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Test report

377510 - 1TRFWL

Date of issue: October 8, 2019

Applicant:

Robert Bosch Manufacturing Solutions GmbH Bosch Connected Industry

Product:

BT Radio Beacon

Model:

3843.AX1.368

Variants:

3843.AX1.566, 3843.AX1.567

FCC ID:

2SOSY-SENSE02

Specifications:

- FCC 47 CFR Part 15 Subpart C, §15.247

  Operation in the 902–928 MHz, 2400–2483.5 MHz, 5725–5850 MHz

Test location

Company name	Nemko USA, Inc.
Address	2210 Faraday Ave, Suite 150
City	Carlsbad
Province	California
Postal code	92008
Country	USA
Telephone	+1 760 444 3500
Website	www.nemko.com
Site number	FCC: US5058; IC: 2040B-3

Tested by	Andres Martinez, Wireless Engineer
Reviewed by	Chip Fleury, Wireless and Certification Supervisor.
Review date	October 8, 2019
Reviewer signature	

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.
This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko USA's ISO/IEC 17025 accreditation.
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Section 1. Report summary

1.1 Applicant and manufacturer

Company name	Robert Bosch Manufacturing Solutions GmbH Bosch Connected Industry
Address	Leitzstrasse 47
City	Stuttgart-Feuerbach
Province/State	BW
Postal/Zip code	70469
Country	Germany

1.2 Test specifications

FCC 47 CFR Part 15, Subpart C, Clause 15.247	Operation in the 902–928 MHz, 2400–2483.5 MHz, 5725–5850 MHz
RSS-247, Issue 2	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices

1.3 Test methods

ANSI C64.3-2014	American National Standard for Methods of Measurement of Radio- Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10-2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

1.4 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was completed against all relevant requirements of the test standard. Results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested.

See “Summary of test results” for full details.

1.5 Exclusions

None

1.6 Test report revision history

Revision #	Details of changes made to test report
TRF	Original report issued

Section 2. Summary of test results

2.1 FCC Part 15 Subpart C, general requirements test results

Part	Test description	Verdict
§15.207(a)	Conducted limits	Pass
§15.31(e)	Variation of power source	Pass
§15.203	Antenna requirement	Pass
§15.205	Restricted bands of operation	Pass

Notes:

2.2 FCC Part 15 Subpart C, intentional radiators test results

Part	Test description	Verdict
§15.247(a)(1)	20 dB bandwidth of the hopping channel	Not applicable
§15.247(a)(1)(i)	Frequency hopping systems operating in the 902–928 MHz band	Not applicable
§15.247(a)(1)(ii)	Frequency hopping systems operating in the 5725–5850 MHz band	Not applicable
§15.247(a)(1)(iii)	Frequency hopping systems operating in the 2400–2483.5 MHz band	Not applicable
§15.247(a)(2)	Minimum 6 dB bandwidth for systems using digital modulation techniques	Pass
§15.247(b)(1)	Maximum peak output power of frequency hopping systems operating in the 2400–2483.5 MHz band and 5725–5850 MHz band	Pass
§15.247(b)(2)	Maximum peak output power of Frequency hopping systems operating in the 902–928 MHz band	Not applicable
§15.247(b)(3)	Maximum peak output power of systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands	Pass
§15.247(c)(1)	Fixed point-to-point operation with directional antenna gains greater than 6 dBi	Not applicable
§15.247(c)(2)	Transmitters operating in the 2400–2483.5 MHz band that emit multiple directional beams	Not applicable
§15.247(d)	Spurious emissions	Pass
§15.247(e)	Power spectral density for digitally modulated devices	Pass
§15.247(f)	Time of occupancy for hybrid systems	Not applicable

Section 3. Equipment under test (EUT) details

3.1 Sample information

Receipt date	July 22, 2019
Nemko sample ID number	377510

3.2 EUT information

Product name	BT Radio Beacon
Model	3843.AX1.368
Model variant	3843.AX1.566, 3843.AX1.567
Serial number	N/A
FCC ID	2A0SY-SENSE02
IC Registration Number	NA

3.3 Technical information

Frequency band	2.4-2.4835Ghz
Frequency Min (MHz)	2402
Frequency Max (MHz)	2480
RF power Min (W), Conducted	NA
RF power Max (W), Conducted/ERP/EIRP	0.0027W
Field strength, Units @ distance	N/A
Calculated BW (kHz), as per TRC-43	1143 kHz
Type of modulation	GFSK
Emission classification (F1D, G1D, D1D)	F1D
Power requirements	3V battery
Antenna information	Integrated PCB IFA – Max gain 2.26dBi

3.4 Product description and theory of operation

The Bosch Connected Industry Sense S Beacons are battery-powered devices for asset tracking, freight tracking and other tracking or monitoring use cases. Sense S uses a 2.4GHz Low Energy radio and a RFID UHF interface to communicate with corresponding receivers for data transmission and configuration. The 2.4GHz radio uses a 48MHz Crystal as the main time reference. It operates in the 2.4 – 2.4835 GHz ISM band, using Frequency Hopping in 40 channels spaced by 2MHz. Within a channel, data is transmitted using Gaussian frequency shift modulation (GFSK). The bit rate is 1 Mbit/s, and the maximum transmit power is 10mW.

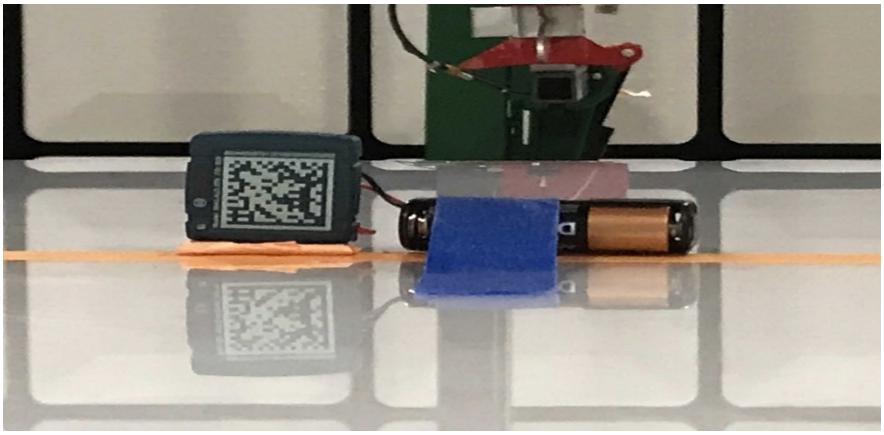
The RFID UHF radio interface is a battery assisted passive wireless interface operating between 856MHz and 960MHz. Communication can only be activated by an external reader device. Communication is used to read and write information to the Sense S.

3.5 EUT exercise details

A test software was used that allows the change of different RF modes/channels. EUT is set to fixed channel test mode with modulation.

RF conducted test was performed on unit with temporary RF output modification (50Ω SMA before antennas).

3.6 EUT setup diagram



3.7 EUT sub assemblies

Table 3.7-1: EUT sub assemblies

Description	Brand name	Model/Part number	FCC ID
Low-Energy Proximity Beacon	SENSE S	3843.AX1.368, 3843.AX1.566, 3843.AX1.567	2A0SY-SENSE02

Table 3.7-2: Support Equipment

Description	Brand name	Model/Part number	Serial number	Rev.
Laptop Computer	Dell	Inspiron 15	MSIP-RMM-CEI-P39F001	N/A

Section 4. Engineering considerations

4.1 Modifications incorporated in the EUT

None.

4.2 Technical judgment

None.

4.3 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.

Section 5. Test conditions

5.1 Atmospheric conditions

Temperature	15–30 °C
Relative humidity	20–75 %
Air pressure	860–1060 mbar

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

5.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages ±5 %, for which the equipment was designed.

Section 6. Measurement uncertainty

6.1 Uncertainty of measurement

Measurement uncertainty budgets for the tests are detailed below. Measurement uncertainty calculations assume a coverage factor of K = 2 with 95% certainty.

Test name	Measurement uncertainty, dB
All antenna port measurements/ including OBW	0.55
Conducted spurious emissions	1.13
Radiated spurious emissions	3.78
AC power line conducted emissions	1.38
Supply Voltages	0.05%
Time	2.09%

Section 7. Test equipment

7.1 Test equipment list

Table 7.1-1: Equipment list

Table 7.1-2: Radiated and conducted emissions equipment list

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
EMC Test Receiver	Rohde & Schwarz	ESU 40	E1121	1 year	05-25-2020
Antenna, Bilog	Schaffner-Chase	CBL6111C	1480	1 year	04-18-2020
Antenna, Horn	ETS	3117-PA	E1139	1 year	03-21-2020
Spectrum Analyzer	Rohde & Schwarz	FSV40	E1120	1 year	09-24-2019
Signal Generator	Rohde & Schwarz	SMB 100A	E1128	1 year	12-20-2019
High-pass filter	Wainwright Instruments GMBH	WHKX12-2493-2770-18000-60SS	N/A	N/A	Verified with FSV40 and SMB 100A
USB RF Power Sensor	ETS – Lindgren	7002-006	E1061	1 yr.	05-16-2020

Notes: None

Table 7.1-3: Radiated emissions test software details

Manufacturer of Software	Details
Rohde-Schwarz	EMC 32 V10.0

Notes: None

Section 8. Test Data

8.1 FCC 15.247(a) (2) Minimum 6 dB bandwidth

8.1.1 Definitions and limits

FCC 15.247:

(a) (2) Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

8.1.2 Test summary

Test date	July 25, 2029	Temperature	20 °C
Test engineer	Andres Martinez	Air pressure	1007 mbar
Verdict	Pass	Relative humidity	51 %

8.1.3 Observations, settings and special notes

Spectrum analyzer settings:

Resolution bandwidth	100 kHz
Video bandwidth	≥3 × RBW
Frequency span	10 MHz
Detector mode	Peak
Trace mode	Max Hold

8.1.4 Test data

Table 8.1-1: 6 dB bandwidth results

Modulation	Frequency, MHz	6dB bandwidth, kHz	Minimum Limit, kHz	Result
GFSK	2402	796.00	500	Pass
	2480	757.1	500	Pass

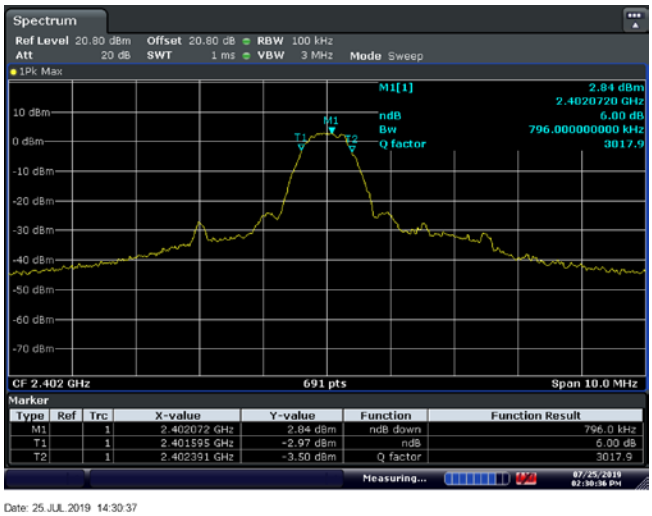


Figure 8.1-1: 6 dB bandwidth @ 2402MHz

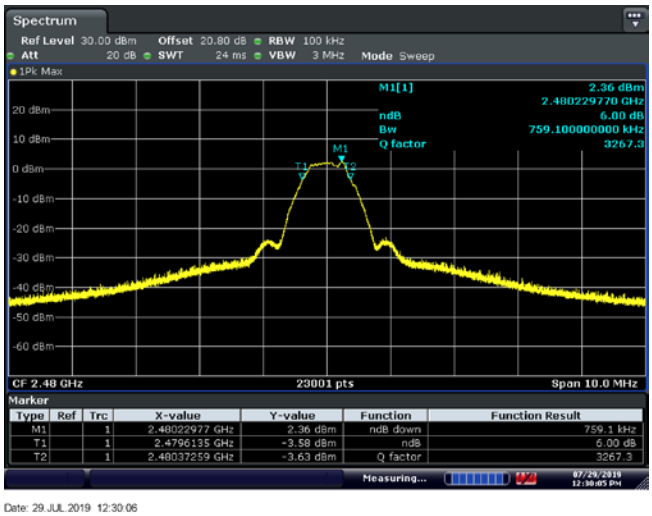


Figure 8.1-2: 6 dB bandwidth @ 2480MHz

Table 8.1-2: 99% bandwidth results

Modulation	Frequency, MHz	99% bandwidth, MHz	Limit, kHz	Margin, kHz
GFSK	2402	1.143	-	-
			-	-
	2480	1.119	-	-

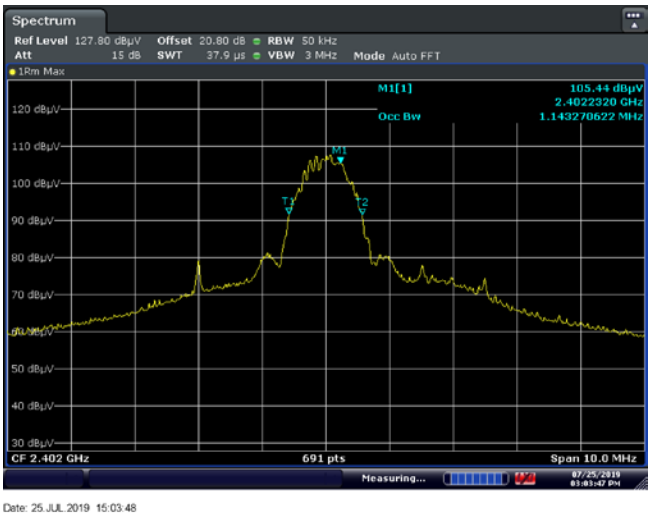


Figure 8.1-4: 99% bandwidth, 2402MHz

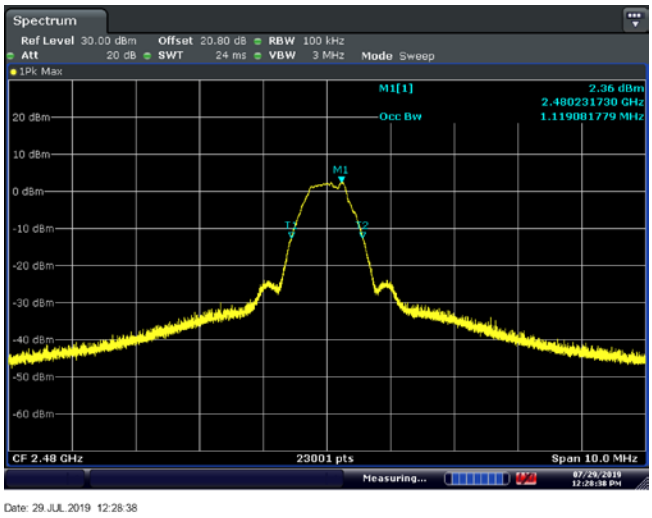


Figure 8.1-5: 99% bandwidth, 2480 MHz

8.2 FCC 15.247(b) Transmitter output power and e.i.r.p. requirements

8.2.1 Definitions and limits

FCC:

(b) The maximum peak conducted output power of the intentional radiator shall not exceed the following:

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one-Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2.2 Test summary

Test date	July 25, 2019	Temperature	20 °C
Test engineer	Andres Martinez	Air pressure	1007 mbar
Verdict	Pass	Relative humidity	51 %

8.2.3 Observations, settings and special notes

Peak Conducted Power Measured from antenna power is less than 1W (30dBm)
EIRP is less than 4W (36dBm) with measured antenna gains
Tested with Power Meter

8.2.4 Test data

Table 8.1-1: Output Power

Modulation	Frequency, MHz	Power Meter (dBm)	Conducted Port Limit (dBm)	Result	Antenna Gain (dBi)	EIRP (dBm)	Limit EIRP(dBm)	Result
GFSK	2402	4.38	30	Pass	2.26	6.64	36	Pass
	2440	3.52	30	Pass	1.70	5.22	36	Pass
	2480	3.34	30	Pass	1.78	5.12	36	Pass

8.3 FCC 15.247(d) (out-of-band) emissions

8.3.1 Definitions and limits

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

Per ANSI 63.10 band edges and restricted bands near the 2.4 to 2.4835 GHz band were performed using Antenna Conducted port method.

Table 8.3-1: FCC §15.209– Radiated emission limits

Frequency, MHz	Field strength of emissions		Measurement distance, m
	µV/m	dBµV/m	
0.009–0.490	2400/F	$67.6 – 20 \times \log_{10}(F)$	300
0.490–1.705	24000/F	$87.6 – 20 \times \log_{10}(F)$	30
1.705–30.0	30	29.5	30
30–88	100	40.0	3
88–216	150	43.5	3
216–960	200	46.0	3
above 960	500	54.0	3

Notes: In the emission table above, the tighter limit applies at the band edges.
For frequencies above 1 GHz the limit on peak RF emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

Table 8.3-2: FCC restricted frequency bands

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	Above 38.6
13.36–13.41			

8.3.2 Test summary

Test date	July 25, 2019	Temperature	20 °C
Test engineer	Andres Martinez	Air pressure	1007 mbar
Verdict	Pass	Relative humidity	51 %

8.3.3 Observations, settings and special notes

The spectrum was searched from 30 MHz to the 10th harmonic.
EUT was set to transmit with 100 % duty cycle.
EUT was evaluated in X, Y and Z polarizations and worst case was chosen for testing
Antenna 0 path was selected for most radiated test cases as worst case. Plots represents worst case transmitter spurious from 30MHz to 18GHz.

Spectrum analyzer settings for radiated measurements within restricted bands below 1 GHz:

Resolution bandwidth:	100 kHz
Video bandwidth:	3 MHz
Detector mode:	Peak
Trace mode:	Max Hold

Spectrum analyzer settings for peak radiated measurements within restricted bands above 1 GHz:

Resolution bandwidth:	1 MHz
Video bandwidth:	3 MHz
Detector mode:	Peak
Trace mode:	Max Hold

Spectrum analyzer settings for average radiated measurements within restricted bands above 1 GHz:

Resolution bandwidth:	1 MHz
Video bandwidth:	3 MHz
Detector mode:	AVG
Trace mode:	Max Hold

8.3.4 Test data

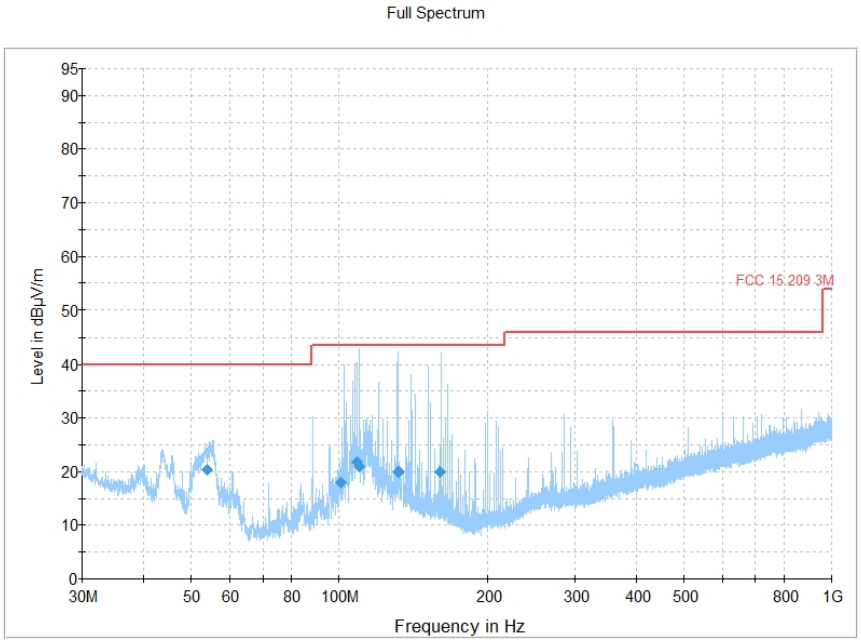


Figure 8.3 1: Spurious (out-of-band) emissions plot.

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
53.895000	20.42	40.00	19.58	1000.0	120.000	104.0	V	10.0	8.4	
101.108333	17.94	43.50	25.56	1000.0	120.000	204.0	H	233.0	12.1	
108.786333	21.79	43.50	21.71	1000.0	120.000	226.0	H	188.0	12.8	
109.832667	20.97	43.50	22.53	1000.0	120.000	250.0	H	157.0	12.8	
131.599000	19.98	43.50	23.52	1000.0	120.000	137.0	V	7.0	13.8	
160.009667	19.88	43.50	23.62	1000.0	120.000	134.0	V	118.0	12.8	

Table 8.3-3: Spurious (out-of-band) emissions data.

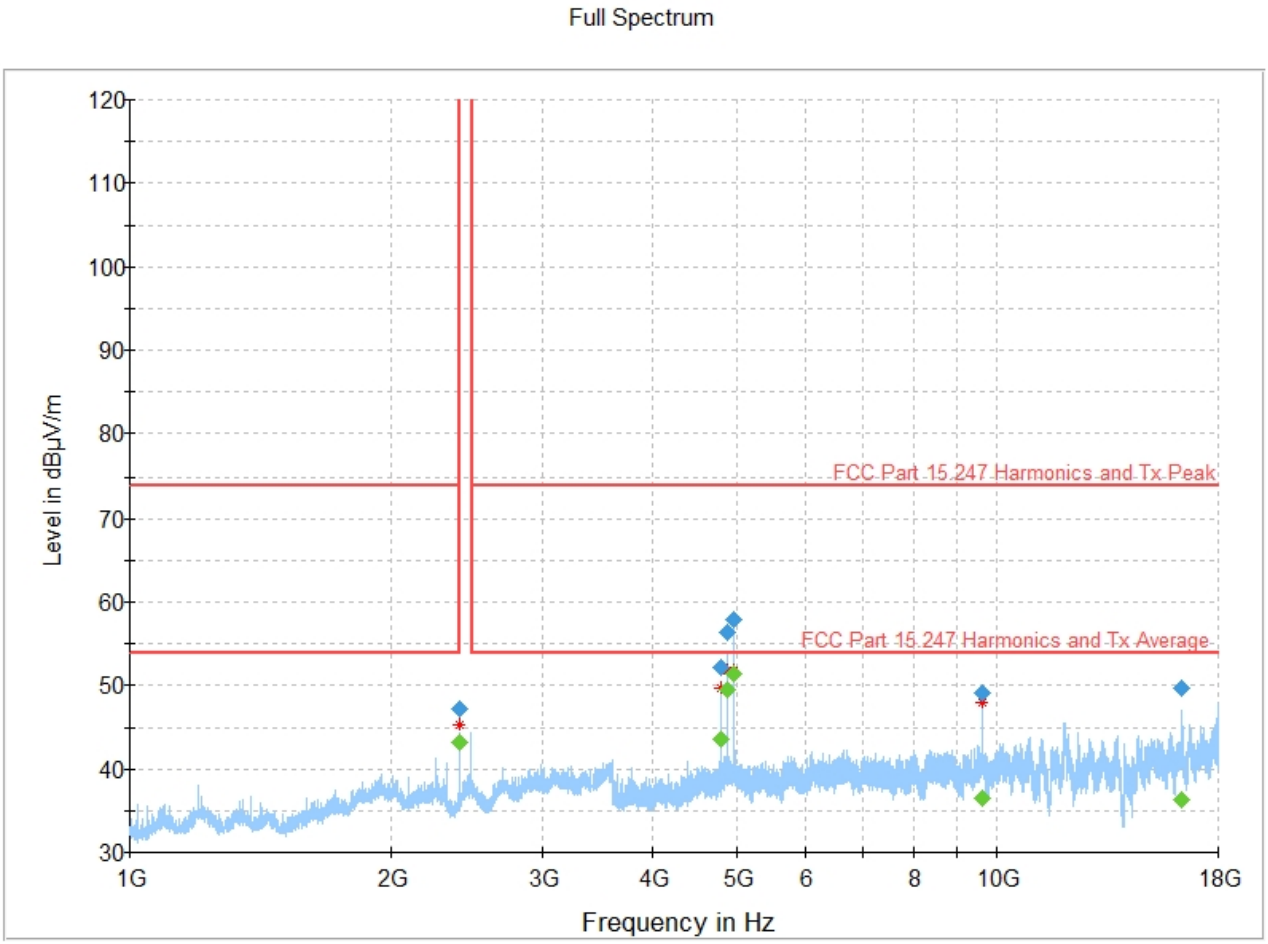


Figure 8.3-2: Spurious (out-of-band) emissions plot.

Note: From 2.4GHz to 2.4835GHz a 2.4GHz Notch filter was used as it can be seen in the emissions plot it. All 3 channels Tx simultaneously

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
2401.933333	---	43.16	Fundamental		5000.	1000.000	148.0	H	311.0	-11.0	
2401.933333	47.15	---	Fundamental		5000.	1000.000	148.0	H	311.0	-11.0	
4804.666667	52.19	---	73.90	21.71	5000.	1000.000	159.0	H	112.0	-3.1	
4804.666667	---	43.48	54.00	10.52	5000.	1000.000	159.0	H	112.0	-3.1	
4879.566667	---	49.43	54.00	4.57	5000.	1000.000	164.0	H	47.0	-3.3	
4879.566667	56.28	---	73.90	17.62	5000.	1000.000	164.0	H	47.0	-3.3	
4960.500000	57.86	---	73.90	16.04	5000.	1000.000	212.0	H	44.0	-3.5	
4960.500000	---	51.32	54.00	2.68	5000.	1000.000	212.0	H	44.0	-3.5	
9609.200000	---	36.49	54.00	17.51	5000.	1000.000	155.0	V	168.0	1.8	
9609.200000	49.11	---	73.90	24.79	5000.	1000.000	155.0	V	168.0	1.8	
16337.833333	---	36.36	54.00	17.64	5000.	1000.000	112.0	V	10.0	10.1	
16337.833333	49.60	---	73.90	24.30	5000.	1000.000	112.0	V	10.0	10.1	

Table 8.3-4: Spurious (out-of-band) emissions data.

8.4 FCC 15.247(d) (Band edge

8.4.4 Definitions and limits

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

Per ANSI 63.10 band edges and restricted bands near the 2.4 to 2.4835 GHz band were performed using Antenna Conducted port method.

8.4.5 Test summary

Test date	July 29, 2019	Temperature	21 °C
Test engineer	Andres Martinez	Air pressure	1007 mbar
Verdict	Pass	Relative humidity	51 %

8.4.6 Observations, settings and special notes

The spectrum was searched from 30 MHz to the 10th harmonic.
EUT was set to transmit with 100 % duty cycle.
EUT was evaluated in X, Y and Z polarizations and worst case was chosen for testing
Antenna 0 path was selected for most radiated test cases as worst case. Plots represents worst case transmitter spurious from 30MHz to 18GHz.

Spectrum analyzer settings for peak radiated measurements at Band Edge above 1 GHz:

Limit displayed is -41dBm which is equivalent to 54dBµV/m at 3meter.
Table below adds in antenna gain to demonstrate EIRP result

Resolution bandwidth:	100 kHz
Video bandwidth:	3 MHz
Detector mode:	Peak
Trace mode:	Max Hold

Spectrum analyzer settings for average radiated measurements at Band Edge above 1 GHz:

Resolution bandwidth:	100 kHz
Video bandwidth:	3 MHz
Detector mode:	RMS (power averaging)
Trace mode:	Max Hold

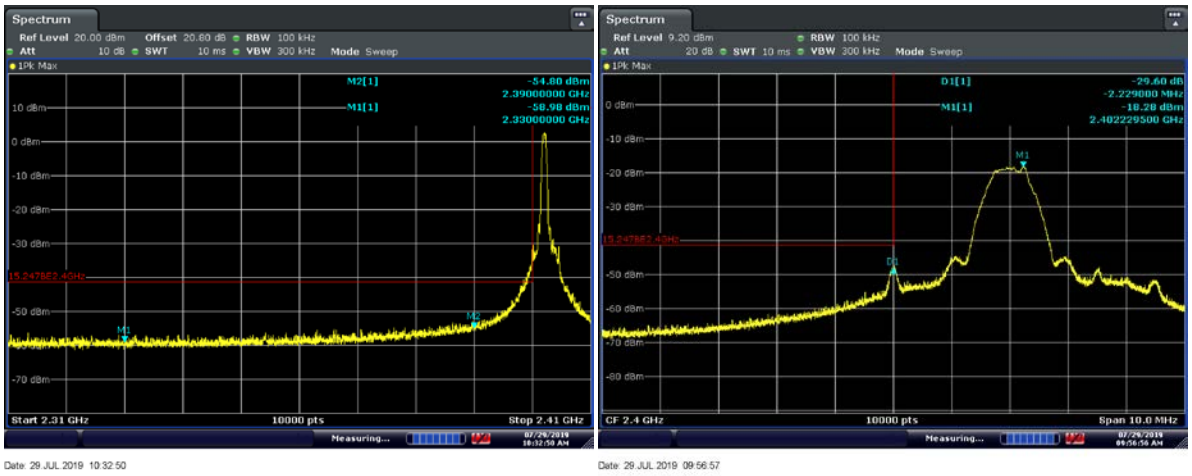


Figure 8.3-2: Low Band-edges emissions plots at 2.4GHz edge

NOTE 1: 2390MHz is below the restricted band limit

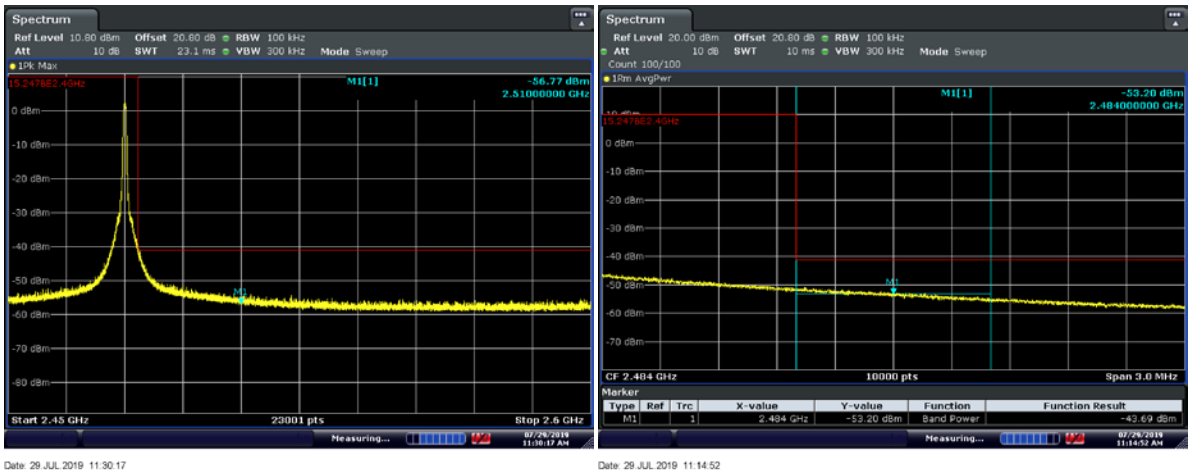


Figure 8.3-3: Band-edges emissions plots at 2.4835GHz edge

Table 8.4-1: Restricted band

Frequency, MHz	Analyzerr (dBm)	Antenna Gain (dBi)	Total (dBm)	EIRP (dBµV/m)	Limit EIRP(dBµV/m)	Result
2333	-58.98	2.26*	-56.72	38.51	54	Pass
2390	-54.8	2.26	-52.54	42.69	54	Pass
2400	-47.88	2.26	-45.62	49.61	54	Pass
2484	-53.2	2.26	-50.94	44.29	54	Pass
2510	-56.77	2.26	-54.51	40.72	54	Pass

Note*: Antenna Gain – using worst case of 2.26 across for all the frequencies
Note: dBm + 95.23 = dBµV/m

8.5 FCC 15.247(e) Power Spectrum Density

8.5.4 Definitions and limits

FCC
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

8.5.5 Test summary

Test date	July 25, 2019	Temperature	20 °C
Test engineer	Andres Martinez	Air pressure	1007 mbar
Verdict	Pass	Relative humidity	51 %

8.5.6 Observations, settings and special notes

Power output is less than 8dbm therefor PSD complies.

The device PSD even utilizing a 1MHz band with was below the required Limit - See Mid Channel plot at 1MHz RBW

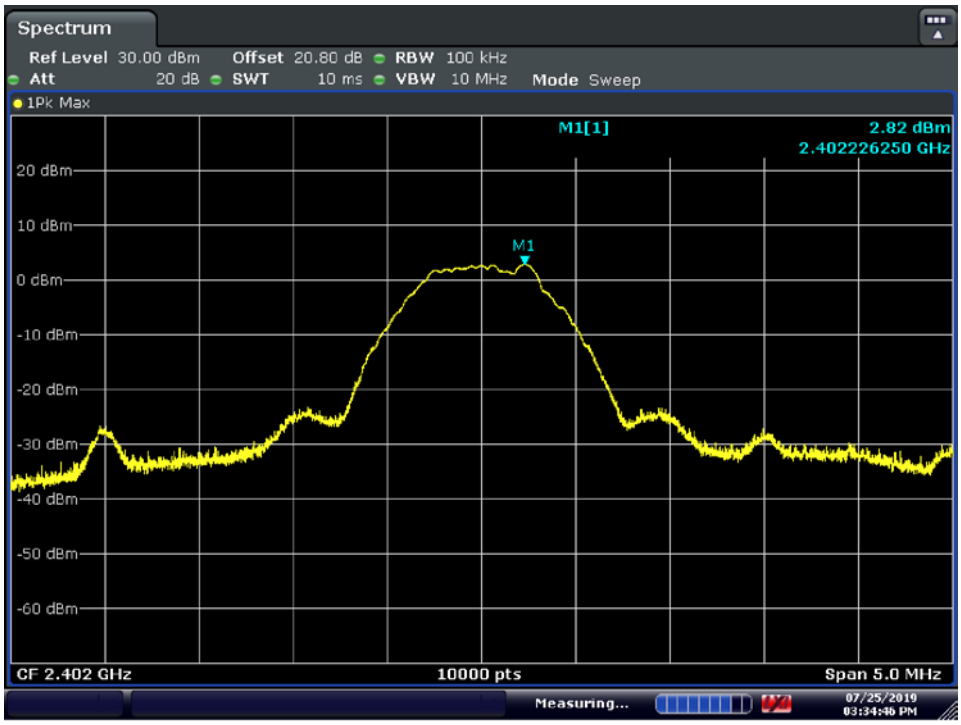
8.5.7 Test data

Table 8.4-1: Power Spectrum Density

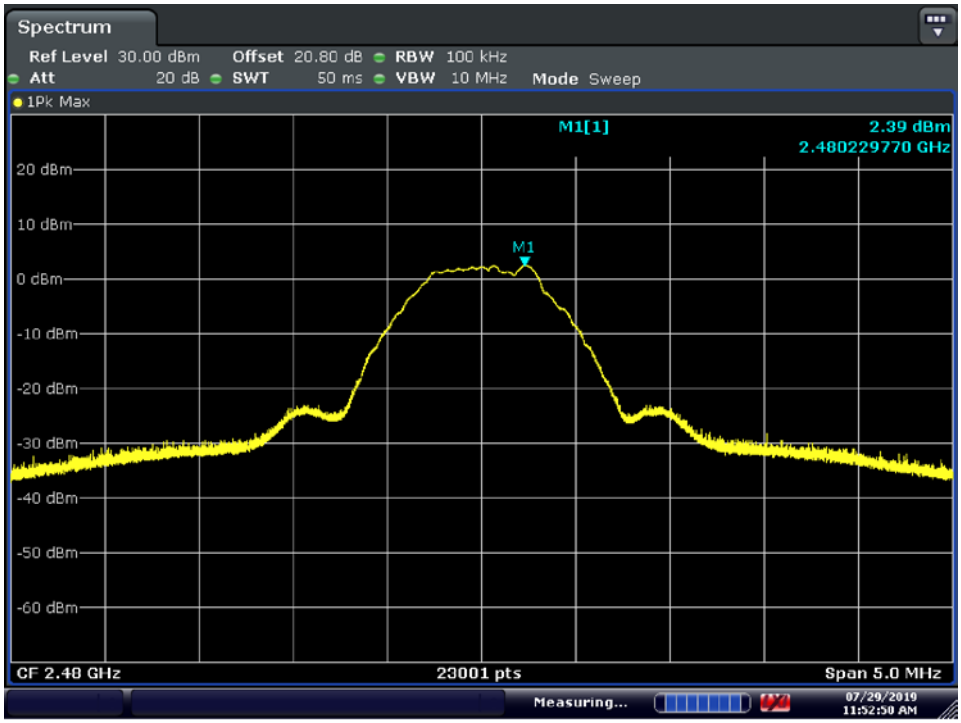
Modulation	Frequency, MHz	Conducted PSD@100kHz dBm				Margin, dB
		Measured	Antenna Gain dBi	Total dBm	Limit	
GFSK	2402	2.82	2.26	5.08	8	2.92
	2441 (NOTE)	4.13	1.70	5.83	8	2.17
	2480	2.39	1.78	4.17	8	3.83

NOTE: 2441MHz was measured with a 1MHz RBW and still complies with the FCC limit of 8dBm/3kHz Limit (See plot below)

POWER SPECTRAL DENSITY PLOTS

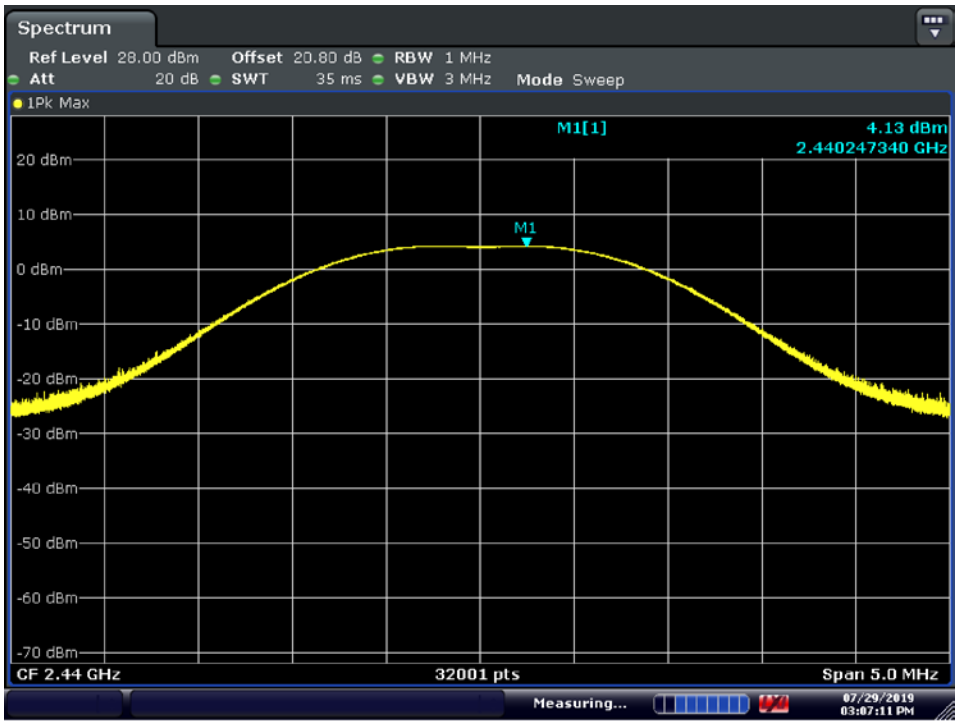


Date: 25.JUL.2019 15:34:47



Date: 29.JUL.2019 11:52:51

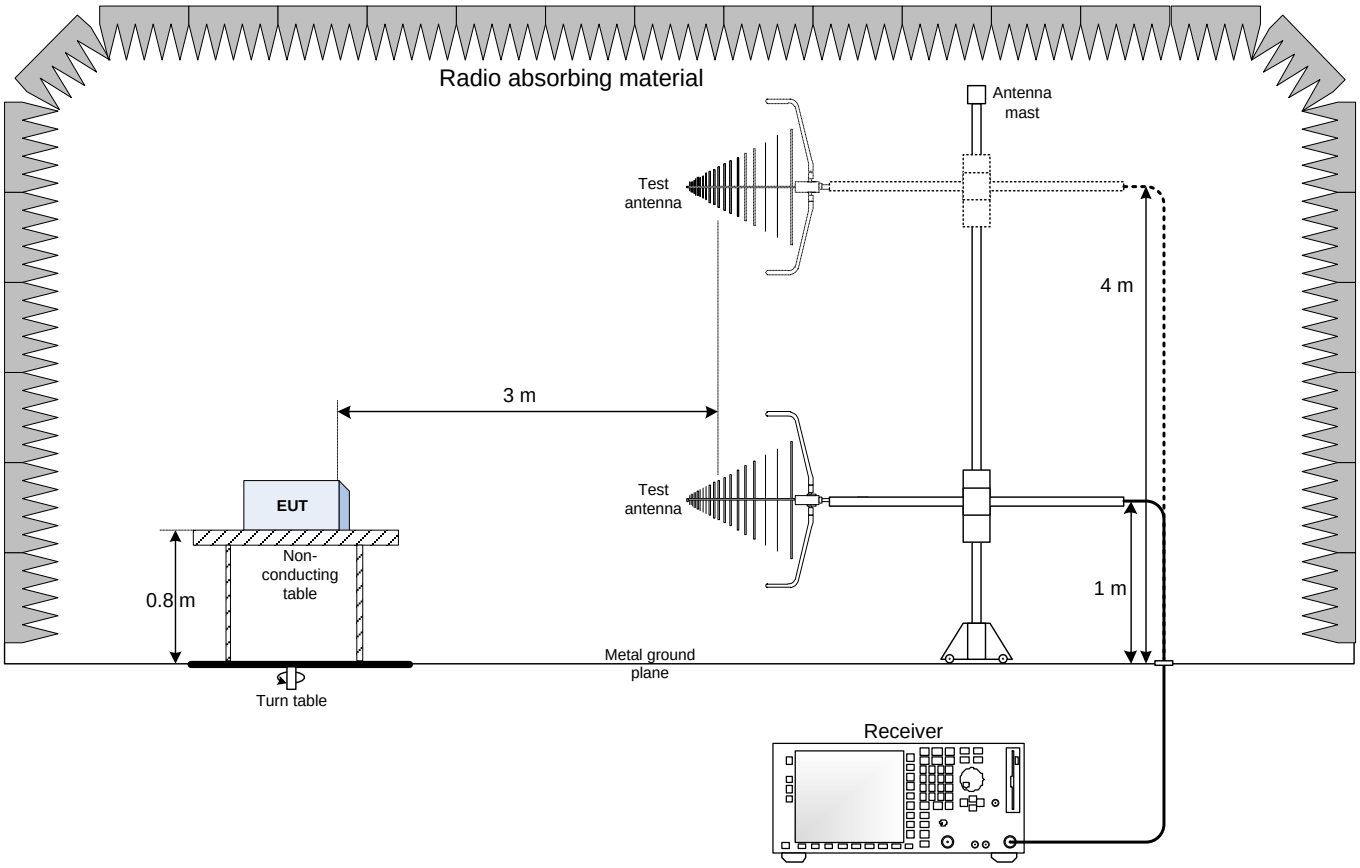
POWER SPECTRAL DENSITY PLOT – Mid Channel 1 MHz RBW



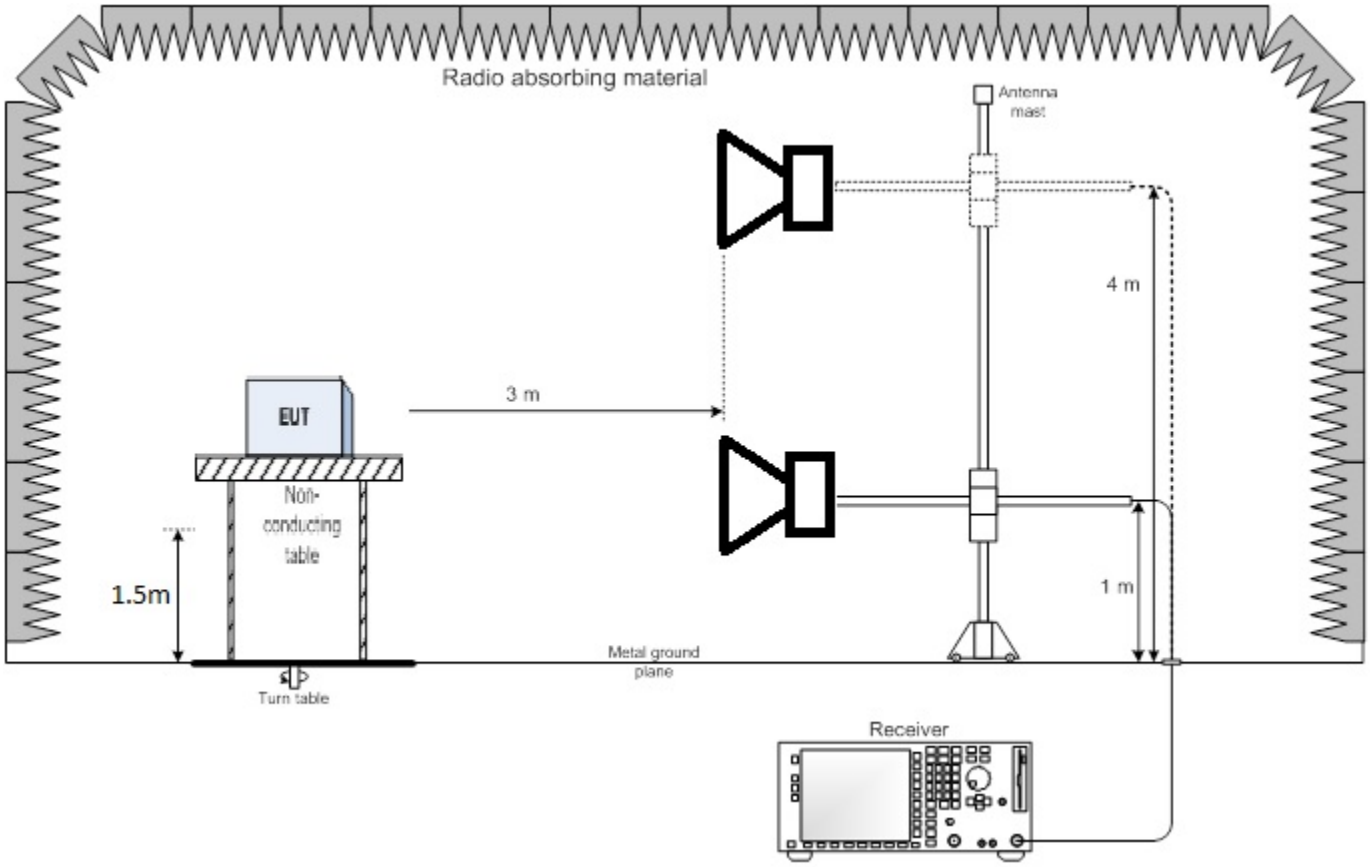
Date: 29.JUL.2019 15:07:12

Section 9. Block diagrams of test set-ups

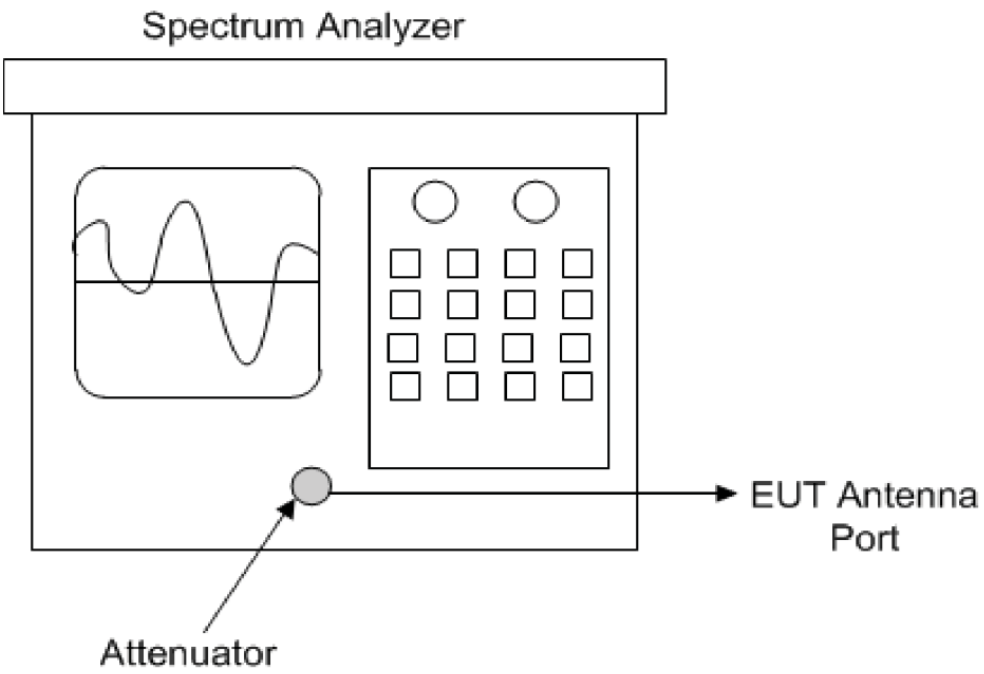
9.5 Radiated emissions set-up – Below 1GHz



9.6 Radiated emissions set-up – Above 1GHz



9.7 Antenna Port Conducted emissions set-up –



Thank you for choosing

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