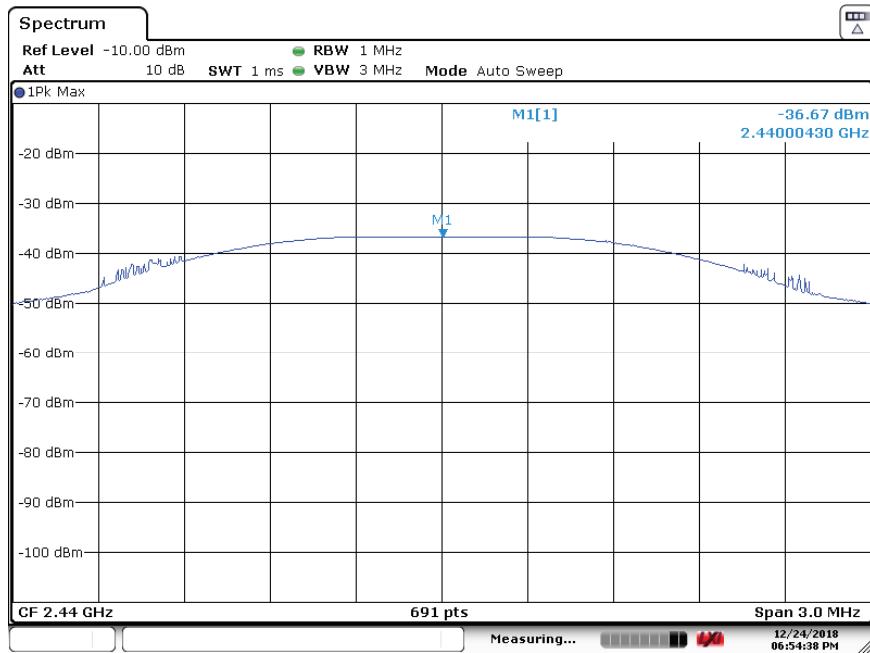
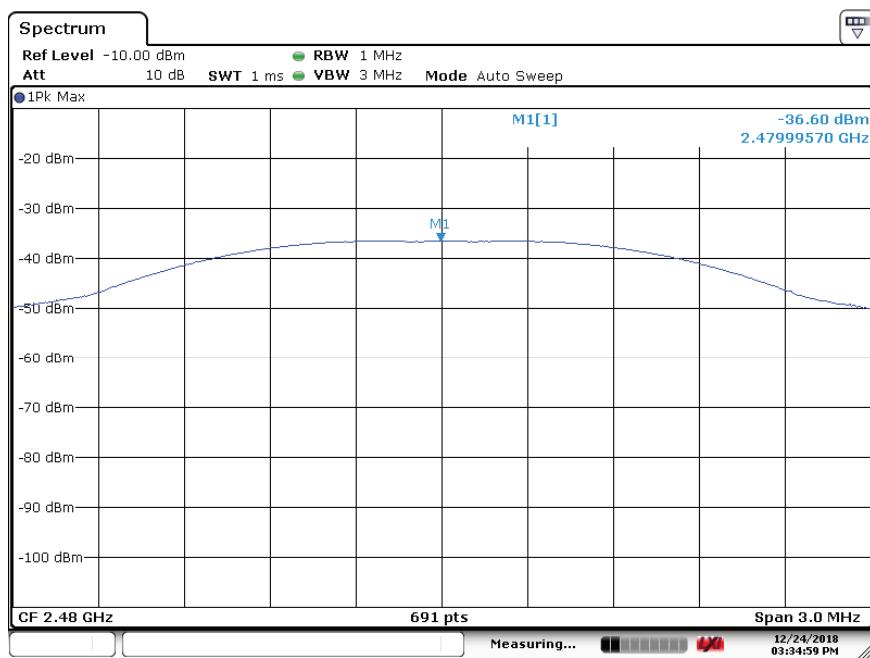
Channel	Channel Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)
Low Channel	902.5	-1.7	30
Mid Channel	913.7	-3.41	30
High Channel	927.3	-5.38	30

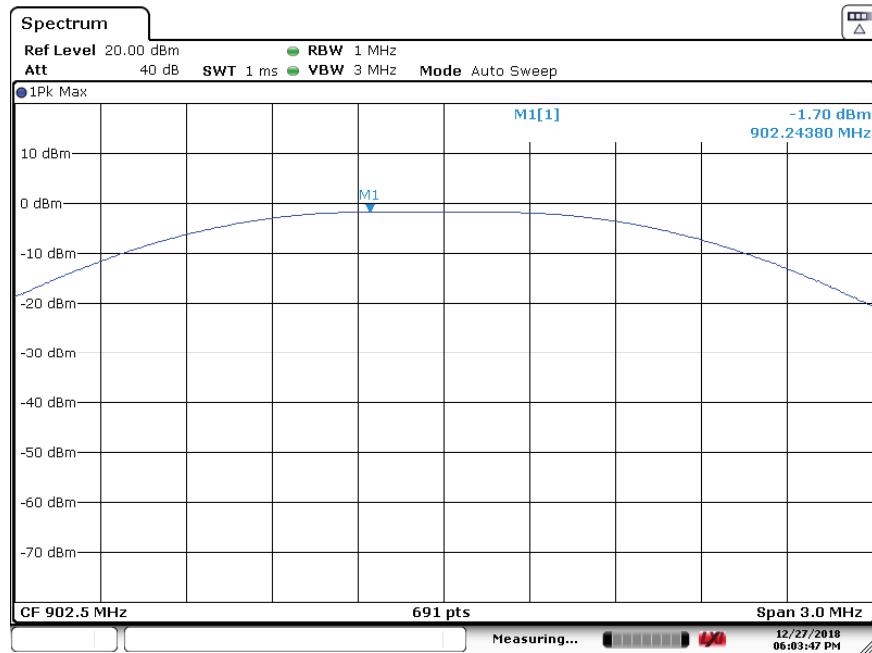
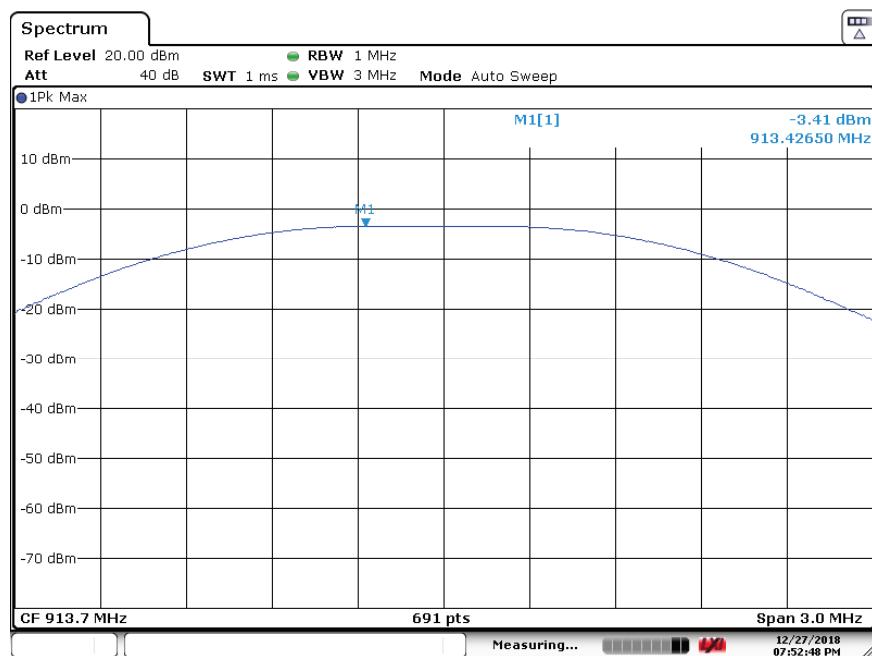
Figure 2: Maximum Conducted Output Power

Low Channel: 2402MHz



Date: 24.DEC.2018 18:57:12

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Mid Channel: 2440MHz

High Channel: 2480MHz


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Low Channel: 902.5MHz

Mid Channel: 913.7MHz


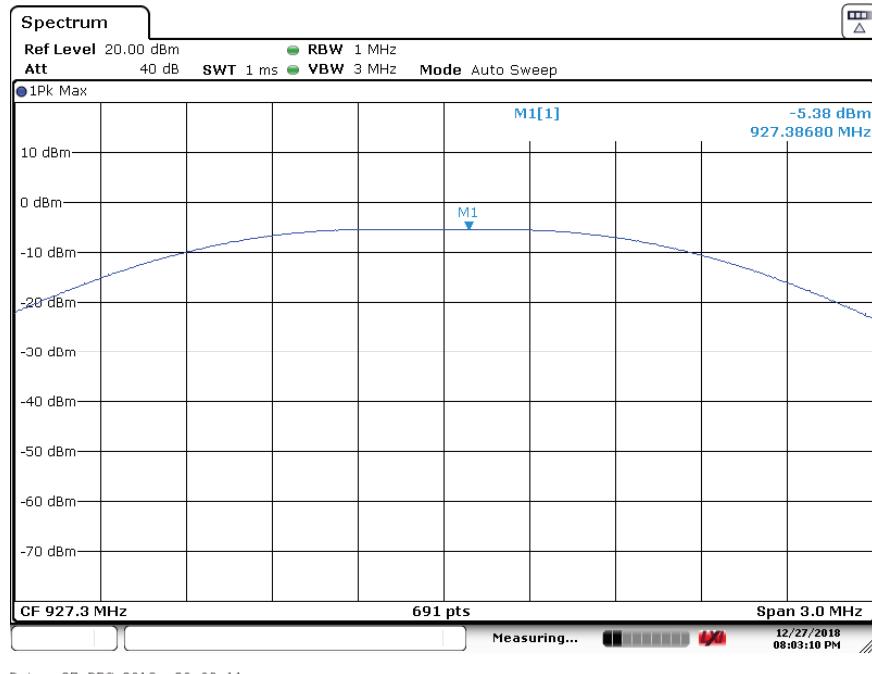
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High Channel: 927.3MHz



4.1.4 Power Spectral Density

Result:
Pass

Test Specification	
Test standard	: FCC Part 15.247(e)
Basic standard	: ANSI C63.10: 2013
Limits	: 8 dBm in any 3 kHz band
Kind of test site	: Shielded Room

Test Setup

Date of testing	:	2018.12.24
Input voltage	:	Powered by battery
Operational mode	:	On, BLE, 902-928MHz Wireless
Test channel	:	Lo, Mi, Hi
Temperature	:	20.5°C
Relative humidity	:	53.6%
Atmospheric pressure	:	101 kPa

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Table 6a: Test result of Power Spectral Density, BLE

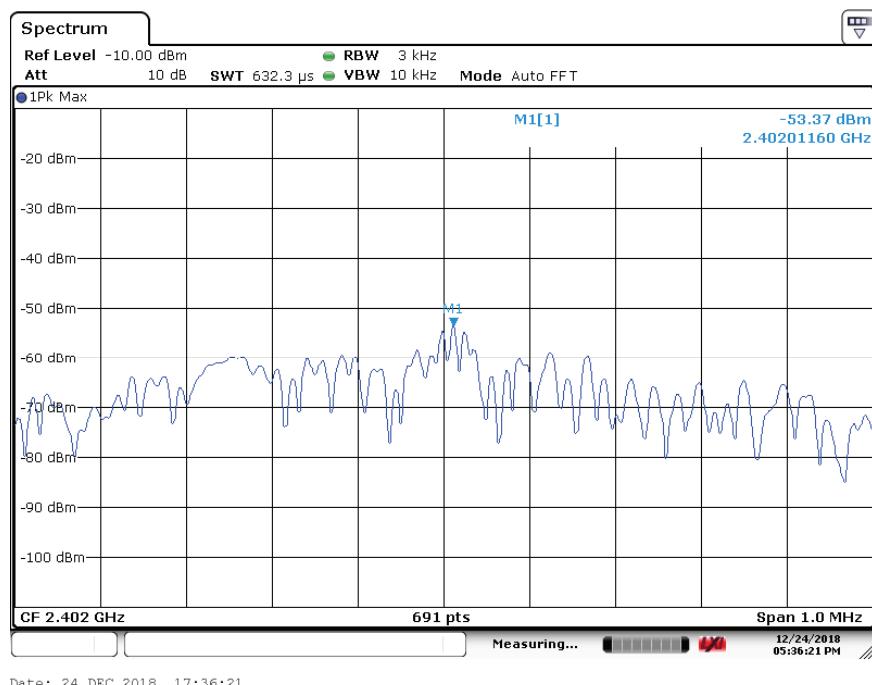
Channel	Channel Frequency (MHz)	Measured Power Density (dBm)	Limit (dBm)	Result
Low Channel	2402	-53.37	8.0	Pass
Mid Channel	2440	-52.99	8.0	Pass
High Channel	2480	-52.79	8.0	Pass

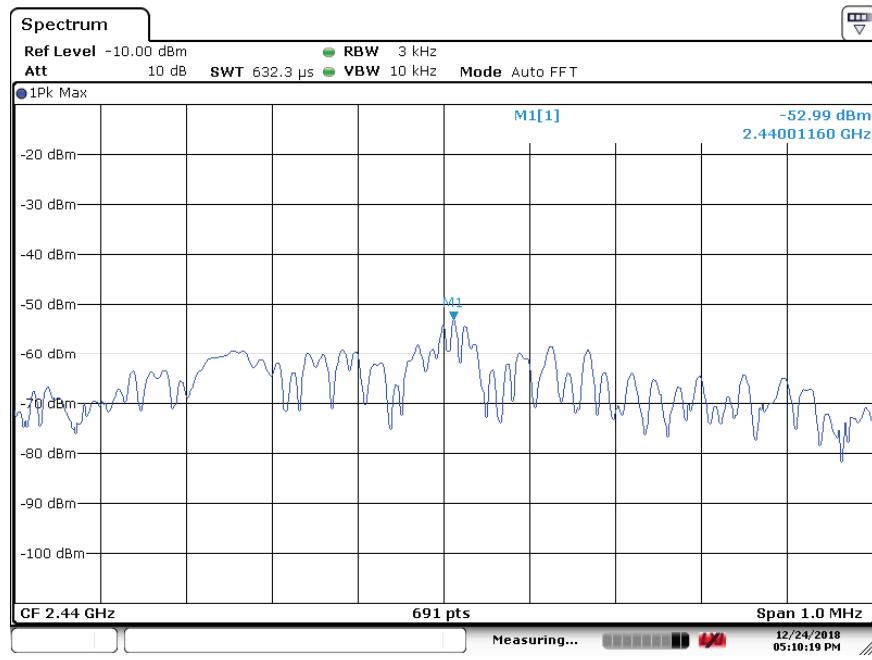
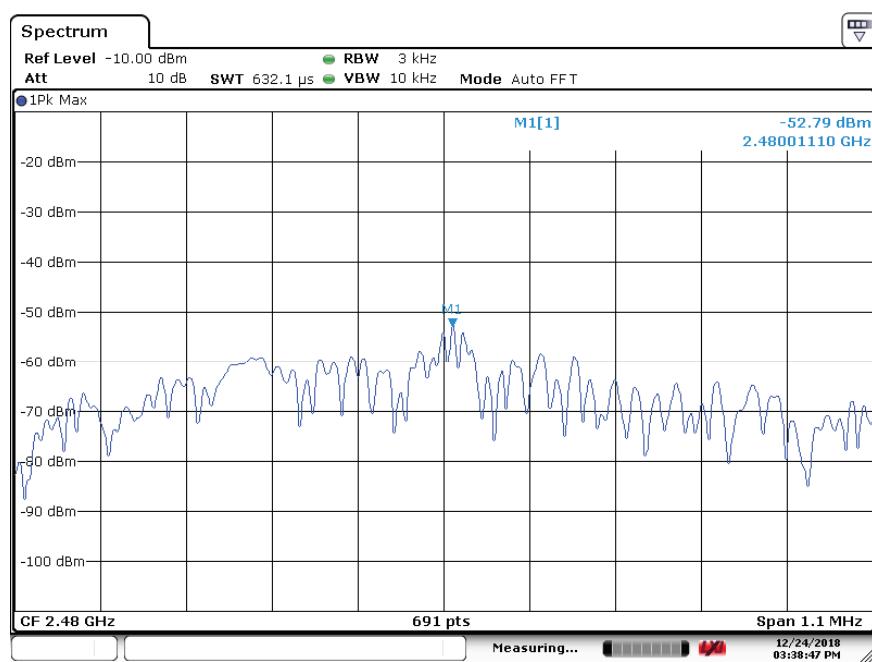
Table 7b: Test result of Power Spectral Density, 902-928MHz Wireless

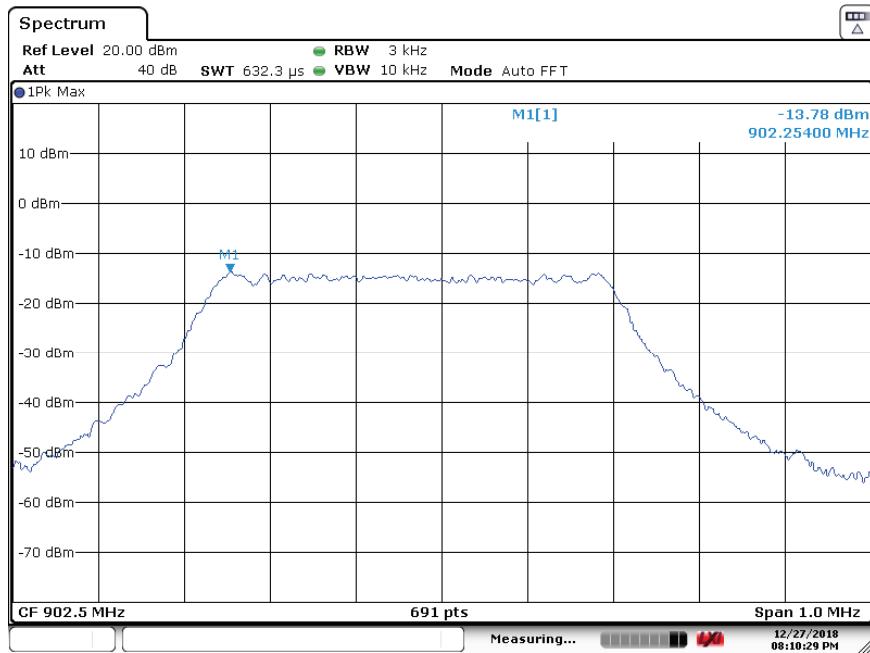
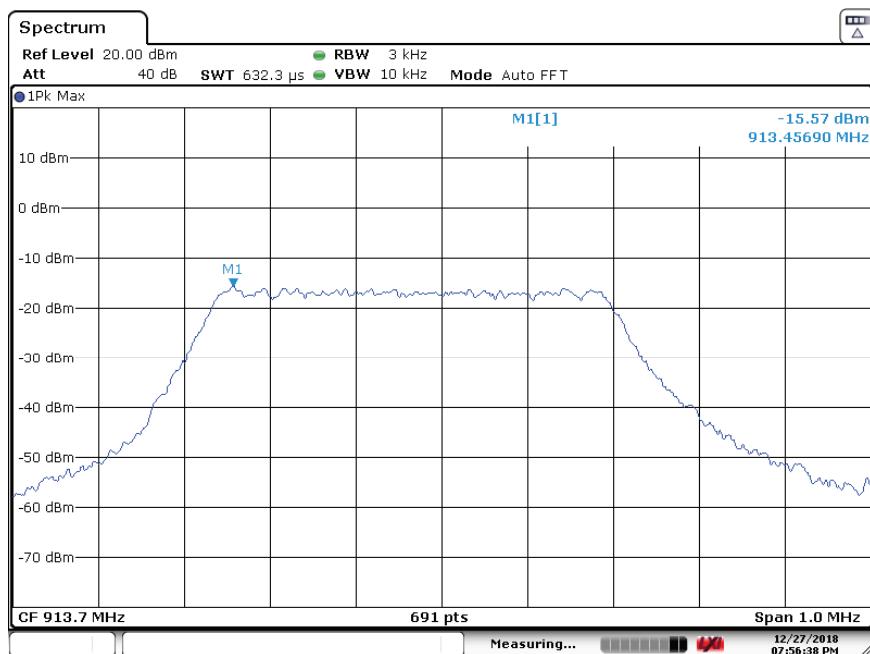
Channel	Channel Frequency (MHz)	Measured Power Density (dBm)	Limit (dBm)	Result
Low Channel	902.5	-13.78	8.0	Pass
Mid Channel	913.7	-15.57	8.0	Pass
High Channel	927.3	-17.7	8.0	Pass

Figure 3: Power Spectral Density

Low Channel: 2402MHz

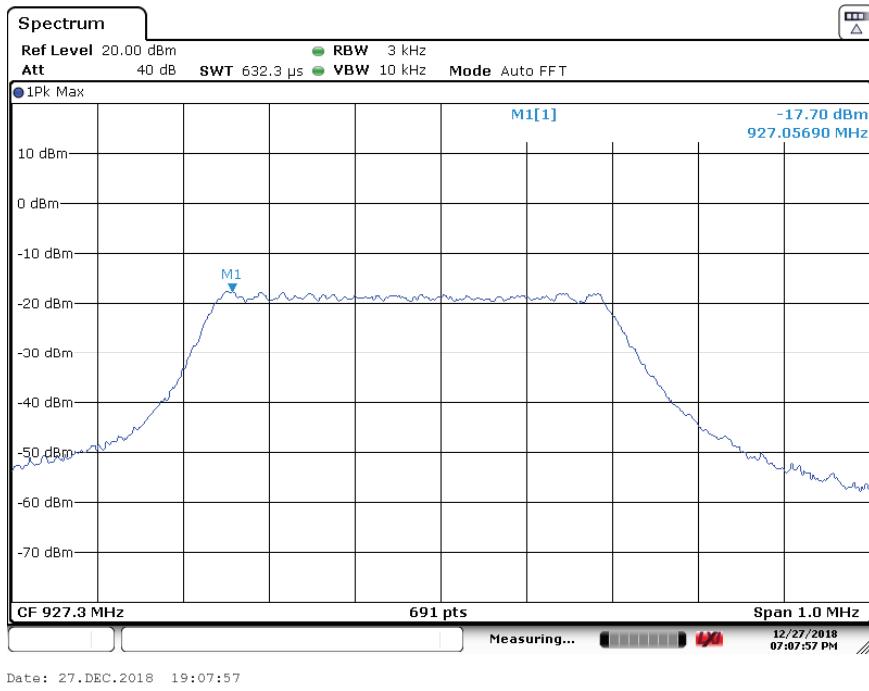


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Mid Channel: 2440MHz

High Channel: 2480MHz


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Low Channel: 902.5MHz

Mid Channel: 913.7MHz


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High Channel: 927.3MHz



4.1.5 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

Result:
Pass

Test Specification	
Test standard	: FCC Part 15.247(d)
Basic standard	: ANSI C63.10: 2013
Limits	: 20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power);
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2018.12.24
Input voltage	: Powered by battery
Operational mode	: On, BLE, 902-928MHz Wireless
Test channel	: Lo, Mi, Hi
Temperature	: 20.5°C
Relative humidity	: 53.6%
Atmospheric pressure	: 101 kPa

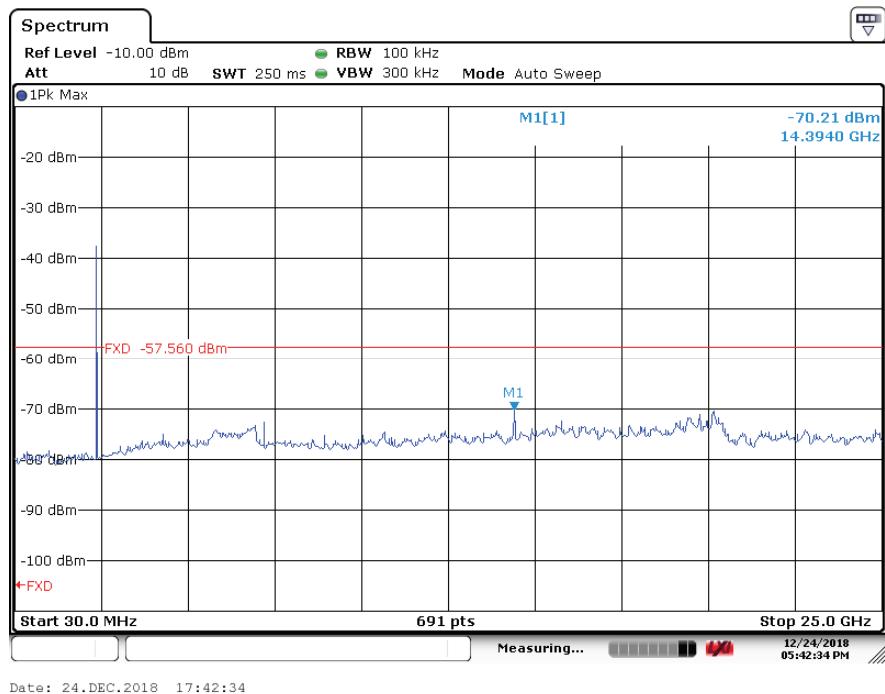
All emissions are more than 20dB below fundamental, compliance is achieved as well.

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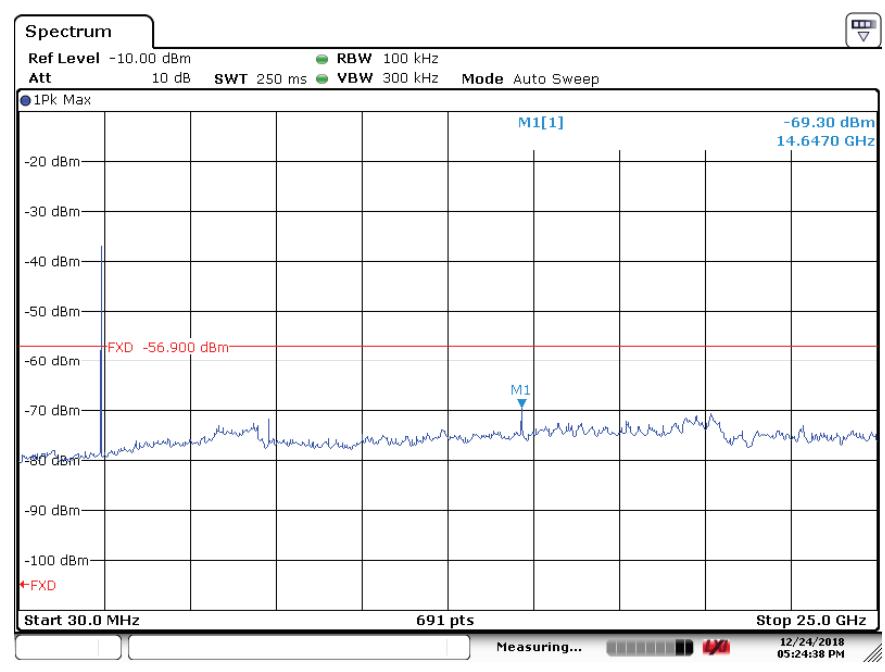
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Figure 4: Conducted Spurious Emissions

Low Channel: 2402MHz



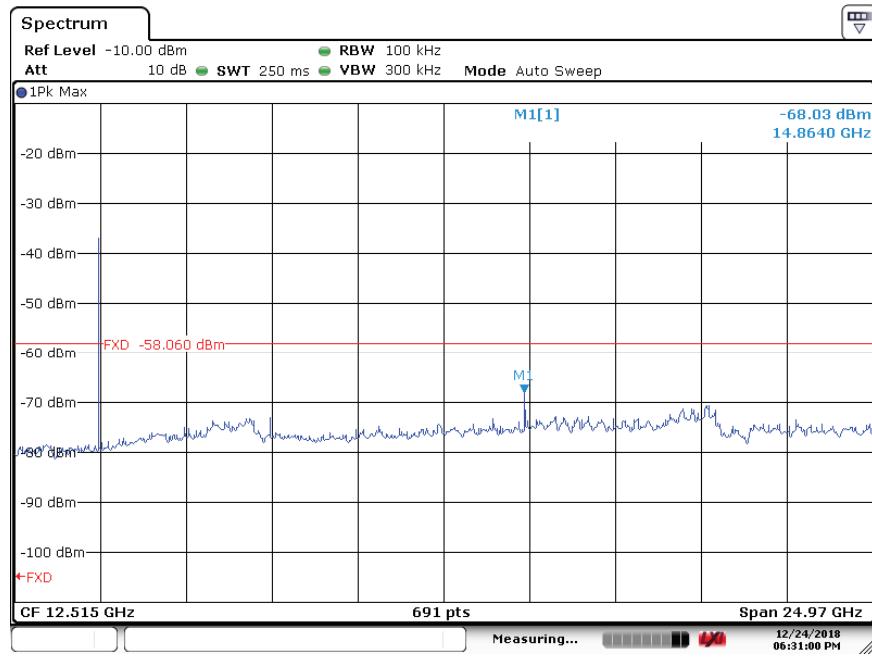
Mid Channel: 2440MHz



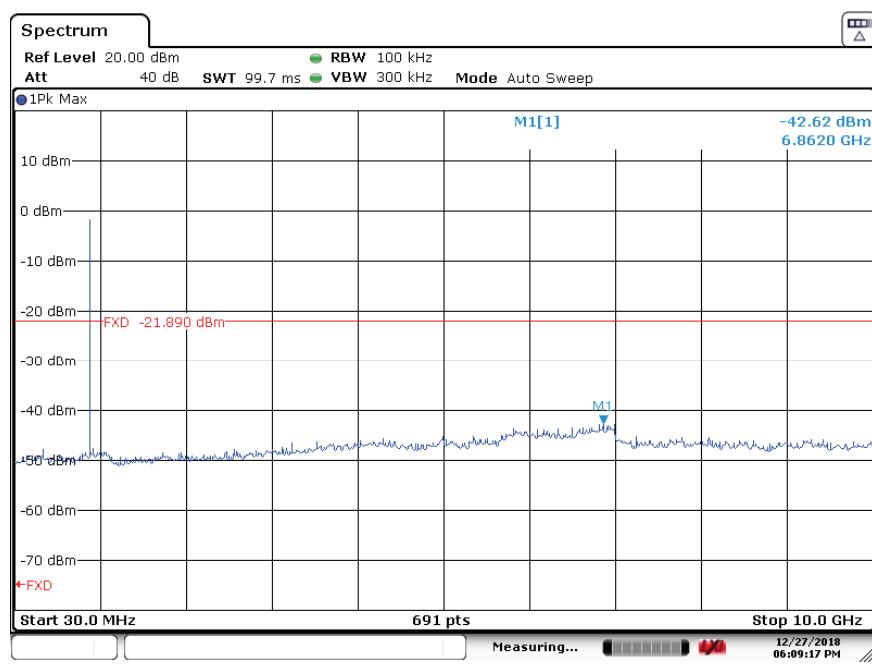
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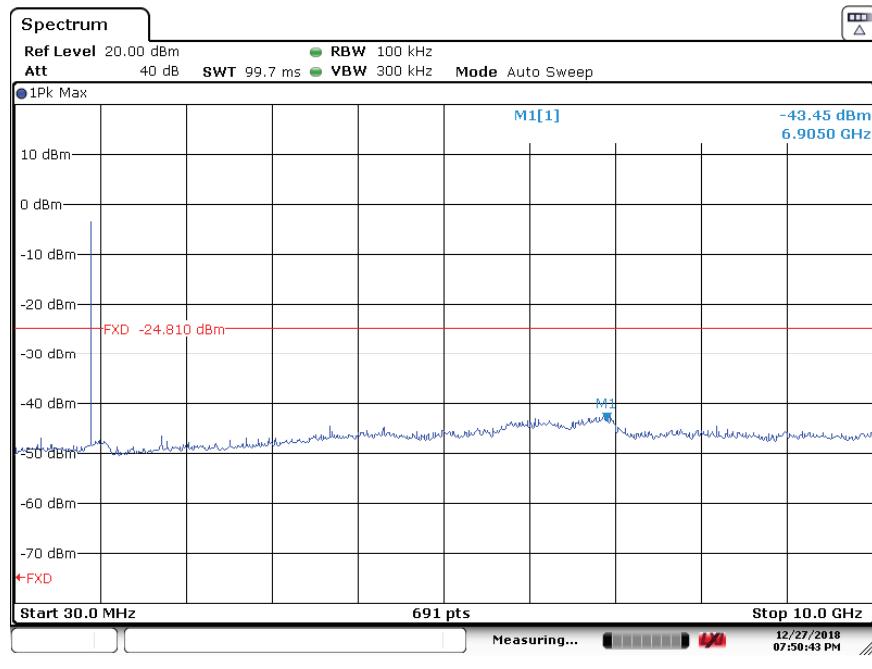
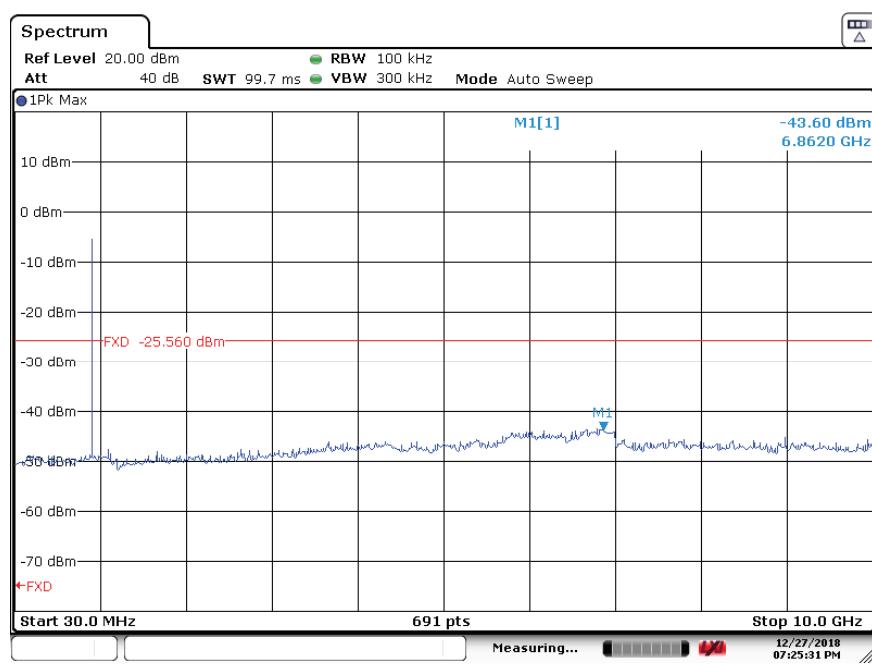
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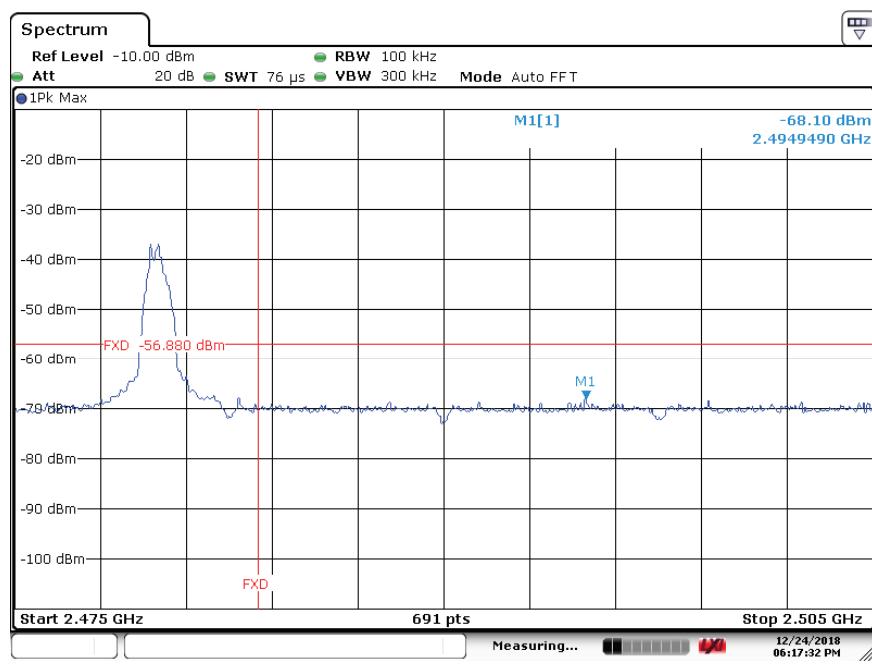
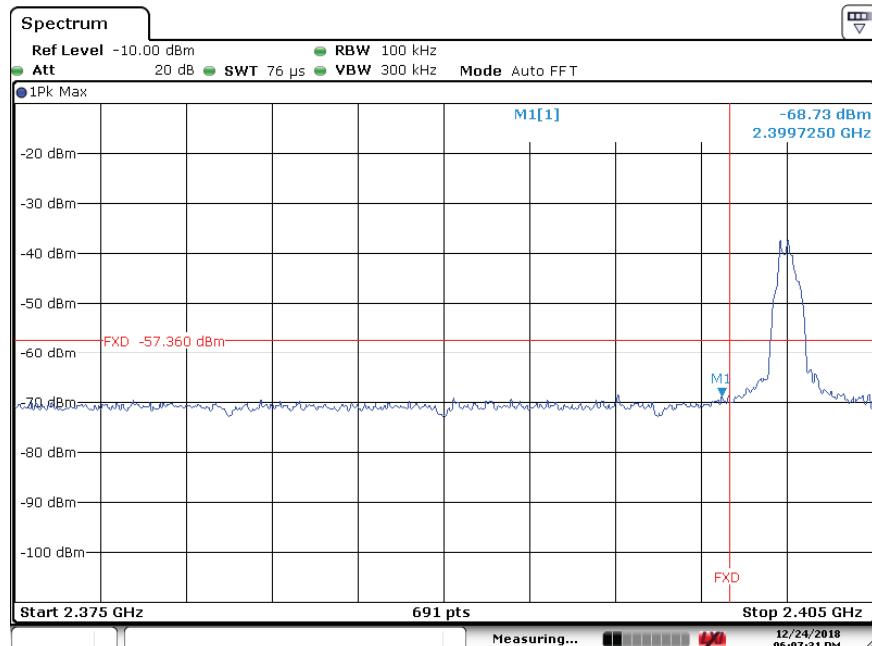
High Channel: 2480MHz

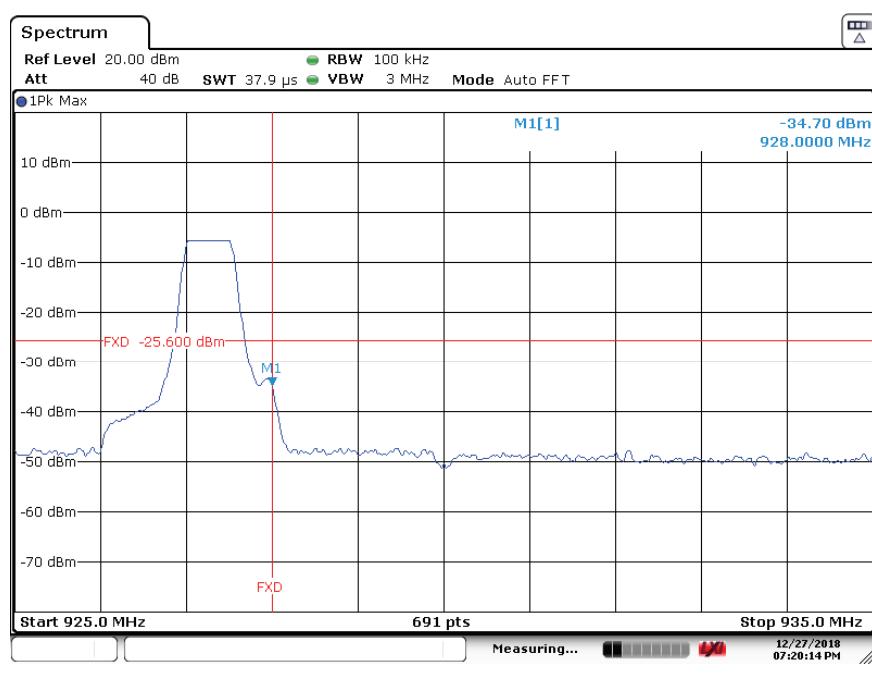
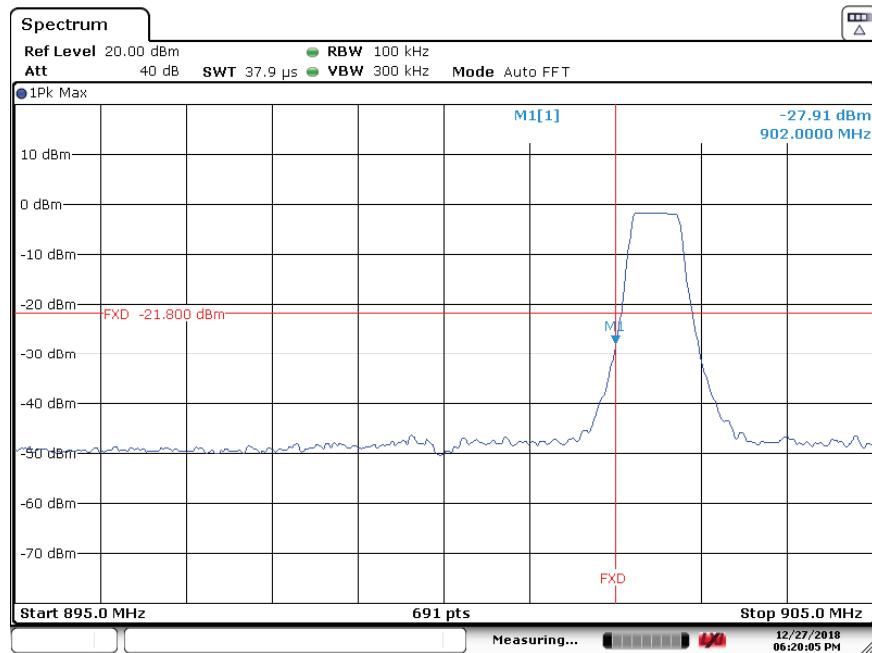


Low Channel: 902.5MHz



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Mid Channel: 913.7MHz

High Channel: 927.3MHz


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Band edge BLE


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Band edge 902-928MHz Wireless


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4.1.6 Radiated Spurious Emission

Result:

Pass

Test Specification

Test standard : FCC Part 15.247(d) & FCC Part 15.205

Basic standard : ANSI C63.10: 2013

Limits : Refer to 15.209(a) of FCC part 15.247(d)

Kind of test site : 3m Semi-anechoic Chamber

Test Setup

Date of testing : 2018.12.24

Input voltage : Powered by battery

Operational mode : On, BLE, 902-928MHz Wireless

Test channel : Lo, Mi, Hi

Temperature : 21.4°C

Relative humidity : 56.5%

Atmospheric pressure : 101 kPa

Remark:

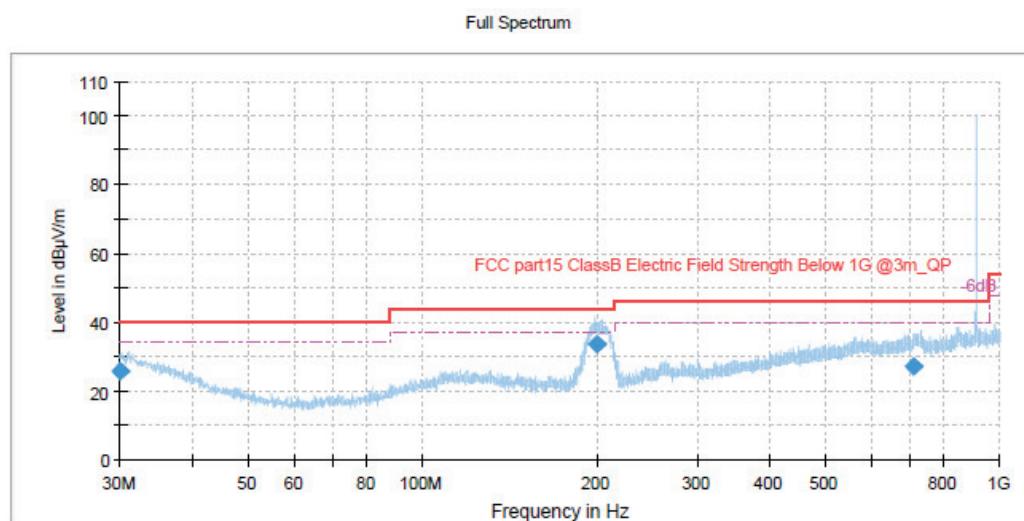
Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst case spurious emissions configuration of the each mode were reported.

The measurement result is calculated based on the following formula by the test software:
Emission Level = Reading level + Correction (Antenna factor + Cable loss – Preamplifier)

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Figure 5: Test Results of Radiated Spurious Emissions

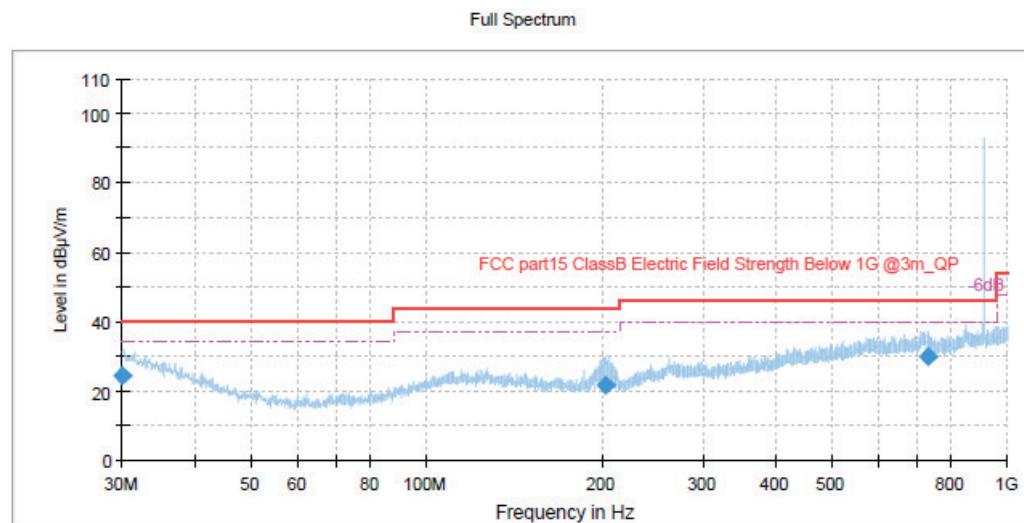
Below 1GHz_Light On

Horizontal

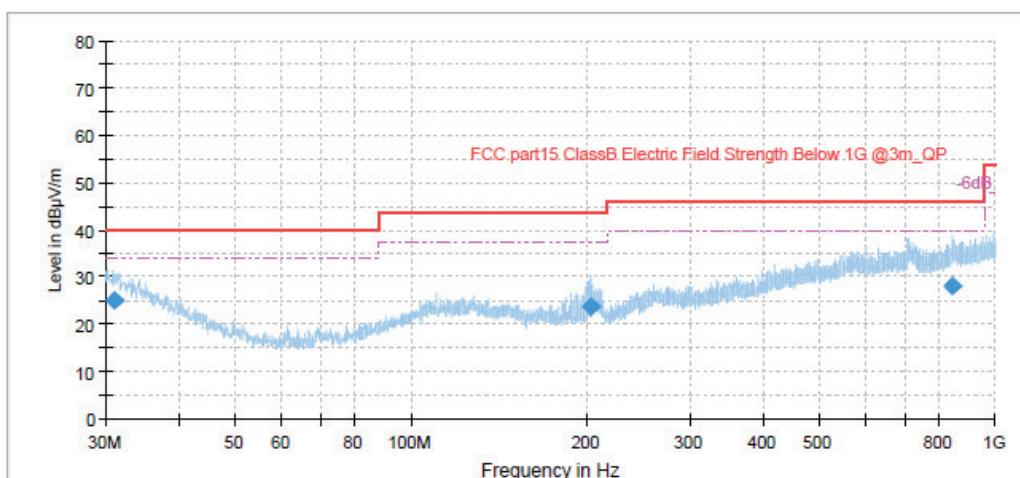

Final Result

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.040000	25.62	40.00	14.38	1000.0	120.000	160.0	H	121.0	25.3
200.051667	33.75	43.50	9.75	1000.0	120.000	107.0	H	-5.0	16.6
710.195000	27.36	46.00	18.64	1000.0	120.000	350.0	H	344.0	27.8

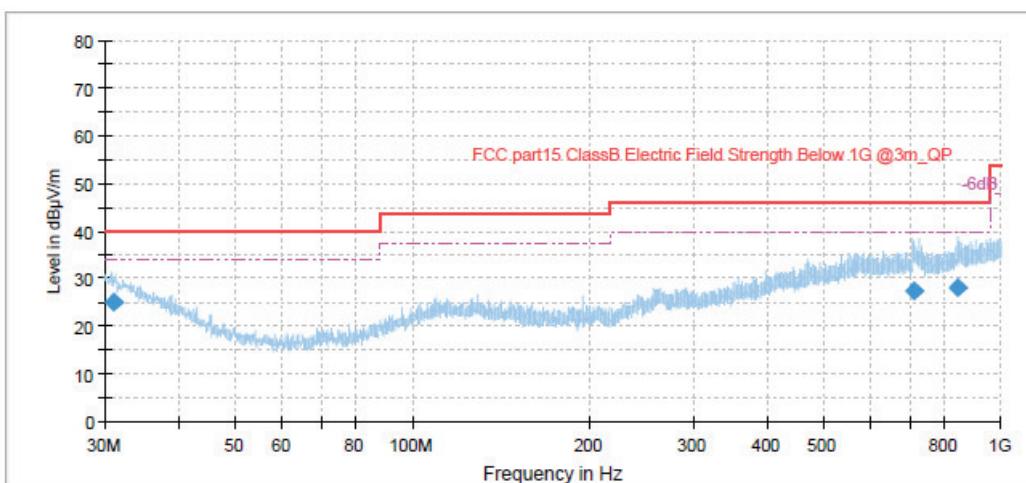
Vertical


Final Result

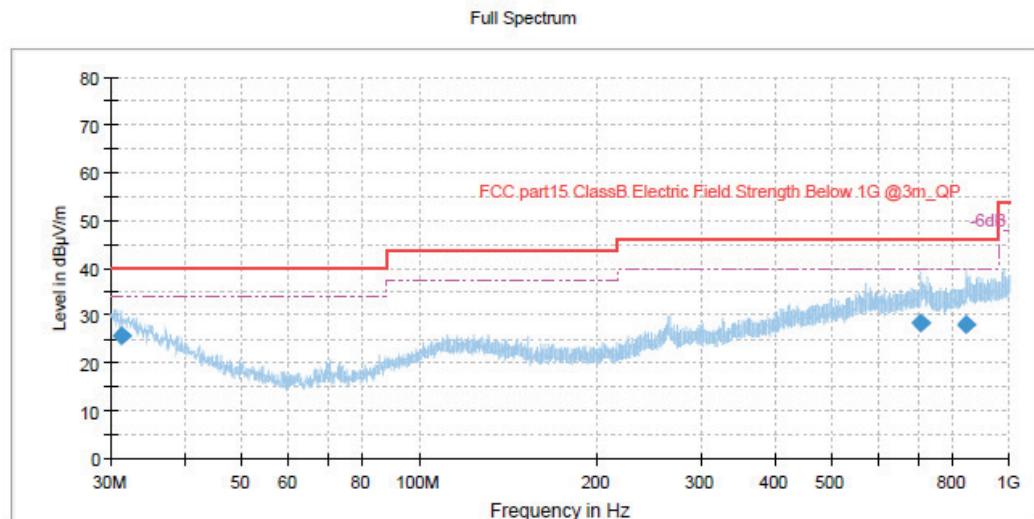
Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.080000	24.55	40.00	15.45	1000.0	120.000	386.0	V	73.0	25.2
204.199444	21.75	43.50	21.75	1000.0	120.000	167.0	V	122.0	16.8
728.287778	29.98	46.00	16.02	1000.0	120.000	246.0	V	-5.0	28.0

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Test Report No.:
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Below 1GHz_BLE_Test Mode
Low Channel: 2402MHz
Horizontal
Full Spectrum

Final Result

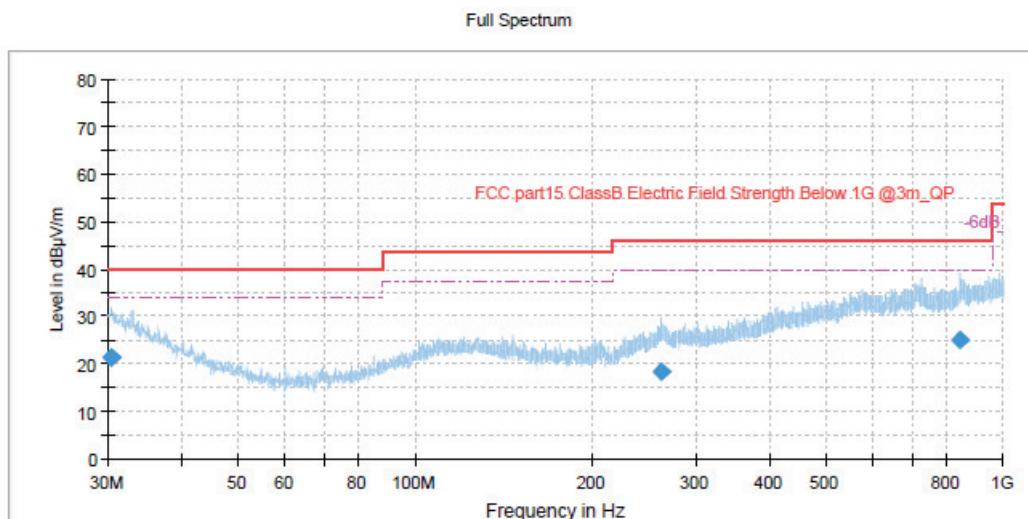
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
31.136111	24.94	40.00	15.06	1000.0	120.000	117.0	H	110.0	24.7
203.300556	23.85	43.50	19.65	1000.0	120.000	132.0	H	18.0	16.7
845.451111	28.05	46.00	17.95	1000.0	120.000	361.0	H	33.0	29.4

Vertical
Full Spectrum

Final Result

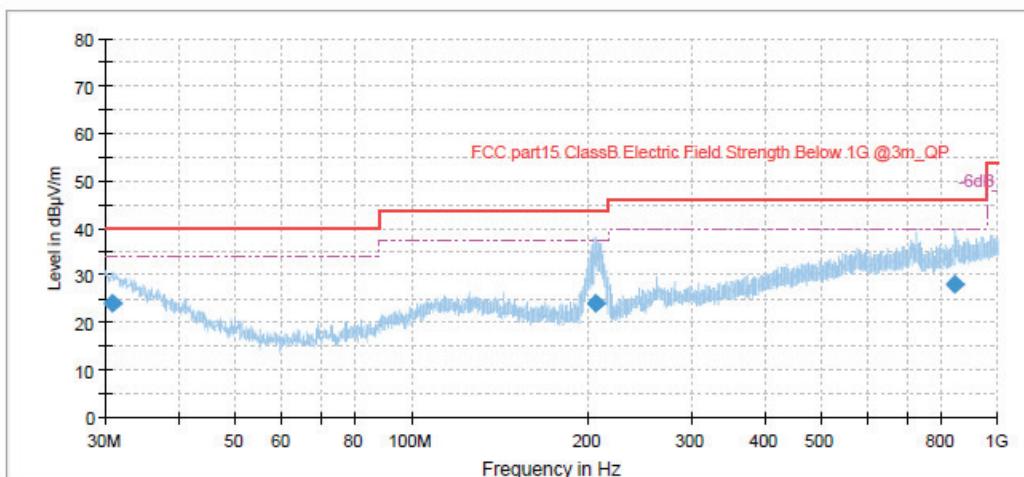
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
31.014444	25.00	40.00	14.00	1000.0	120.000	321.0	V	166.0	24.8
709.515556	27.46	46.00	18.54	1000.0	120.000	273.0	V	26.0	27.8
845.652778	28.11	46.00	17.89	1000.0	120.000	364.0	V	201.0	29.4

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Test Report No.:
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Mid Channel: 2440MHz
Horizontal

Final Result

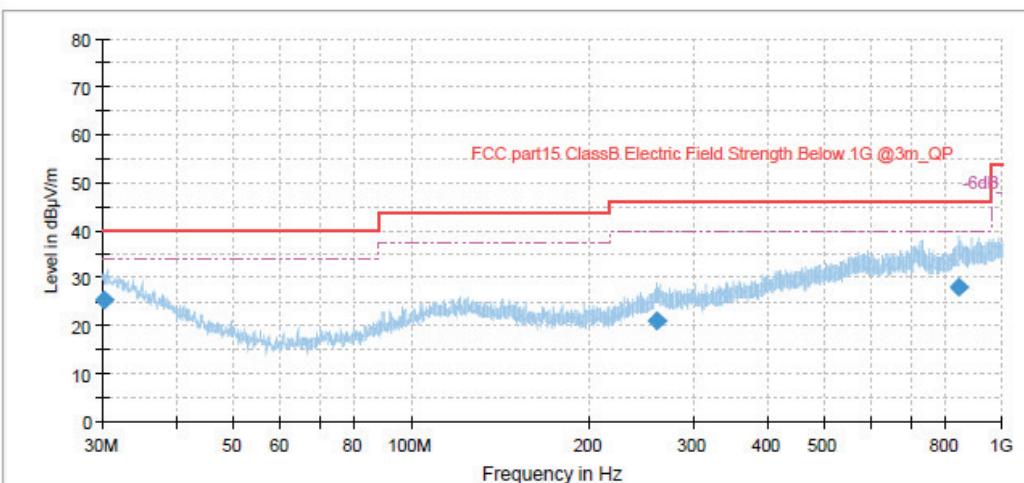
Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
31.233333	25.93	40.00	14.07	1000.0	120.000	380.0	H	162.0	24.7
709.020000	28.47	46.00	17.53	1000.0	120.000	308.0	H	140.0	27.8
845.073889	28.17	46.00	17.83	1000.0	120.000	250.0	H	-5.0	29.4

Vertical

Final Result

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.505000	25.38	40.00	14.62	1000.0	120.000	194.0	V	23.0	25.0
262.938333	21.28	46.00	24.72	1000.0	120.000	215.0	V	176.0	21.5
845.870000	28.04	46.00	17.96	1000.0	120.000	350.0	V	165.0	29.4

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Test Report No.:
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High Channel: 2480MHz
Horizontal
Full Spectrum

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.950000	24.08	40.00	15.92	1000.0	120.000	126.0	H	195.0	24.8
206.116667	23.98	43.50	19.52	1000.0	120.000	150.0	H	14.0	16.8
846.099444	28.05	46.00	17.95	1000.0	120.000	157.0	H	44.0	29.4

Vertical
Full Spectrum

Final Result

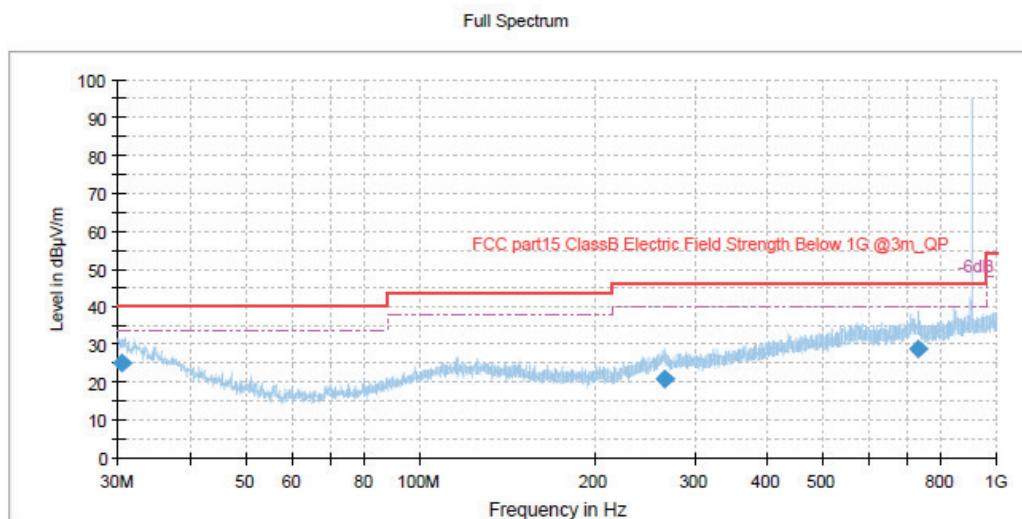
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.238889	25.44	40.00	14.56	1000.0	120.000	150.0	V	261.0	25.2
260.761667	21.16	46.00	24.84	1000.0	120.000	104.0	V	125.0	21.4
845.051111	28.10	46.00	17.90	1000.0	120.000	342.0	V	335.0	29.4

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Test Report No.:
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Below 1GHz_902-928MHz Wireless Test Mode

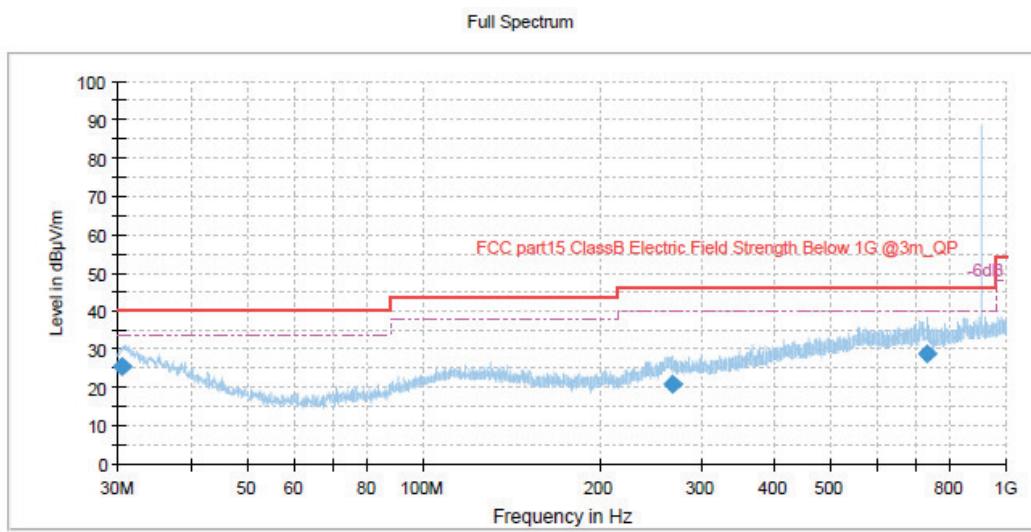
Low Channel: 902.5MHz

Horizontal


Final Result

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.492778	25.28	40.00	14.72	1000.0	120.000	114.0	H	229.0	25.0
265.314444	21.03	46.00	24.97	1000.0	120.000	258.0	H	182.0	21.3
729.835000	29.06	46.00	16.94	1000.0	120.000	114.0	H	255.0	28.1

Vertical


Final Result

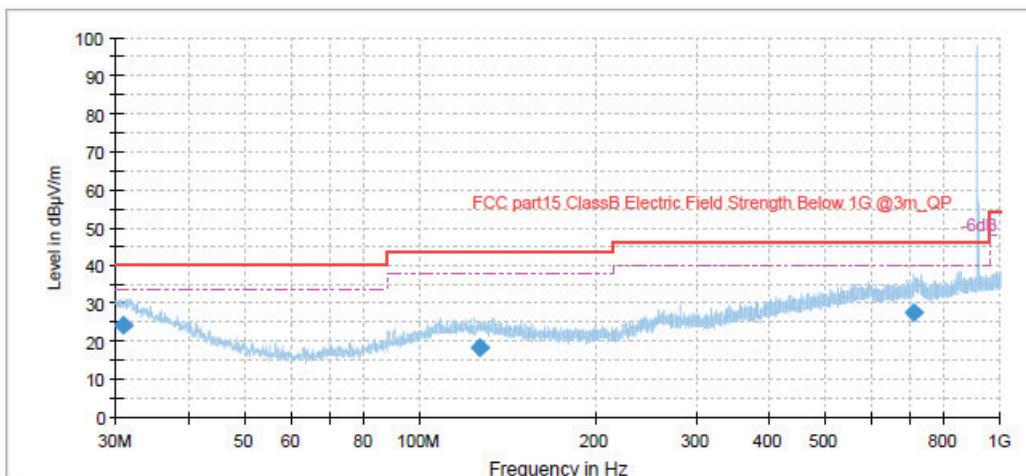
Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.400556	25.39	40.00	14.61	1000.0	120.000	150.0	V	320.0	25.1
267.482222	20.73	46.00	25.27	1000.0	120.000	281.0	V	150.0	21.0
728.567778	29.03	46.00	16.97	1000.0	120.000	150.0	V	243.0	28.0

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Test Report No.:
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Mid Channel: 913.7MHz

Horizontal

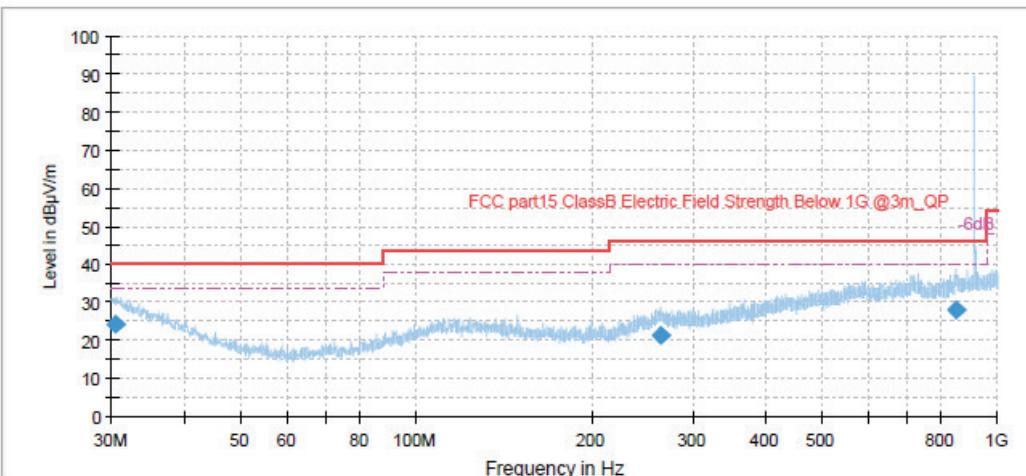
Full Spectrum


Final Result

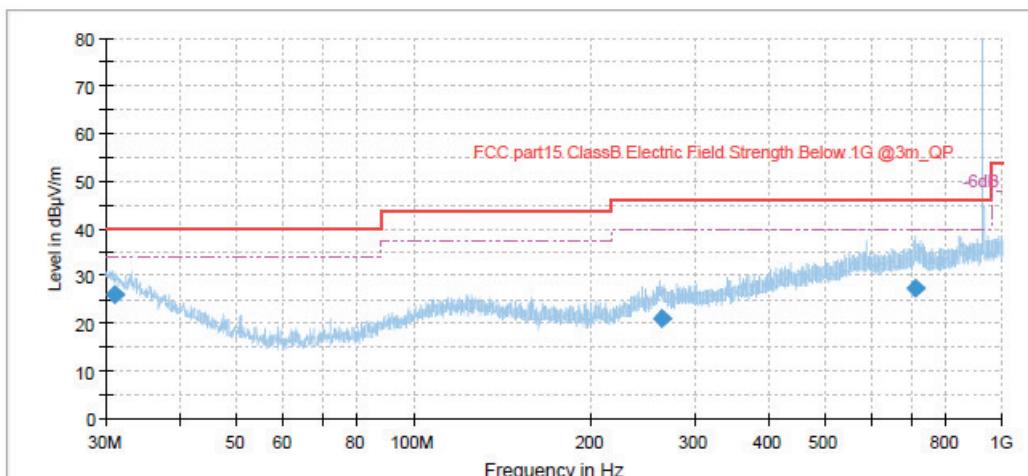
Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.777778	24.12	40.00	15.88	1000.0	120.000	400.0	H	17.0	24.9
127.140000	18.39	43.50	25.11	1000.0	120.000	340.0	H	4.0	19.1
709.722222	27.42	46.00	18.58	1000.0	120.000	208.0	H	153.0	27.8

Vertical

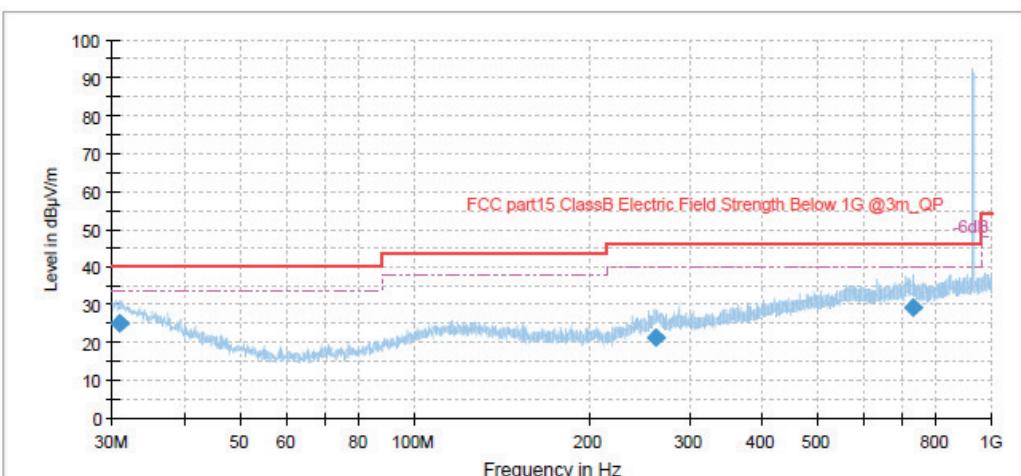
Full Spectrum


Final Result

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.332778	24.47	40.00	15.53	1000.0	120.000	182.0	V	175.0	25.1
263.263333	21.26	46.00	24.74	1000.0	120.000	267.0	V	185.0	21.5
845.454444	28.07	46.00	17.93	1000.0	120.000	170.0	V	2.0	29.4

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Test Report No.:
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High Channel: 927.3MHz
Horizontal
Full Spectrum

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
31.042222	25.98	40.00	14.02	1000.0	120.000	293.0	H	157.0	24.8
263.261667	21.25	46.00	24.75	1000.0	120.000	386.0	H	196.0	21.5
712.778333	27.51	46.00	18.49	1000.0	120.000	233.0	H	290.0	27.8

Vertical
Full Spectrum

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.923889	25.05	40.00	14.95	1000.0	120.000	170.0	V	26.0	24.8
261.565000	21.15	46.00	24.85	1000.0	120.000	326.0	V	135.0	21.5
728.621667	29.08	46.00	16.92	1000.0	120.000	215.0	V	4.0	28.0

Prüfbericht - Nr.: 50213031 001

Test Report No.:

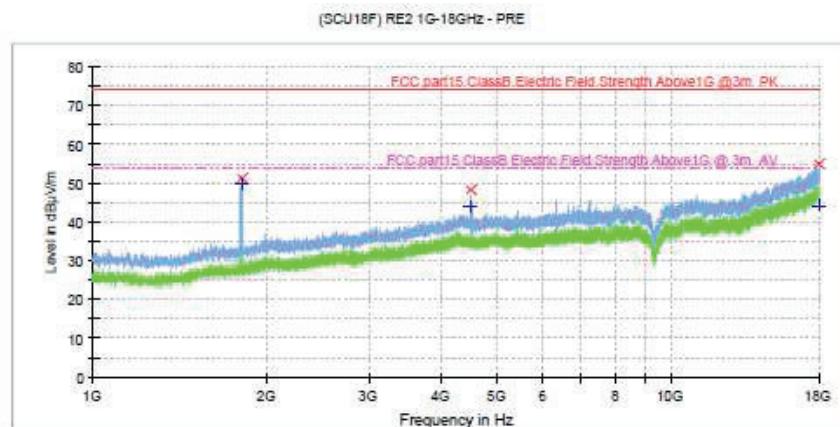
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Above 1GHz_902-928MHzWireless Test Mode

Low Channel: 902.5MHz

Horizontal



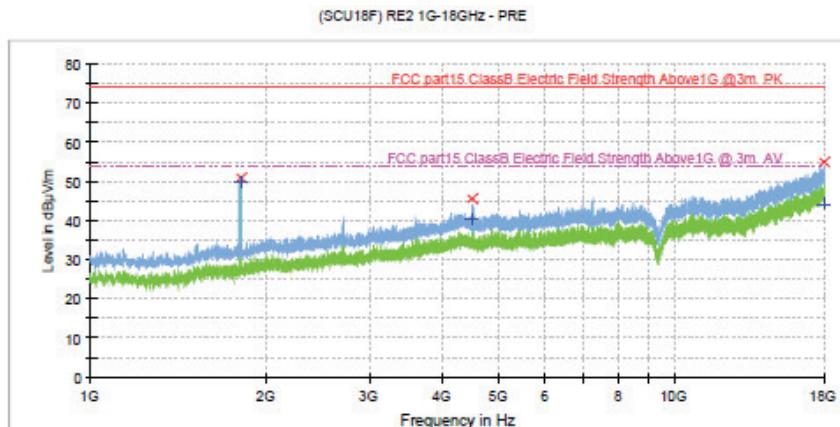
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dB μ V/m)
1804.845000	51.1	1000.0	1000.000	100.0	H	1.0	-10.3	22.9	74.0
4512.095000	48.1	1000.0	1000.000	200.0	H	0.0	0.4	25.9	74.0
17981.405000	55.0	1000.0	1000.000	200.0	H	0.0	18.7	19.0	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dB μ V/m)
1804.845000	49.9	1000.0	1000.000	100.0	H	1.0	-10.3	4.1	54.0
4512.095000	43.9	1000.0	1000.000	200.0	H	0.0	0.4	10.1	54.0
17981.405000	44.2	1000.0	1000.000	200.0	H	0.0	18.7	9.8	54.0

Vertical



Limit and Margin-PK

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dB μ V/m)
1804.845000	51.0	1000.0	1000.000	100.0	V	0.0	-10.3	23.0	74.0
4511.560000	45.7	1000.0	1000.000	100.0	V	0.0	0.4	28.3	74.0
17984.595000	55.0	1000.0	1000.000	100.0	V	0.0	18.7	19.0	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dB μ V/m)
1804.845000	49.9	1000.0	1000.000	100.0	V	0.0	-10.3	4.1	54.0
4511.560000	40.6	1000.0	1000.000	100.0	V	0.0	0.4	13.4	54.0
17984.595000	44.1	1000.0	1000.000	100.0	V	0.0	18.7	9.9	54.0

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Test Report No.:

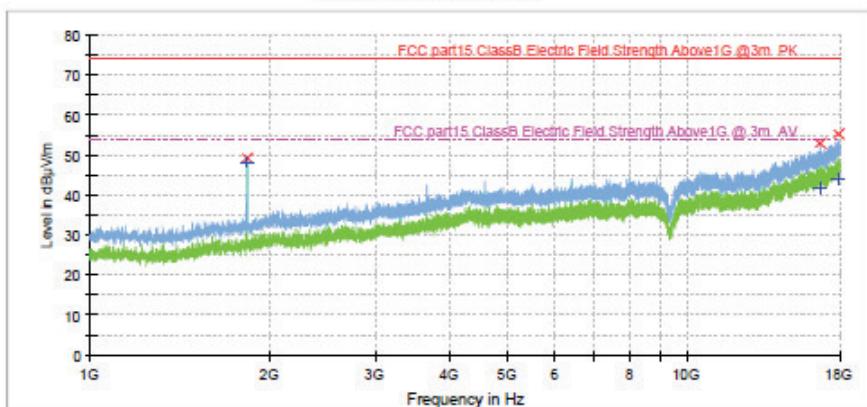
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Mid Channel: 913.7MHz

Horizontal

(SCU18F) RE2 1G-18GHz - PRE



Limit and Margin-PK

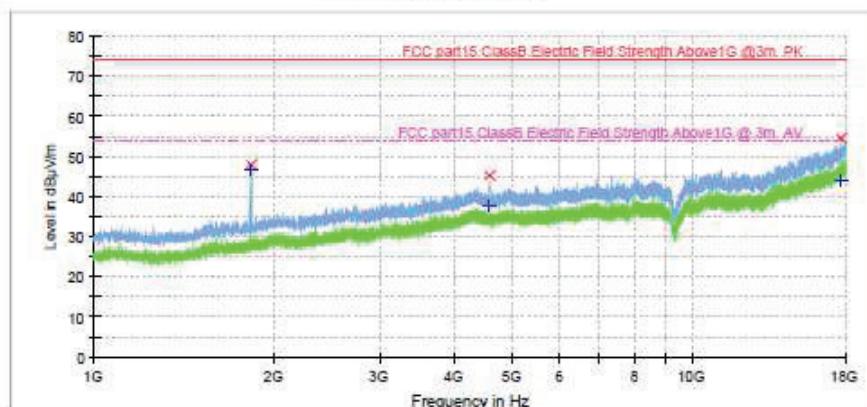
Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1827.685000	49.3	1000.0	1000.000	100.0	H	0.0	-10.1	24.7	74.0
16691.530000	52.7	1000.0	1000.000	100.0	H	0.0	14.3	21.3	74.0
17934.655000	55.2	1000.0	1000.000	100.0	H	0.0	18.4	18.8	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1827.685000	48.1	1000.0	1000.000	100.0	H	0.0	-10.1	5.9	54.0
16691.530000	41.8	1000.0	1000.000	100.0	H	0.0	14.3	12.2	54.0
17934.655000	43.7	1000.0	1000.000	100.0	H	0.0	18.4	10.3	54.0

Vertical

(SCU18F) RE2 1G-18GHz - PRE



Limit and Margin-PK

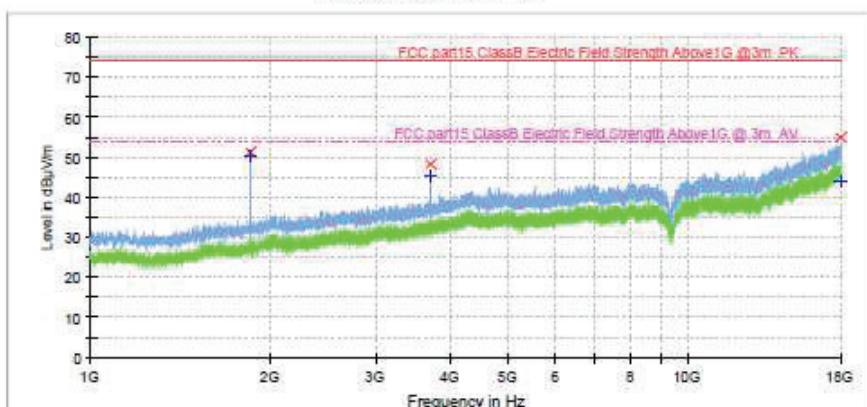
Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1827.155000	48.0	1000.0	1000.000	100.0	V	0.0	-10.1	26.0	74.0
4569.470000	45.3	1000.0	1000.000	100.0	V	0.0	0.2	28.8	74.0
17707.280000	54.6	1000.0	1000.000	100.0	V	0.0	17.6	19.4	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1827.155000	46.7	1000.0	1000.000	100.0	V	0.0	-10.1	7.3	54.0
4569.470000	37.7	1000.0	1000.000	100.0	V	0.0	0.2	16.4	54.0
17707.280000	43.9	1000.0	1000.000	100.0	V	0.0	17.6	10.1	54.0

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Test Report No.:
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High Channel: 927.3MHz
Horizontal

(SCU18F) RE2 1G-18GHz - PRE


Limit and Margin-PK

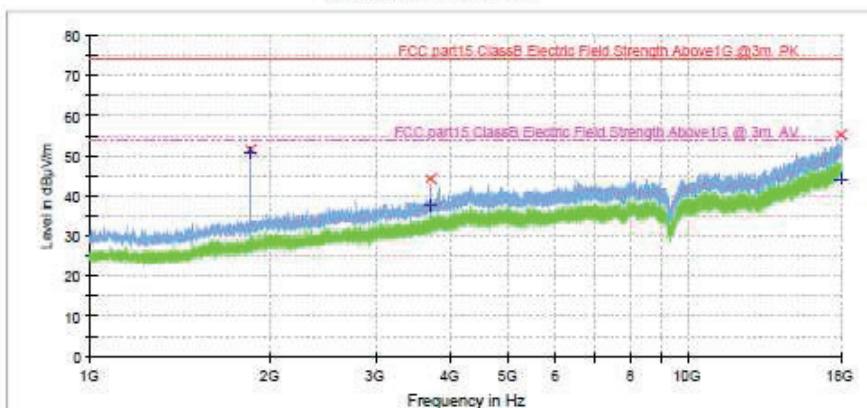
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1854.780000	51.2	1000.0	1000.000	100.0	H	0.0	-10.1	22.8	74.0
3708.845000	48.3	1000.0	1000.000	100.0	H	0.0	-1.5	25.7	74.0
17983.000000	55.0	1000.0	1000.000	100.0	H	0.0	18.7	19.0	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1854.780000	50.3	1000.0	1000.000	100.0	H	0.0	-10.1	3.7	54.0
3708.845000	45.3	1000.0	1000.000	100.0	H	0.0	-1.5	8.7	54.0
17983.000000	43.8	1000.0	1000.000	100.0	H	0.0	18.7	10.2	54.0

Vertical

(SCU18F) RE2 1G-18GHz - PRE


Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1854.250000	51.7	1000.0	1000.000	100.0	V	0.0	-10.1	22.4	74.0
3708.310000	44.3	1000.0	1000.000	100.0	V	0.0	-1.5	29.7	74.0
17991.500000	55.1	1000.0	1000.000	100.0	V	0.0	18.7	18.9	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1854.250000	50.7	1000.0	1000.000	100.0	V	0.0	-10.1	3.3	54.0
3708.310000	37.5	1000.0	1000.000	100.0	V	0.0	-1.5	16.5	54.0
17991.500000	44.3	1000.0	1000.000	100.0	V	0.0	18.7	9.7	54.0

5 Photographs of the Test Set-Up

Photograph 1: Set-up for Radiated Spurious Emission, 30MHz - 1GHz

Photograph 2: Set-up for Radiated Spurious Emission, 1GHz - 18GHz

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