





RADIO REPORT EN 300 328 Wideband transmission systems; Data transmission equipment operating in the 2.4 GHz ISM band and using wide band modulation techniques	
Report Reference No	G0M-1901-7972-TEU328BL-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	  DAkkS - Registration number : D-PL-12092-01-02
Applicant	Autovoice ApS
Address	Kornmarksvej 6 2605 Brøndby Denmark
Test Specification	According to RE directive 2014/53/EU
Standard	EN 300 328 V2.1.1
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Traffic alarm/Bluetooth device
Model(s)	ooono
Additional Model(s)	None
Brand Name(s)	ooono
Hardware Version(s)	V2
Software Version(s)	DTM firmware for RED testing
Test Result	PASSED

Possible test case verdicts:		
required by standard but not tested	N/T	
not required by standard	N/R	
not applicable to EUT	N/A	
test object does meet the requirement	P(PASS)	
test object does not meet the requirement	F(FAIL)	
Testing:		
Test Lab Temperature	20 - 23 °C	
Test Lab Humidity	32 – 38 %	
Date of receipt of test item	2019-01-30	
Report:		
Compiled by	Abdullah Al Jamal	
Tested by (+ signature) (Responsible for Test)	Wilfried Treffke	
Approved by (+ signature) (Deputy Head of Lab)	Toralf Jahn	
Date of Issue	2019-02-25	
Total number of pages	73	
General Remarks:		
<p>The test results presented in this report relate only to the object tested.</p> <p>The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.</p> <p>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p>		
Additional Comments:		
None.		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2019-02-25	Initial Release	

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
EUT	Equipment Under Test
GFSK	Gaussian Frequency Shift Keying
RBW	Resolution bandwidth
RMS	Root mean square
VBW	Video bandwidth
V _{NOM}	Nominal supply voltage
V _{MIN}	Minimum supply voltage
V _{MAX}	Maximum supply voltage

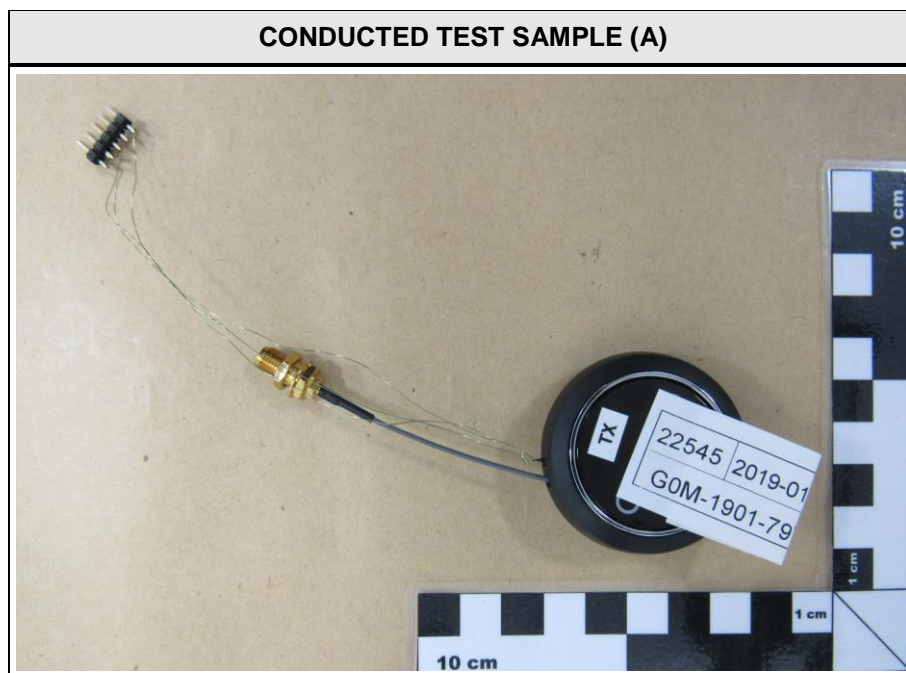
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1 Equipment (Test Item) Under Test

Description	Traffic alarm/Bluetooth device	
Model	ooono	
Additional Model(s)	None	
Brand Name(s)	ooono	
Serial Number(s)	Not specified (test sample 22542, radiated measurements) Not specified (test sample 22544, conducted measurements)	
Hardware Version(s)	V2	
Software Version(s)	DTM firmware for RED testing	
Equipment type	End Product	
Radio type	Transceiver	
Assigned frequency bands	2400 - 2483.5 MHz	
Radio technology	Bluetooth LE	
Modulation	GFSK	
Adaptive equipment	Yes	
Receiver category	3	
Number of antenna ports	1	
Antenna	Type	Integrated antenna
	Model	Not specified
	Manufacturer	Not specified
	Gain	0 dBi (declared by manufacturer)
Supply Voltage	V_{NOM}	3.0 VDC
Operating Temperature	T_{NOM}	20 °C
	T_{MIN}	-40 °C
	T_{MAX}	70 °C
AC/DC-Adaptor	Model	N/A
	Vendor	N/A
	Input	N/A
	Output	N/A
Manufacturer	CB Svendsen A/S Kirke Værløsevej 22 3500 Værløse Denmark	

1.1 Equipment Photos



CONDUCTED TEST SAMPLE (B)



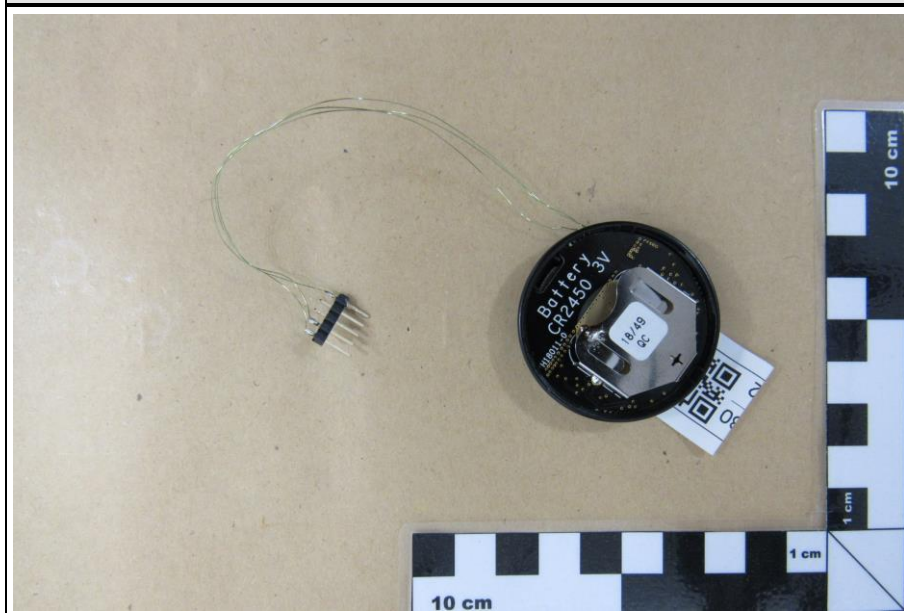
RADIATED TEST SAMPLE (A)



RADIATED TEST SAMPLE (B)



RADIATED TEST SAMPLE (C)



1.2 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
AE1	Laptop	Dell	Latitude E6430	S/N 4MX5TY1
AE2	Power Supply	Dell	LA65NS2-01	S/N 6TM1C
CBL	Converter USB 2.0 male > Serial-TTL	Delock	83787	None
Description:				
AE1 – AE2	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
Comment: None				

1.3 Test Modes

Mode	Description
GFSK	Mode = Transmit Modulation = GFSK Spreading = None Duty cycle = 64%
Blocking	Mode = Direct test receive mode, connection to communication tester Spreading = None
Receive	Mode = Receive
Comment: None	

1.4 Test Frequencies

Designator	Mode	Channel	Frequency [MHz]
F1	Tx / Rx	0	2402
F2	Tx / Rx	19	2440
F3	Tx / Rx	39	2480

2 Result Summary

EN 300 328				
Product Standard Reference	Requirement	Reference Method	Result	Remarks
EN 300 328 4.3.2.2	RF output power	EN 300 328 5.4.2	PASS	
EN 300 328 4.3.2.3	Power spectral density	EN 300 328 5.4.3	PASS	
EN 300 328 4.3.2.4	Duty cycle, Tx-sequence, Tx-gap	EN 300 328 5.4.2	N/R	For non-adaptive equipment with rf output power > 10 dBm EIRP only
EN 300 328 4.3.1.4	Accumulated transmit time	EN 300 328 5.4.4	N/R	For FHSS only
EN 300 328 4.3.1.4	Frequency occupation	EN 300 328 5.4.4	N/R	For FHSS only
EN 300 328 4.3.1.4	Hopping sequence	EN 300 328 5.4.4	N/R	For FHSS only
EN 300 328 4.3.1.5	Hopping frequency separation	EN 300 328 5.4.5	N/R	For FHSS only
EN 300 328 4.3.2.5	Medium utilization	EN 300 328 5.4.2	N/R	For non-adaptive equipment with rf output power > 10 dBm EIRP only
EN 300 328 4.3.2.6	Adaptivity	EN 300 328 5.4.6	N/R	For adaptive equipment with rf output power > 10 dBm EIRP only
EN 300 328 4.3.2.7	Occupied channel bandwidth	EN 300 328 5.4.7	PASS	
EN 300 328 4.3.2.8	Transmitter unwanted emissions in the out-of-band domain	EN 300 328 5.4.8	PASS	
EN 300 328 4.3.2.9	Transmitter unwanted emissions in the spurious domain	EN 300 328 5.4.9	PASS	
EN 300 328 4.3.2.10	Receiver spurious emissions	EN 300 328 5.4.10	PASS	
EN 300 328 4.3.2.11	Receiver blocking	EN 300 328 5.4.11	PASS	
EN 300 328 4.3.1.13	Geo-location capability	EN 300 328 4.3.1.13	N/R	Not used
Comment: None				

Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

3 Test Conditions and Results

3.1 Test Conditions and Results - RF output power

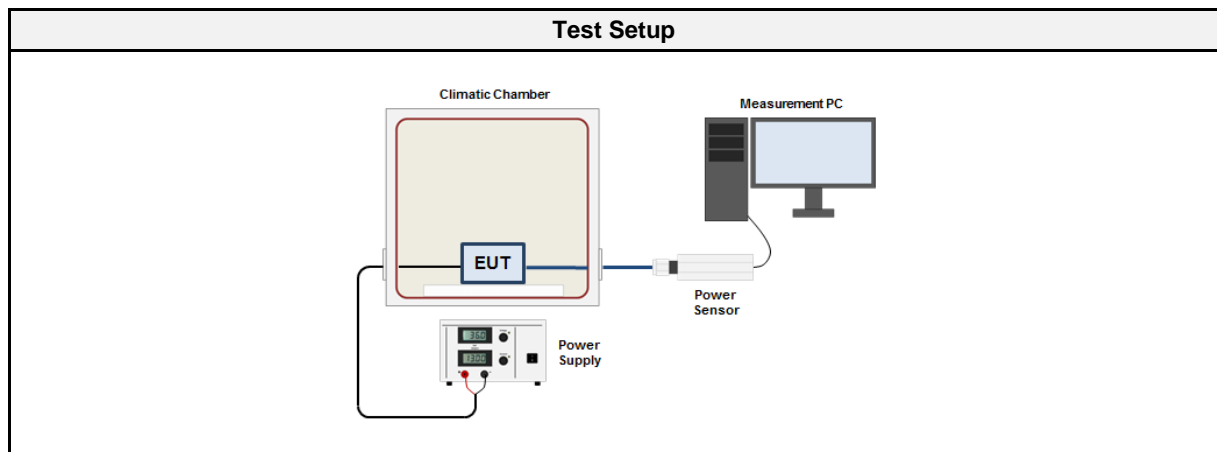
3.1.1 Information

Test Information	
Reference	EN 300 328 4.3.1.2, 4.3.2.2
Reference Method	EN 300 328 5.4.2
Measurement Method	Conducted
Operator	Abdullah Al Jamal
Date	2019-02-04

3.1.2 Limits

Limits	
Type	Power limit
Adaptive	≤ 20 dBm
Non-adaptive	≤ value declared by manufacturer ≤ 20 dBm

3.1.3 Setup



3.1.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2014.2.8

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Power sensor	ETS-Lindgren	7002-006	EF00934	2018-07	2019-07
Climatic chamber	Vötsch	VT 4010	EF00134	2018-08	2019-08

3.1.5 Procedure

Test Procedure	
1.	EUT transmitter is activated in test mode under normal conditions
2.	A power sensor is connected to each antenna port
3.	The output power of the EUT is measured with a digital power sensor with a sampling speed of 1 MSample/s or higher
4.	The RMS power is calculated for each transmission burst
5.	The antenna gain and level offset due to cabling is added
6.	The power is summed from all antenna ports to get the combined power

3.1.6 Results

Test Results					
Mode	Frequency [MHz]	Temperature [°C]	Power [dBm EIRP]	Limit [dBm EIRP]	Verdict
GFSK	2402	20	-4.8	20	PASS
GFSK	2402	-40	-6.6	20	PASS
GFSK	2402	70	-6.9	20	PASS
GFSK	2440	20	-5.9	20	PASS
GFSK	2440	-40	-7.6	20	PASS
GFSK	2440	70	-7.9	20	PASS
GFSK	2480	20	-6.8	20	PASS
GFSK	2480	-40	-8.6	20	PASS
GFSK	2480	70	-8.8	20	PASS

Mode	Frequency [MHz]	Temperature [°C]	max. Power [dBm EIRP]	max. Power [mW EIRP]
Transmit	2402	20	-4.8	0.33

3.2 Test Conditions and Results - Power spectral density

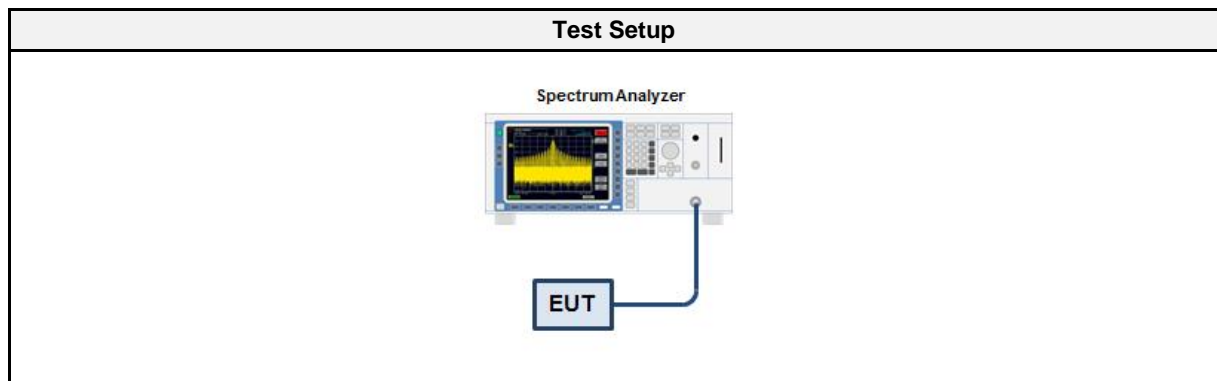
3.2.1 Information

Test Information	
Reference	EN 300 328 4.3.2.3
Reference Method	EN 300 328 5.4.3
Measurement Method	Conducted
Operator	Abdullah Al Jamal
Date	2019-02-04

3.2.2 Limits

Limits
$\leq 10 \text{ dBm (10 mW) / 1 MHz}$

3.2.3 Setup



3.2.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSW 43	EF00896	2018-07	2019-07

3.2.5 Procedure

Test Procedure
<ol style="list-style-type: none"> 1. EUT set to test mode 2. The whole 2.4 GHz band is swept with RBW = 10 kHz and RMS detector and max hold 3. The trace is captured saved to file and the procedure is repeated for the other antenna ports 4. The total power is calculated by summing up all the traces point by point 5. The integrated power is calculated from the data by power integration 5. The trace is renormalized such that the integrated power is equal to the rf output power 6. The trace bins are summed over 1 MHz span for each trace point to get the spectral density per MHz 7. The maximum of the trace is recorded as power spectral density

3.2.6 Results

Test Results				
Mode	Frequency [MHz]	Power spectral density [dBm/MHz EIRP]	Limit [dBm/MHz EIRP]	Verdict
GFSK	2402	-4.871	10	PASS
GFSK	2440	-5.968	10	PASS
GFSK	2480	-6.872	10	PASS

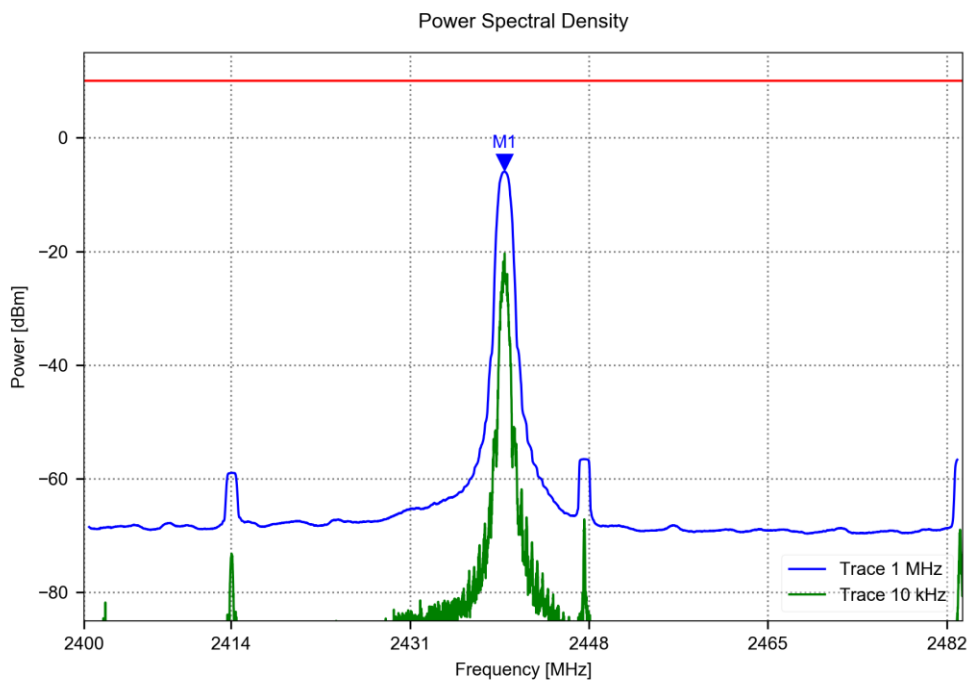
Power Spectral Density

Project Number: G0M-1901-7972
 Applicant: Autovice ApS
 Model Description: Traffic alarm/Bluetooth device
 Model: oono
 Test Sample ID: 22545
 Reference Standards: EN 300 328 V2.1.1
 Reference Method: EN 300 328 V2.1.1, Section 5.4.3
 Operational Mode: Bluetooth LE, GFSK, Channel: 2402.0 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-02-04
 PSD Frequency (M1) [MHz]: 2401.975
 PSD Level [dBm/MHz]: -4.871



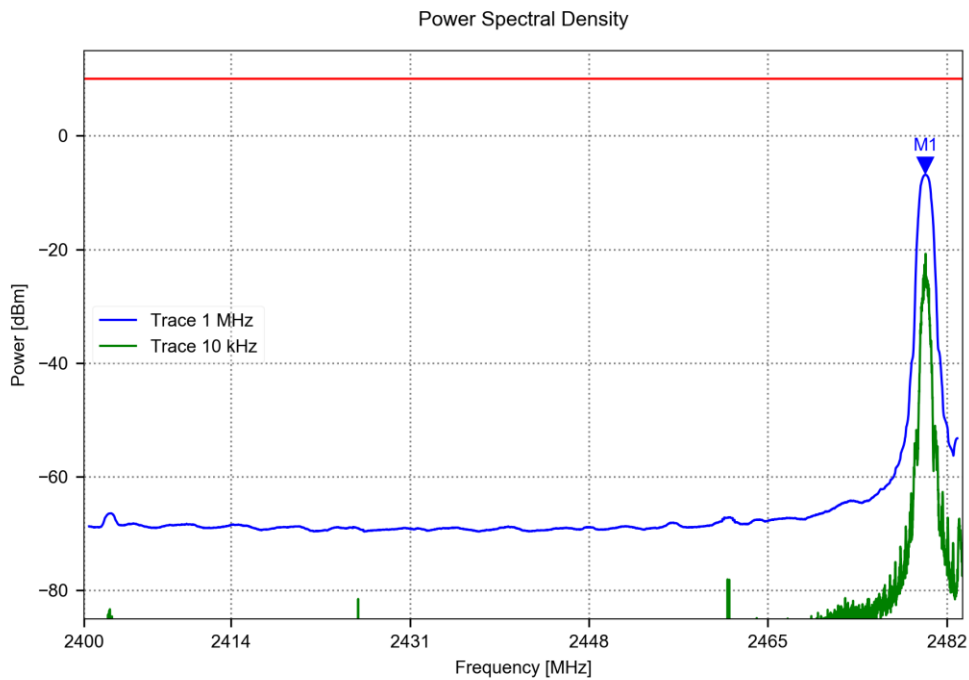
Power Spectral Density

Project Number: G0M-1901-7972
 Applicant: Autovice ApS
 Model Description: Traffic alarm/Bluetooth device
 Model: oono
 Test Sample ID: 22545
 Reference Standards: EN 300 328 V2.1.1
 Reference Method: EN 300 328 V2.1.1, Section 5.4.3
 Operational Mode: Bluetooth LE, GFSK, Channel: 2440.0 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-02-04
 PSD Frequency (M1) [MHz]: 2439.980
 PSD Level [dBm/MHz]: -5.968



Power Spectral Density

Project Number: G0M-1901-7972
 Applicant: Autovice ApS
 Model Description: Traffic alarm/Bluetooth device
 Model: oono
 Test Sample ID: 22545
 Reference Standards: EN 300 328 V2.1.1
 Reference Method: EN 300 328 V2.1.1, Section 5.4.3
 Operational Mode: Bluetooth LE, GFSK, Channel: 2480.0 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-02-04
 PSD Frequency (M1) [MHz]: 2479.975
 PSD Level [dBm/MHz]: -6.872



3.3 Test Conditions and Results - Occupied channel bandwidth

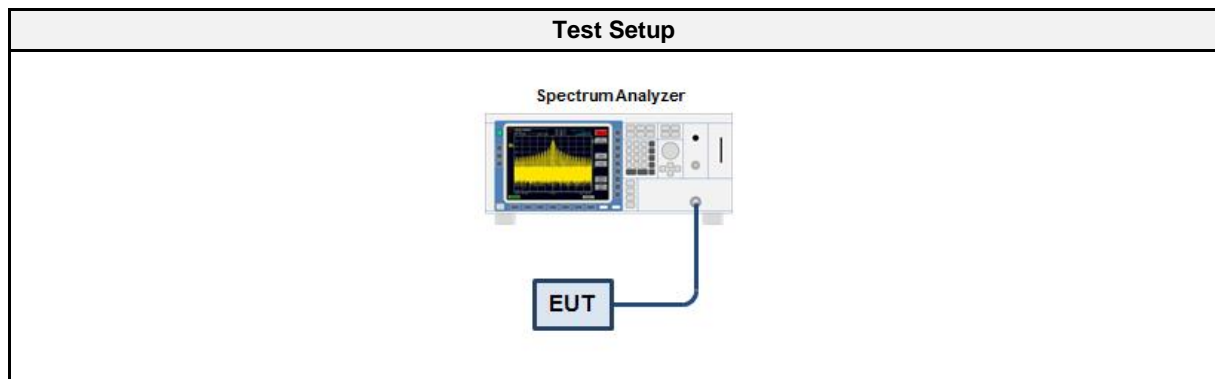
3.3.1 Information

Test Information	
Reference	EN 300 328 4.3.1.8, 4.3.2.7
Reference Method	EN 300 328 5.4.7
Measurement Method	Conducted
Operator	Abdullah Al Jamal
Date	2019-02-04

3.3.2 Limits

Limits	
Condition	Bandwidth [MHz]
Non-adaptive FHSS, power > 10 dBm EIRP	< Value declared by manufacturer < 5
Non-adaptive non-FHSS, power > 10 dBm EIRP	< 20
Occupied channel bandwidth shall fall completely within the band	

3.3.3 Setup



3.3.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSW 43	EF00896	2018-07	2019-07

3.3.5 Procedure

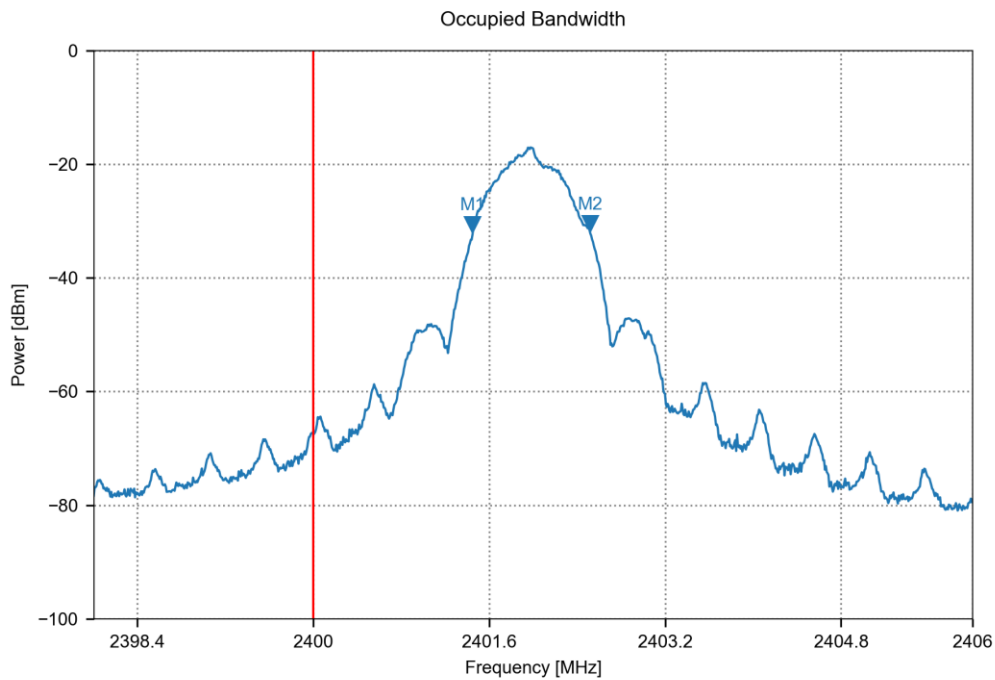
Test Procedure
<ol style="list-style-type: none"> EUT set to test mode (Communication tester is used if needed) The spectrum analyser span is set large enough to capture the complete envelope of the emission spectrum (2 times the occupied channel bandwidth) The RBW is set to 1% of the span and the VBW is set to 3 times the RBW The spectrum is captured with RMS detector and max hold The 99% occupied bandwidth is measured using the spectrum analyzer measurement function

3.3.6 Results

Test Results					
Mode	Channel [MHz]	Bandwidth [MHz]	Limit [MHz]	Margin [MHz]	Band check
GFSK	2402	1.071	N/A	N/A	PASS
GFSK	2480	1.071	N/A	N/A	PASS

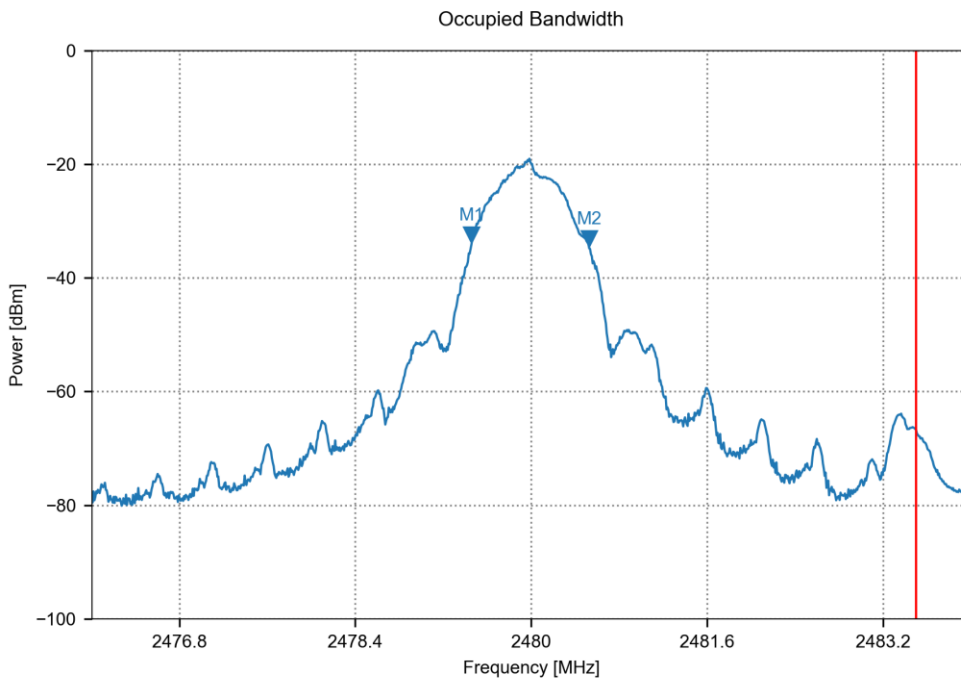
Occupied Bandwidth

Project Number:	G0M-1901-7972
Applicant:	Autovice ApS
Model Description:	Traffic alarm/Bluetooth device
Model:	oono
Test Sample ID:	22545
Reference Standards:	EN 300 328 V2.1.1
Reference Method:	EN 300 328 V2.1.1, Section 5.4.7
Operational Mode:	Bluetooth LE, GFSK, Channel: 2402.0 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Abdullah Al Jamal
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-04
Lower Frequency (M1) [MHz]:	2401.449
Upper Frequency (M2) [MHz]:	2402.519
Occupied Bandwidth [MHz]:	1.071



Occupied Bandwidth

Project Number:	G0M-1901-7972
Applicant:	Autovice ApS
Model Description:	Traffic alarm/Bluetooth device
Model:	oono
Test Sample ID:	22545
Reference Standards:	EN 300 328 V2.1.1
Reference Method:	EN 300 328 V2.1.1, Section 5.4.7
Operational Mode:	Bluetooth LE, GFSK, Channel: 2480.0 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Abdullah Al Jamal
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-04
Lower Frequency (M1) [MHz]:	2479.457
Upper Frequency (M2) [MHz]:	2480.527
Occupied Bandwidth [MHz]:	1.071

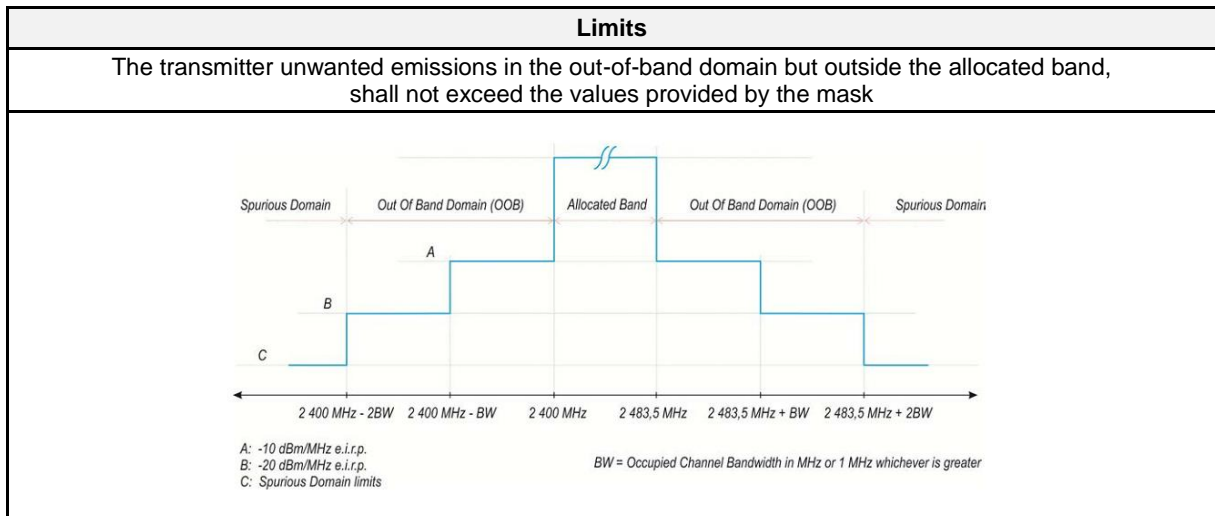


3.4 Test Conditions and Results - Transmitter unwanted emission in the out-of-band domain

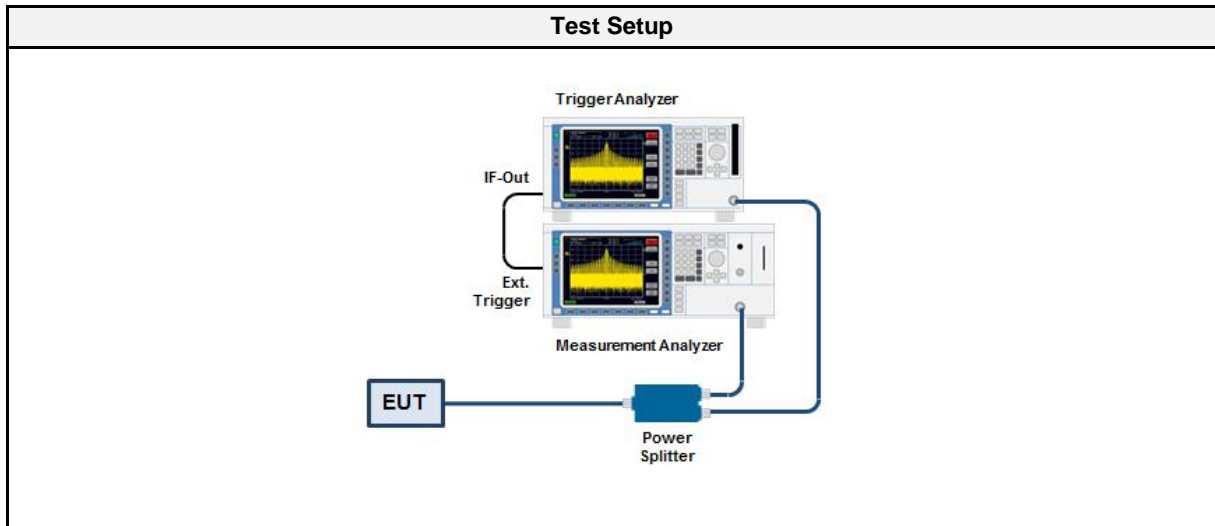
3.4.1 Information

Test Information	
Reference	EN 300 328 4.3.1.9, 4.3.2.8
Reference Method	EN 300 328 5.4.8
Measurement Method	Conducted
Operator	Abdullah Al Jamal
Date	2019-02-04

3.4.2 Limits



3.4.3 Setup



3.4.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSW 43	EF00896	2018-07	2019-07

3.4.5 Procedure

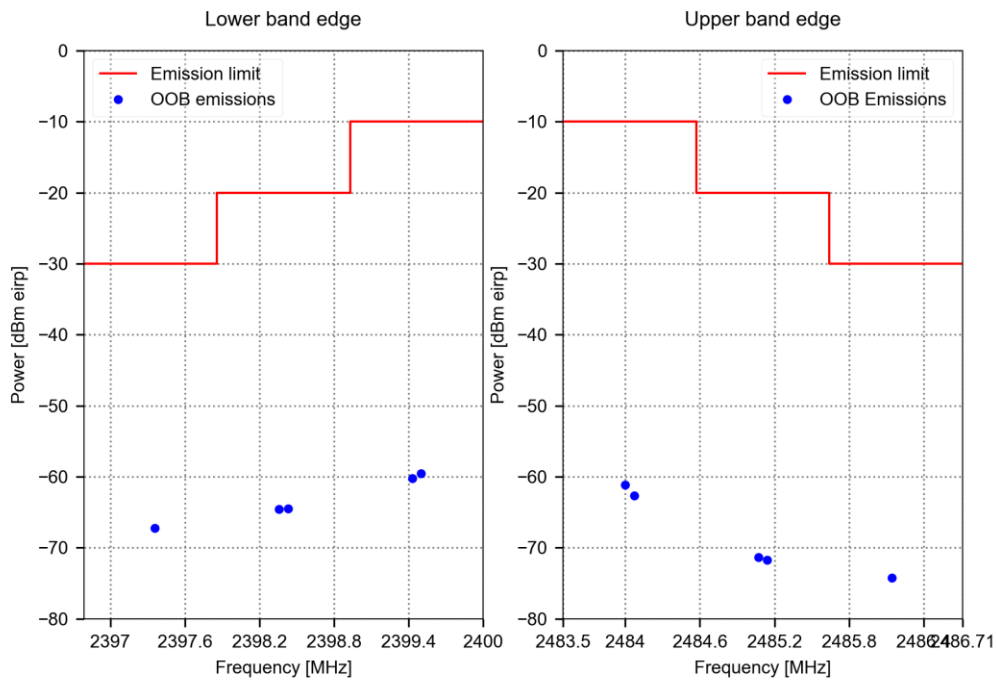
Test Procedure
<ol style="list-style-type: none"> 1. EUT set to test mode (Communication tester is used if needed) 2. The trigger analyzer is set to zero span with RBW of 1 MHz and VBW of 3 MHz on the center frequency of the channel under test 3. The measurement analyzer is set to zero span with RBW of 1 MHz and VBW = 3 x RBW with RMS detector 4. The center frequency is set to the first measurement frequency and the sweep time is set to 120 % of the transmission burst length and trigger is set to external 5. The RMS power over the transmission burst is measured using time domain power function with the measurement range set to the start and the end of the transmission burst 6. The measurement is performed for the lowest and highest transmission channel of the EUT over two bandwidths of the transmission signal

3.4.6 Results

Test Results			
Mode	Channel [MHz]	Occupied Bandwidth [MHz]	Mask Verdict
GFSK	2402 + 2480	1.071	PASS

Tx unwanted emissions in the out-of-band domain

Project Number: G0M-1901-7972
 Applicant: Autovice ApS
 Model Description: Traffic alarm/Bluetooth device
 Model: oono
 Test Sample ID: 22545
 Reference Standards: EN 300 328 V2.1.1
 Reference Method: EN 300 328 V2.1.1, Section 5.4.8
 Operational Mode: Bluetooth LE, GFSK, Channel: 2402 MHz and 2480 MHz
 Operating Conditions: Tnom/Vnom
 Occupied Channel Bandwidth [MHz]: 1.071
 Bandwidth for measurement [MHz]: 1.1
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-02-04



Freq. [MHz]	Level [dBm EIRP]	Limit [dBm EIRP]	Freq. [MHz]	Level [dBm EIRP]	Limit [dBm EIRP]
2399.5	-59.51	-10	2484.0	-61.11	-10
2399.429	-60.22	-10	2484.071	-62.68	-10
2398.429	-64.49	-20	2485.071	-71.35	-20
2398.358	-64.56	-20	2485.142	-71.68	-20
2397.358	-67.2	-30	2486.142	-74.19	-30

3.5 Test Conditions and Results - Transmitter unwanted emission in the spurious domain

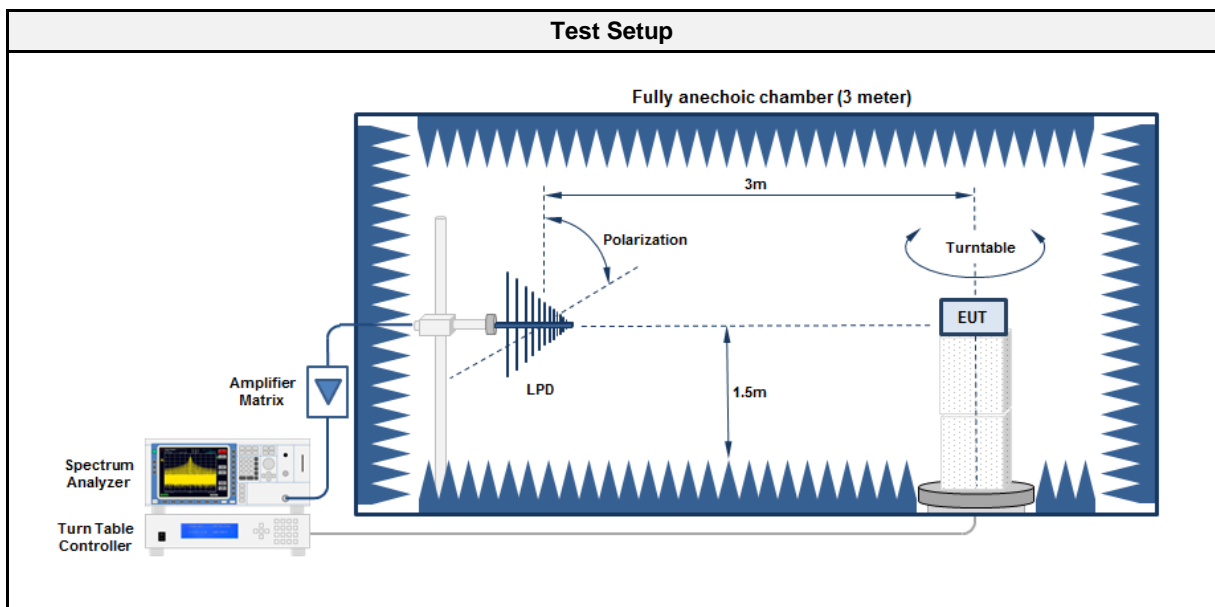
3.5.1 Information

Test Information	
Reference	EN 300 328 4.3.1.10, 4.3.2.9
Reference Method	EN 300 328 5.4.9
Measurement Method	Radiated
Operator	Abdullah Al Jamal
Date	2019-02-14

3.5.2 Limits

Limits			
Frequency range [MHz]	Detector	Limit [dBm]	Bandwidth
30 - 47	RMS	-36	100 kHz
47 - 74	RMS	-54	100 kHz
74 - 87.5	RMS	-36	100 kHz
87.5 - 118	RMS	-54	100 kHz
118 - 174	RMS	-36	100 kHz
174 - 230	RMS	-54	100 kHz
230 - 470	RMS	-36	100 kHz
470 - 862	RMS	-54	100 kHz
862 - 1000	RMS	-36	100 kHz
1000 - 12750	RMS	-30	1 MHz

3.5.3 Setup



3.5.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2015.2.4

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic chamber	Frankonia	AC4	EF00200	-	-
Spectrum Analyzer	R&S	FSU 26	EF01003	2018-07	2019-07
Antenna	R&S	HK 116	EF00203	2018-06	2020-06
Antenna	R&S	HL 223	EF00013	2018-06	2020-06
Antenna	Schwarzbeck	BBHA 9120D	EF00019	2018-10	2020-10

3.5.5 Procedure

Test Procedure
<ol style="list-style-type: none"> 1. EUT transmitter is activated in test mode with modulation under normal conditions 2. The spectrum analyzer is set to RMS detection with max hold and RBW = VBW according to frequency range 3. The measurement antenna is set to vertical polarization 4. The EUT is rotated through 360° in horizontal plane 5. The maximum emission level is recorded 6. The measurement polarization is set to horizontal polarization and the measurement is repeated

3.5.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBm]	Det.	Pol.	Limit [dBm]	Margin [dB]
2402	52.576	-61.10	pk	ver	-54.00	-07.07
2402	64.765	-63.10	RMS	ver	-54.00	-09.12
2402	71.888	-60.50	pk	ver	-54.00	-06.52
2402	185.584	-61.20	pk	ver	-54.00	-07.20
2402	4800	-40.20	pk	hor	-30.00	-10.18
2402	4800	-43.90	pk	ver	-30.00	-13.85
2402	7200	-46.60	pk	hor	-30.00	-16.58
2402	7200	-46.00	pk	ver	-30.00	-15.95
2402	9604	-50.70	pk	ver	-30.00	-20.73
2480	55.84	-62.50	pk	hor	-54.00	-08.55
2480	64.678	-63.20	RMS	ver	-54.00	-09.21
2480	191.024	-60.10	pk	ver	-54.00	-06.13
2480	4250	-57.10	pk	ver	-30.00	-27.11
2480	4954	-43.80	pk	ver	-30.00	-13.85
2480	4960	-37.10	pk	hor	-30.00	-07.08
2480	7437	-48.00	pk	hor	-30.00	-18.02
2480	7437	-49.30	pk	ver	-30.00	-19.29

3.6 Test Conditions and Results - Receiver spurious emissions

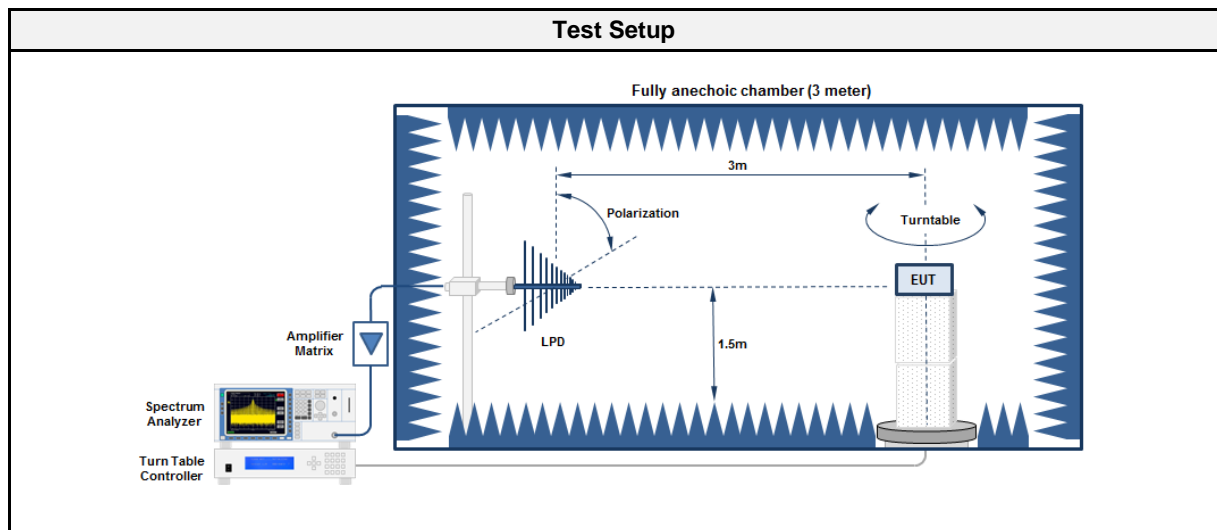
3.6.1 Information

Test Information	
Reference	EN 300 328 4.3.1.11
Reference Method	EN 300 328 5.4.10
Measurement Method	Radiated
Operator	Abdullah Al Jamal
Date	2019-02-14

3.6.2 Limits

Limits			
Frequency range [MHz]	Detector	Limit [dBm]	Bandwidth
30 - 1000	RMS	-57	100 kHz
1000 – 12750	RMS	-47	1 MHz

3.6.3 Setup



3.6.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	Radimation	2015.2.4

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic chamber	Frankonia	AC4	EF00200	-	-
Spectrum Analyzer	R&S	FSU 26	EF01003	2018-07	2019-07
Antenna	R&S	HK 116	EF00203	2018-06	2020-06
Antenna	R&S	HL 223	EF00013	2018-06	2020-06
Antenna	Schwarzbeck	BBHA 9120D	EF00019	2018-10	2020-10

3.6.5 Procedure

Test Procedure	
1.	EUT transmitter is activated in test mode with modulation under normal conditions
2.	The spectrum analyzer is set to RMS detection with max hold and RBW = VBW according to frequency range
3.	The measurement antenna is set to vertical polarization
4.	The EUT is rotated through 360° in horizontal plane
5.	The maximum emission level is recorded
6.	The measurement polarization is set to horizontal polarization and the measurement is repeated

3.6.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBm]	Det.	Pol.	Limit [dBm]	Margin [dB]
2402	31.363	-64.80	RMS	hor	-57.00	-07.81
2402	33.431	-65.30	RMS	ver	-57.00	-08.28
2402	45.066	-65.90	RMS	ver	-57.00	-08.91
2402	51.106	-65.40	RMS	ver	-57.00	-08.41
2402	64.715	-62.90	RMS	ver	-57.00	-05.89
2402	71.96	-63.90	RMS	ver	-57.00	-06.93
2402	76.24	-63.90	pk	hor	-57.00	-06.87
2402	149.68	-63.90	pk	hor	-57.00	-06.90
2402	6989	-56.10	pk	ver	-47.00	-09.08
2402	7808	-55.20	pk	hor	-47.00	-08.17
2402	9398	-62.60	RMS	hor	-47.00	-15.60
2402	10933	-61.70	RMS	ver	-47.00	-14.67
2402	10949	-62.00	RMS	hor	-47.00	-14.98
2402	12530	-61.80	RMS	hor	-47.00	-14.75
2402	12621	-53.30	pk	ver	-47.00	-06.25
2480	31.314	-65.00	RMS	hor	-57.00	-07.95
2480	33.383	-65.70	RMS	ver	-57.00	-08.71
2480	44.137	-66.20	RMS	ver	-57.00	-09.21
2480	49.584	-67.80	RMS	hor	-57.00	-10.81
2480	63.438	-63.70	RMS	ver	-57.00	-06.66
2480	64.678	-63.20	RMS	ver	-57.00	-06.18
2480	68.845	-65.60	RMS	ver	-57.00	-08.55
2480	151.04	-64.00	pk	hor	-57.00	-07.03
2480	7008	-55.80	pk	hor	-47.00	-08.82
2480	10424	-61.50	RMS	ver	-47.00	-14.46
2480	10941	-61.90	RMS	hor	-47.00	-14.86
2480	12507	-62.10	RMS	hor	-47.00	-15.11
2480	12613	-62.30	RMS	ver	-47.00	-15.27

3.7 Test Conditions and Results - Receiver blocking

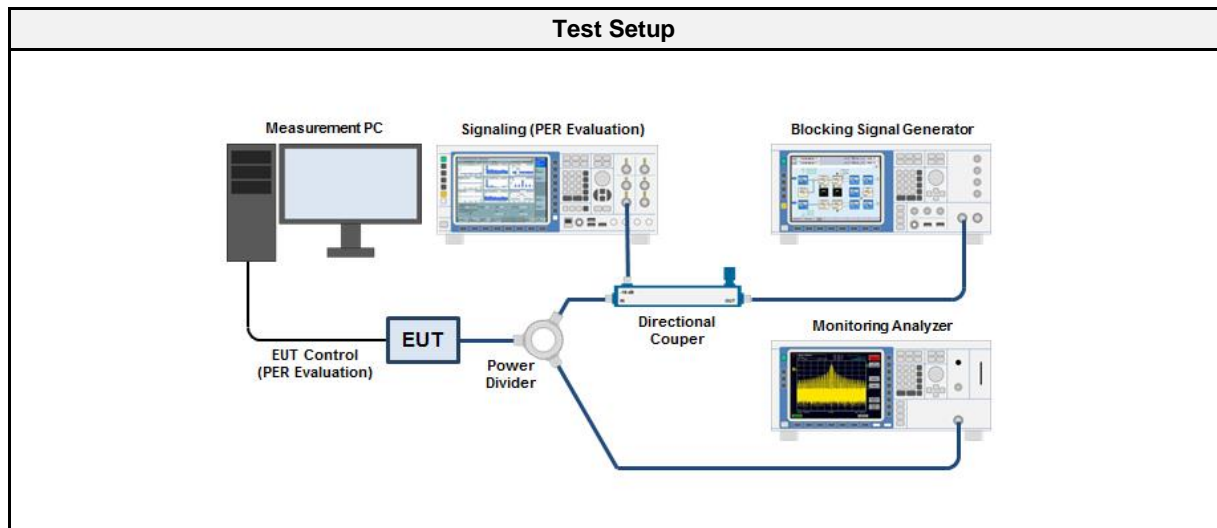
3.7.1 Information

Test Information	
Reference	EN 300 328 4.3.1.12, 4.3.2.11
Reference Method	EN 300 328 5.4.11
Measurement Mode	Blocking
Measurement Method	Conducted
Performance Criteria	PER ≤ 10 %
Operator	Abdullah Al Jamal
Date	2019-02-14

3.7.2 Limits

Limits - Receiver Category 3			
Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
$P_{min} + 12$ dB	2 380 2 503,5	-57	CW
$P_{min} + 12$ dB	2 300 2 583,5	-47	CW
NOTE 1: P_{min} is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.			
NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

3.7.3 Setup



3.7.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Communication Tester	R&S	CMW270	EF01169	2018-11	2019-11
Signal Generator	R&S	SMU200A	EF00004	2018-07	2019-07
Spectrum Analyzer	R&S	FSW 43	EF00896	2018-07	2019-07

3.7.5 Procedure

Test Procedure	
1.	EUT is connected to companion device in blocking test mode.
2.	For FHSS equipment the EUT is set to hopping mode and for non-FHSS equipment the EUT is set to the lowest operating channel
3.	The connection is set to the smallest channel bandwidth and lowest data rate (communication tester is used if possible)
4.	The signal generator is set to the first blocking frequency and is switched off
5.	The attenuation of the step attenuator is increased until the minimum performance criteria is met
6.	The attenuation is decreased in dB by the amount given for the applicable receiver category
7.	The blocking signal generator is activated without modulation with a signal level at the antenna port as given in the corresponding table corrected by the antenna gain
8.	It is verified whether the performance criteria is met or not
9.	The procedure is repeated with the other blocking frequencies and for non-FHSS equipment for the highest operating channel

3.7.6 Results

Test Results Receiver Category 3					
Channel [MHz]	P _{MIN} [dBm]	Wanted signal	Blocking Frequency [MHz]	Blocking Level [dBm]	Verdict
2402	-95.3	P _{MIN} + 12 dB	2380	-57	PASS
2402	-95.3	P _{MIN} + 12 dB	2503.5	-57	PASS
2402	-95.3	P _{MIN} + 12 dB	2300	-47	PASS
2402	-95.3	P _{MIN} + 12 dB	2583.5	-47	PASS
2480	-95.3	P _{MIN} + 12 dB	2380	-57	PASS
2480	-95.3	P _{MIN} + 12 dB	2503.5	-57	PASS
2480	-95.3	P _{MIN} + 12 dB	2300	-47	PASS
2480	-95.3	P _{MIN} + 12 dB	2583.5	-47	PASS
Comment: Levels are corrected by the antenna gain					

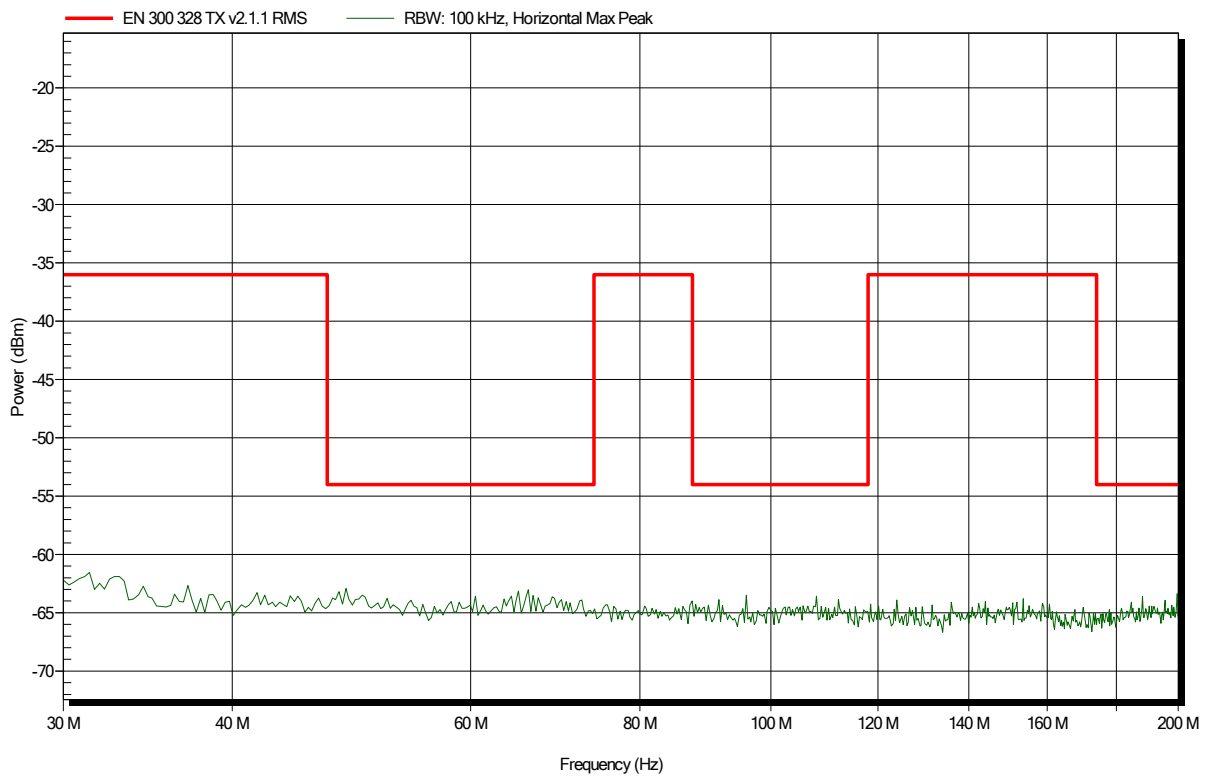
ANNEX A Transmitter spurious emissions

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25.3°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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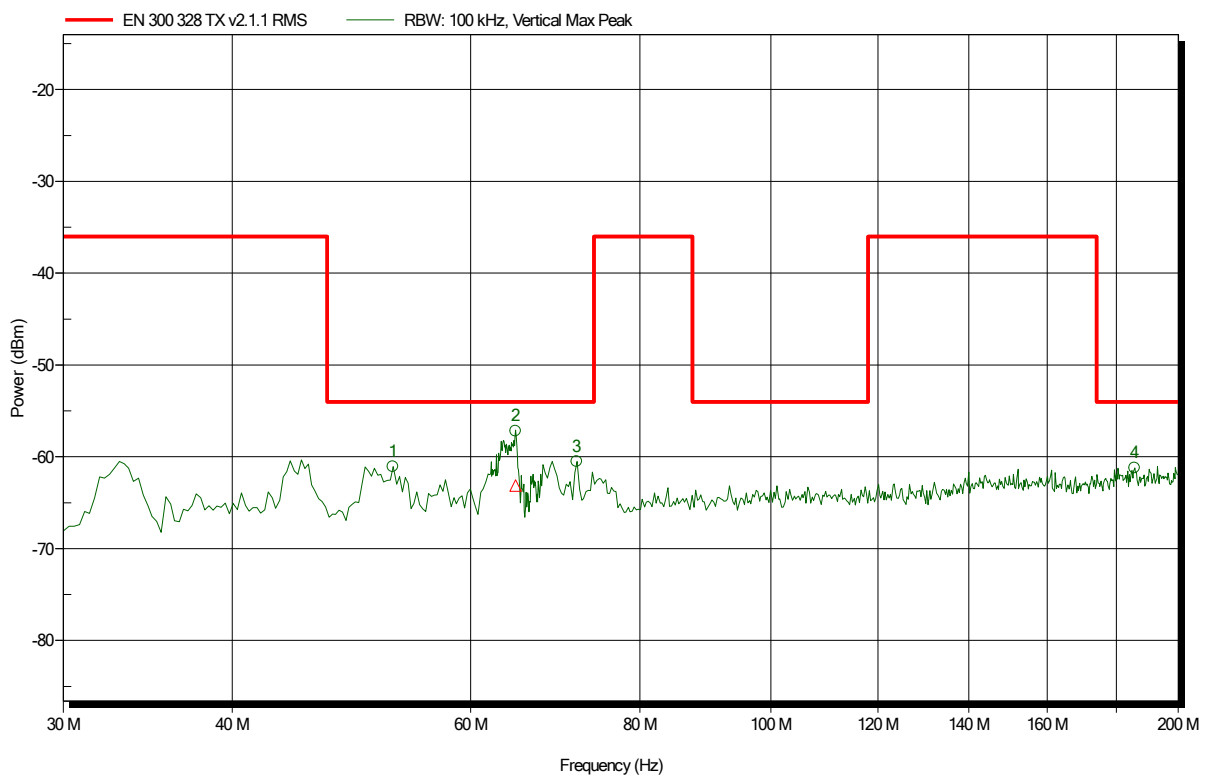


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: oono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25.3°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3 m
 Mode: TX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
185.584 MHz	-61.2 dBm	-54 dBm	-7.2 dB	Pass
52.576 MHz	-61.1 dBm	-54 dBm	-7.07 dB	Pass
64.765 MHz	-57.2 dBm	-54 dBm	-3.18 dB	Pass
71.888 MHz	-60.5 dBm	-54 dBm	-6.52 dB	Pass

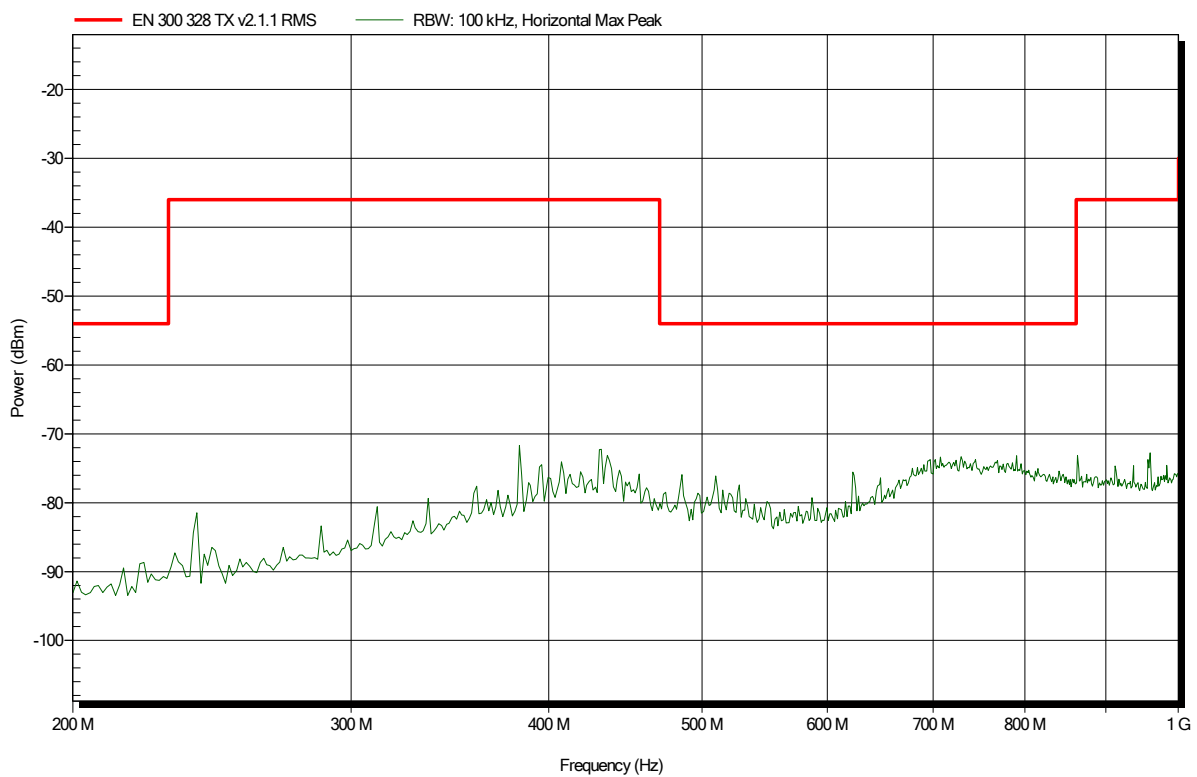
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
64.765 MHz	-63.1 dBm	-54 dBm	-9.12 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25.3°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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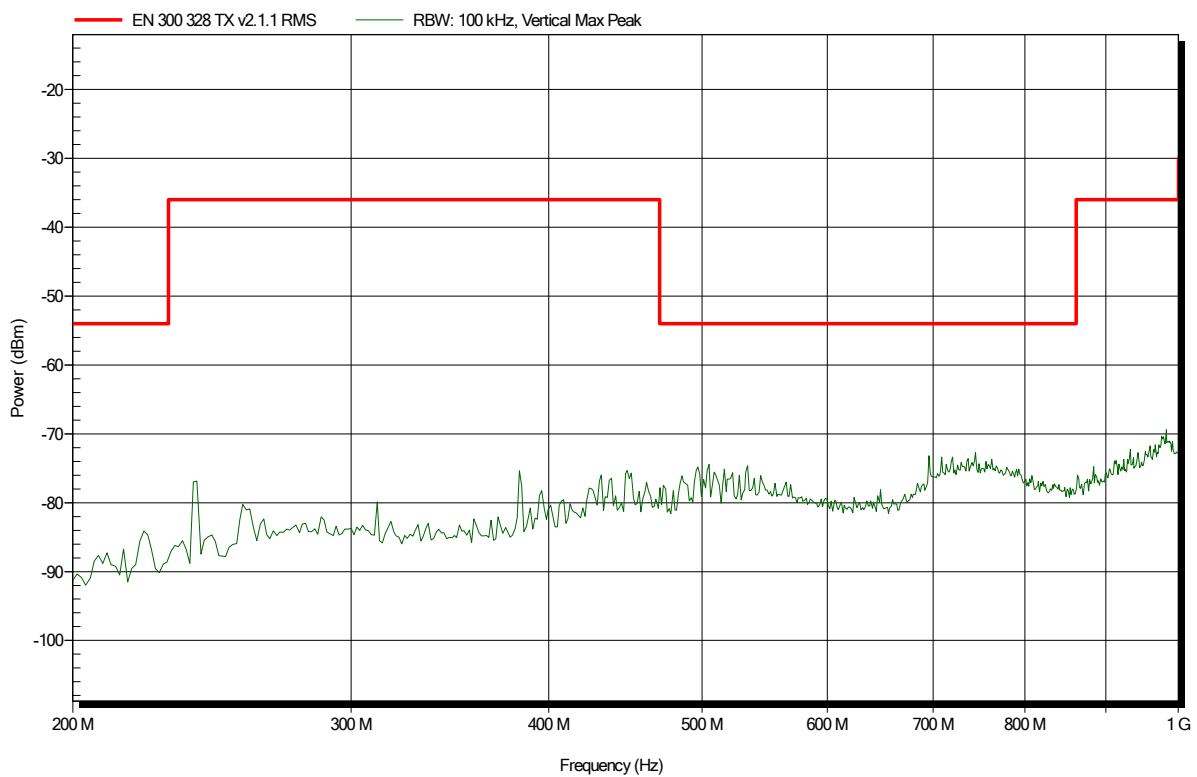


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: oono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25.3°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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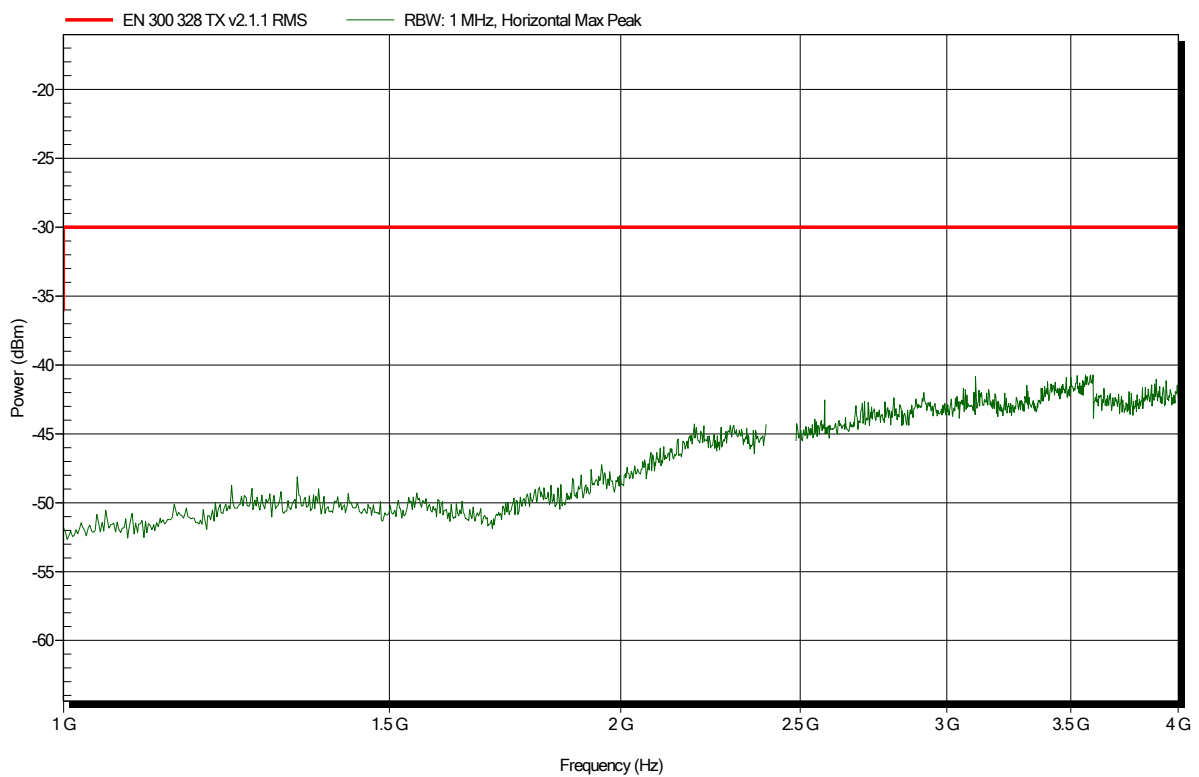


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.7°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m
 Mode: TX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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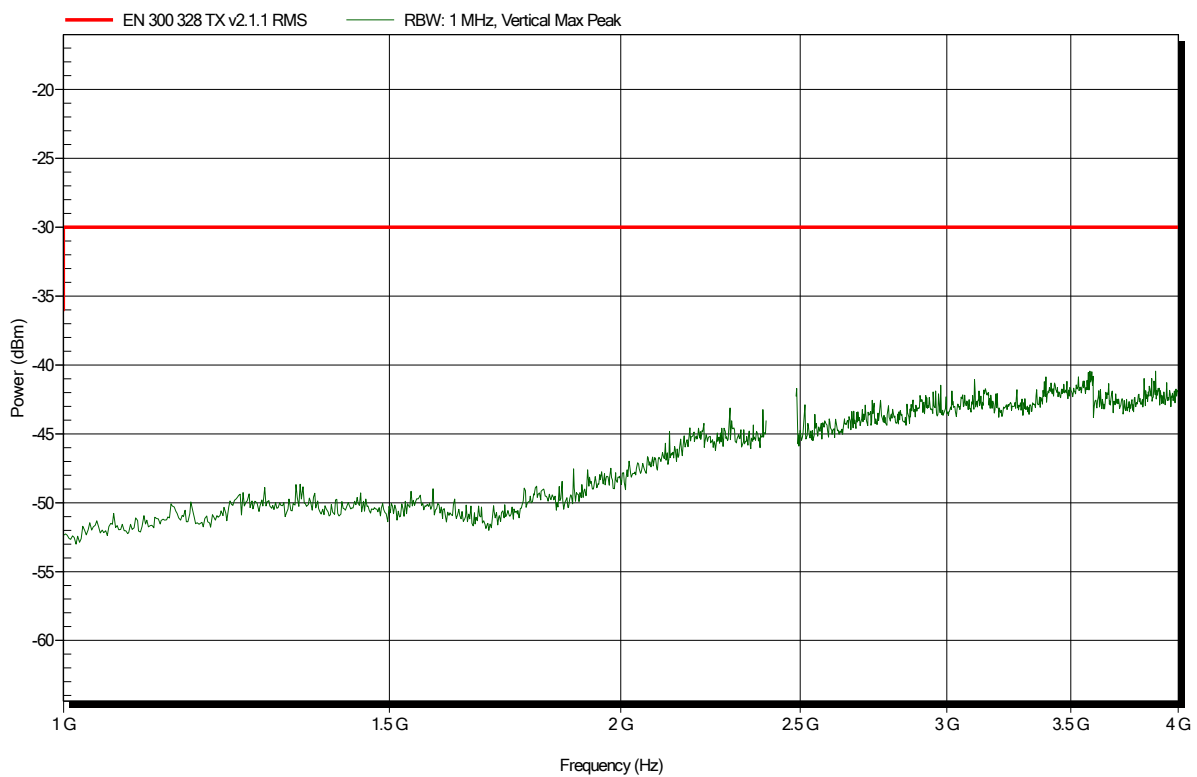


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m
 Mode: TX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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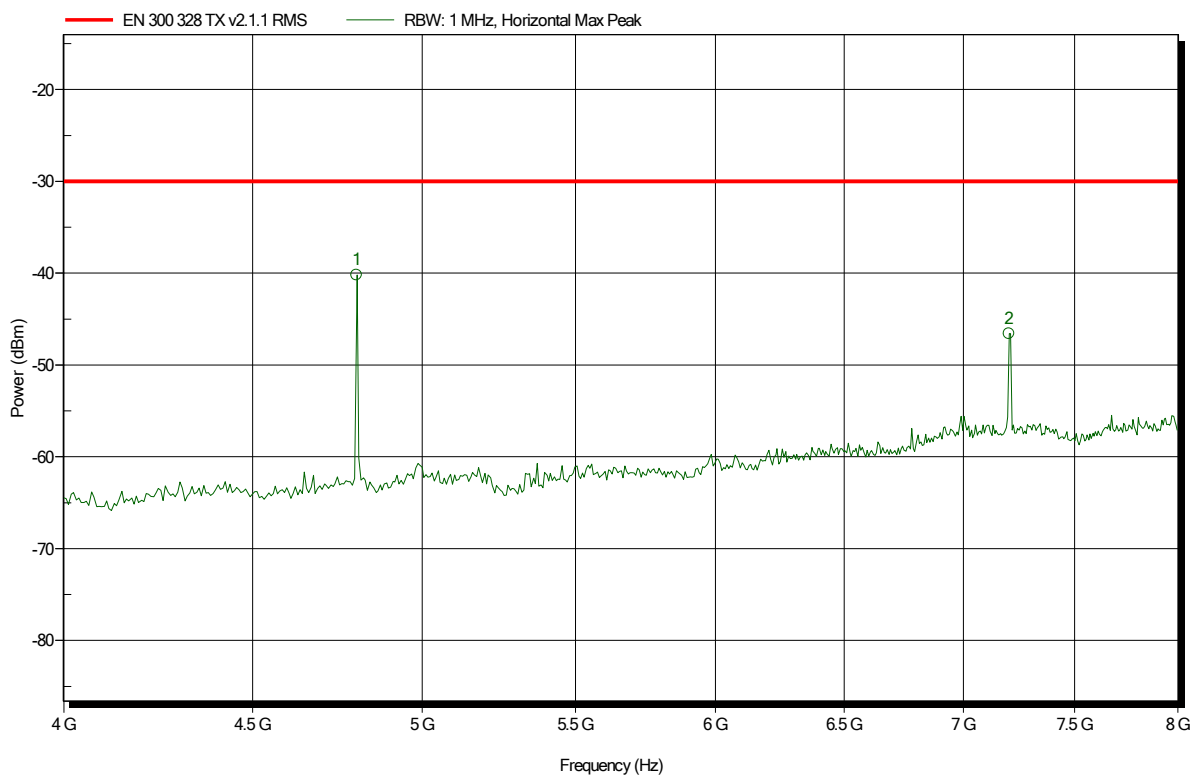


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.7°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m
 Mode: TX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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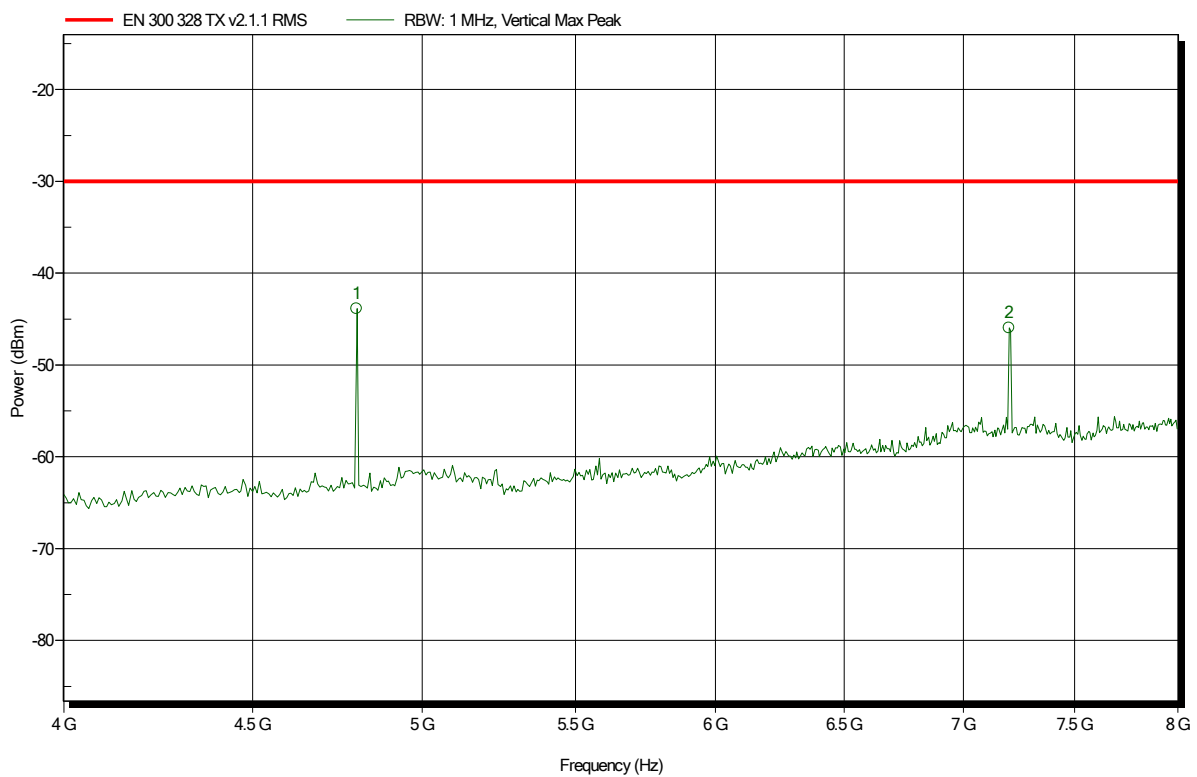
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.8 GHz	-40.2 dBm	-30 dBm	-10.18 dB	Pass
7.2 GHz	-46.6 dBm	-30 dBm	-16.58 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m
 Mode: TX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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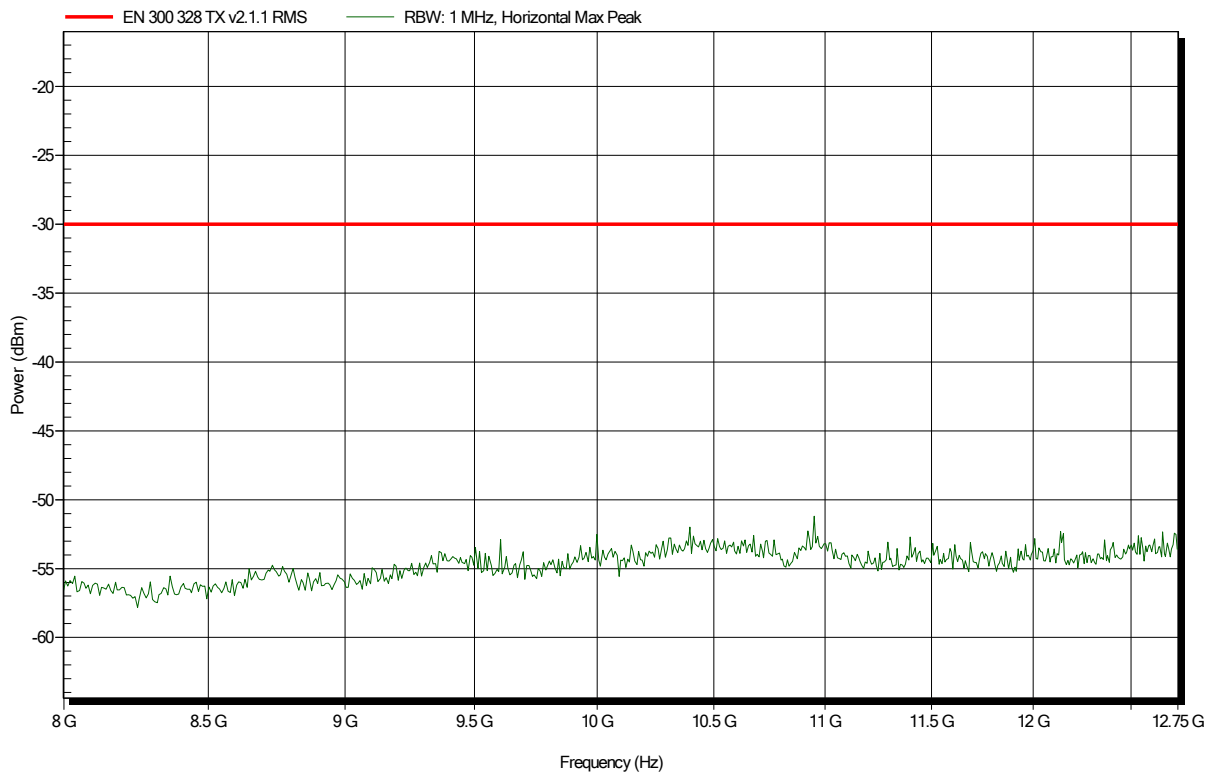
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.8 GHz	-43.9 dBm	-30 dBm	-13.85 dB	Pass
7.2 GHz	-46 dBm	-30 dBm	-15.95 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.7°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m
 Mode: TX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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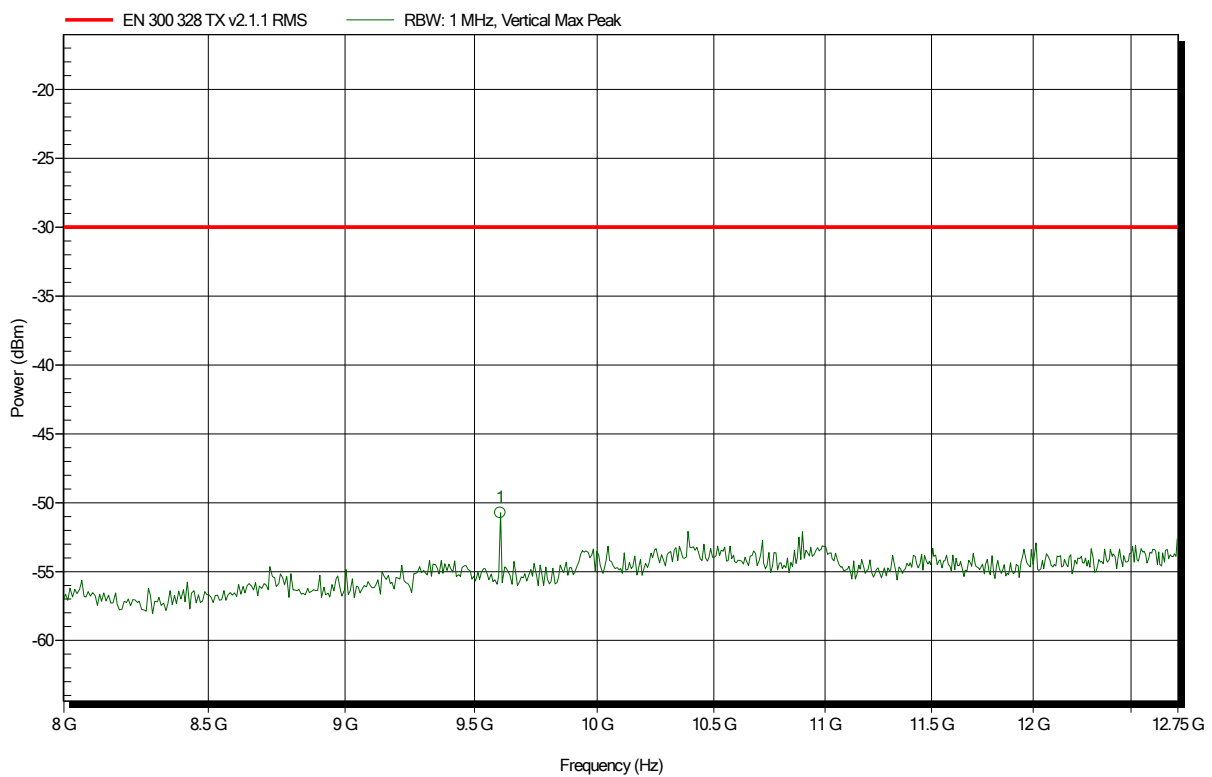


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbek BBHA 9120D, Vertical
 Measurement distance: 1 m
 Mode: TX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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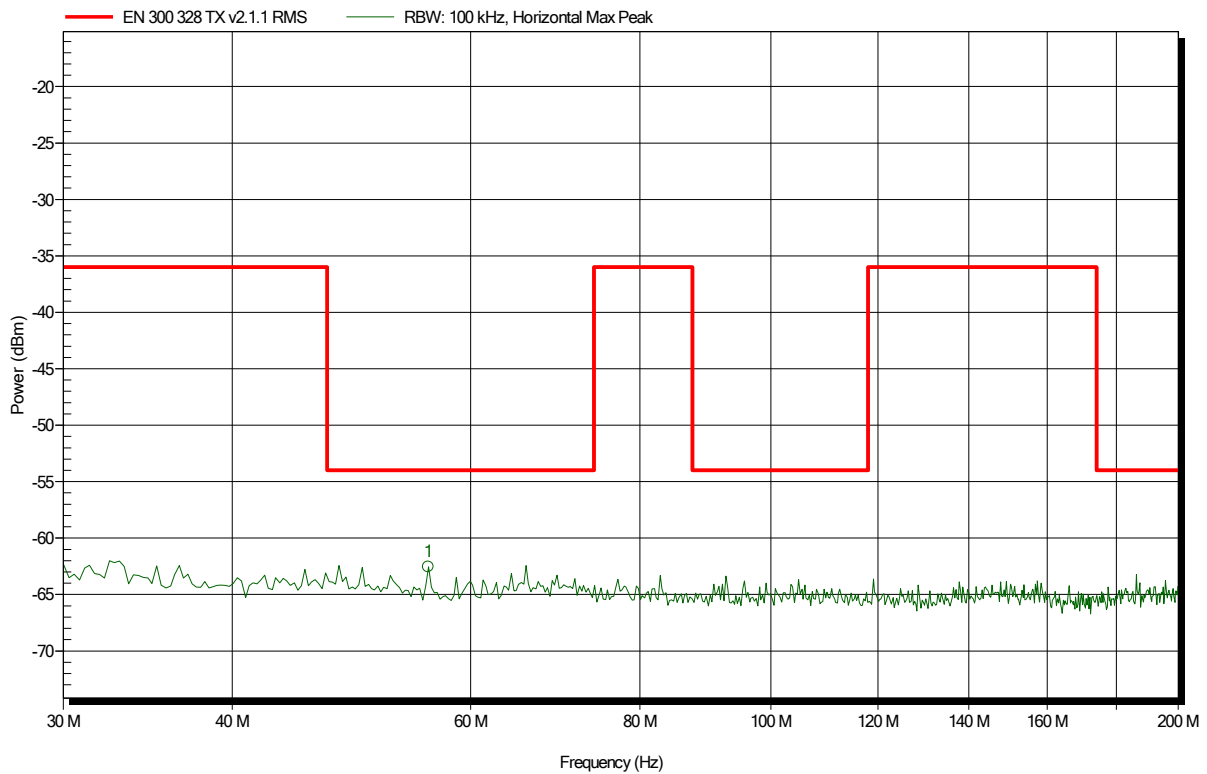
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
9.604 GHz	-50.7 dBm	-30 dBm	-20.73 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25.3°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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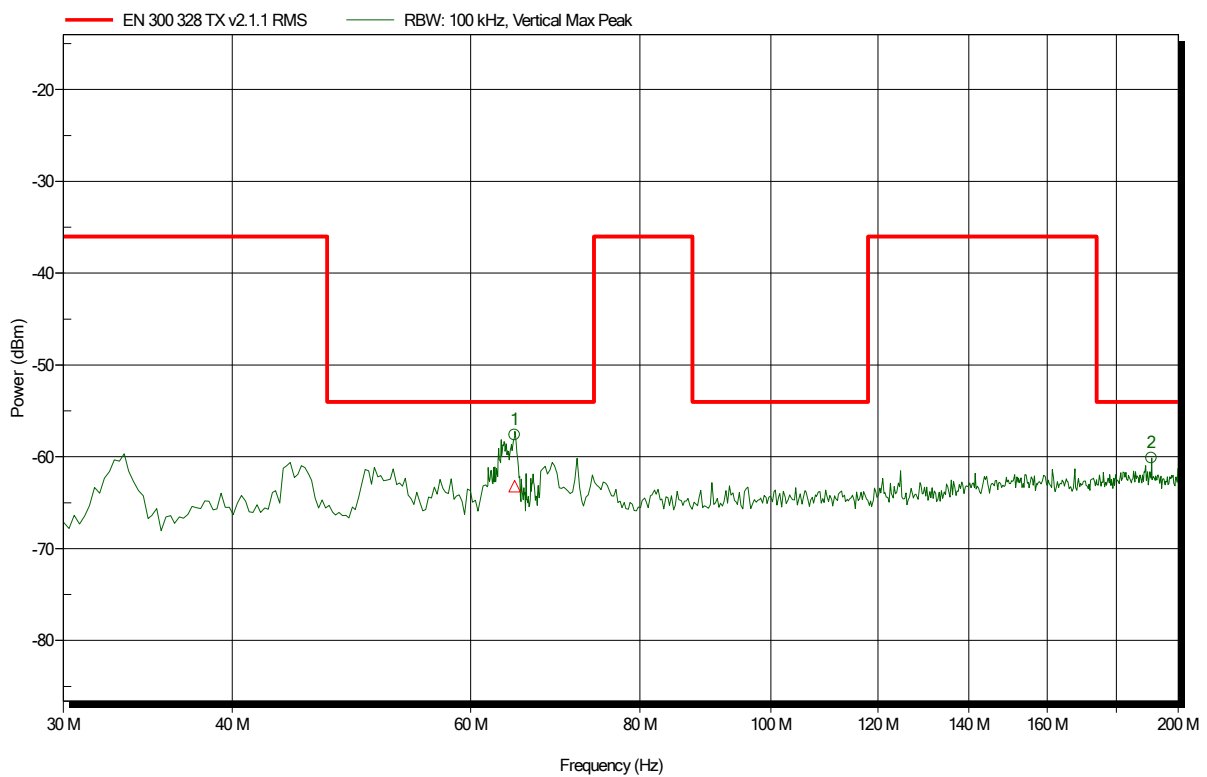
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
55.84 MHz	-62.5 dBm	-54 dBm	-8.55 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: oono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25.3°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3 m
 Mode: TX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
191.024 MHz	-60.1 dBm	-54 dBm	-6.13 dB	Pass
64.678 MHz	-57.6 dBm	-54 dBm	-3.6 dB	Pass

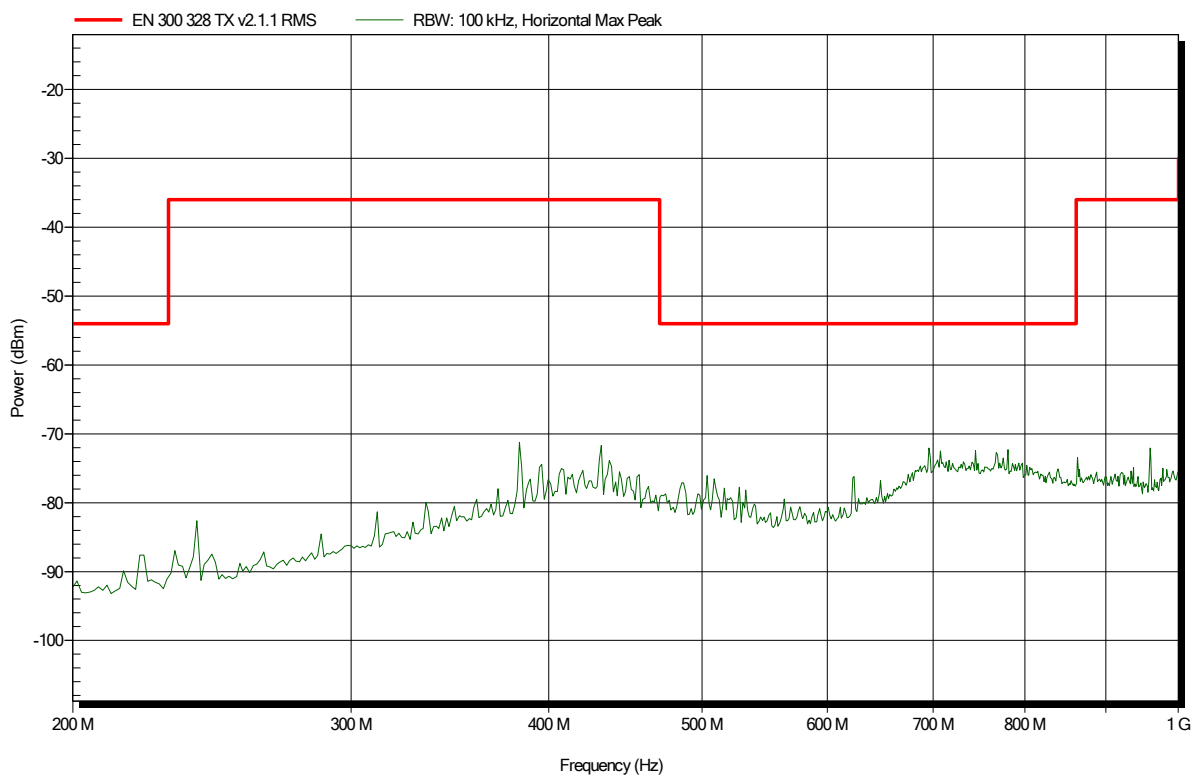
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
64.678 MHz	-63.2 dBm	-54 dBm	-9.21 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25.3°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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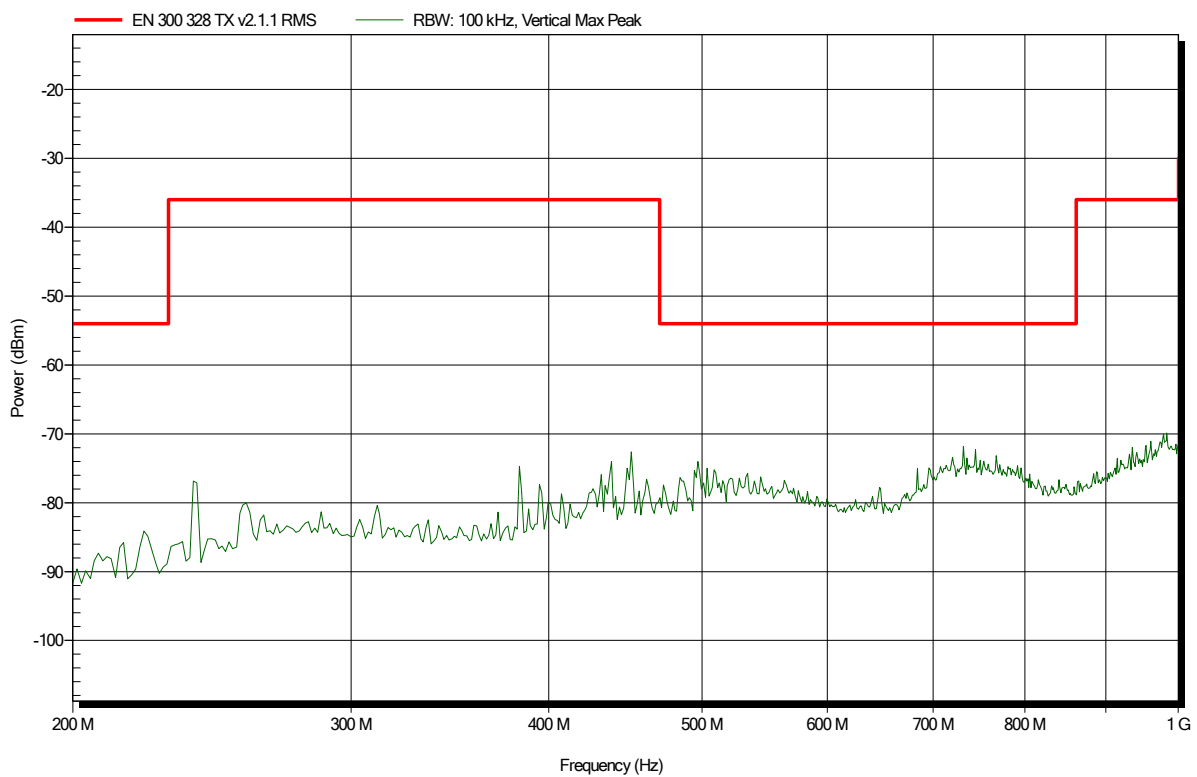


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: oono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25.3°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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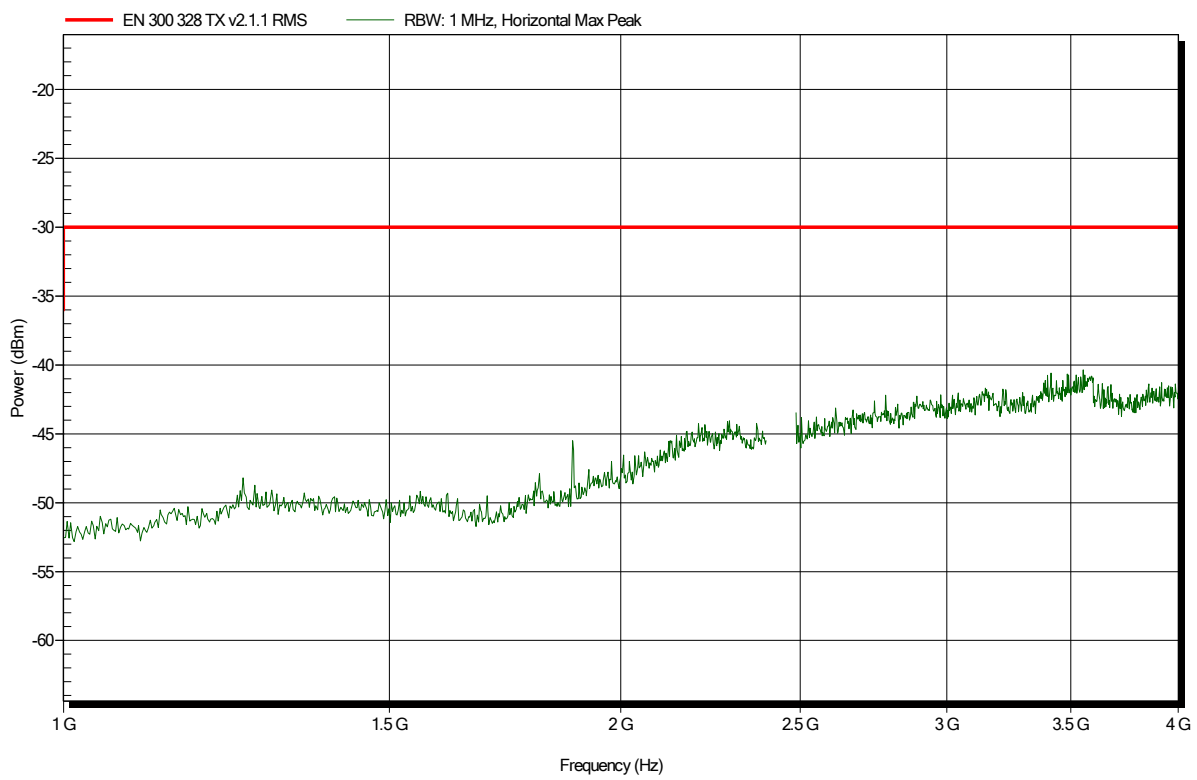


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m
 Mode: TX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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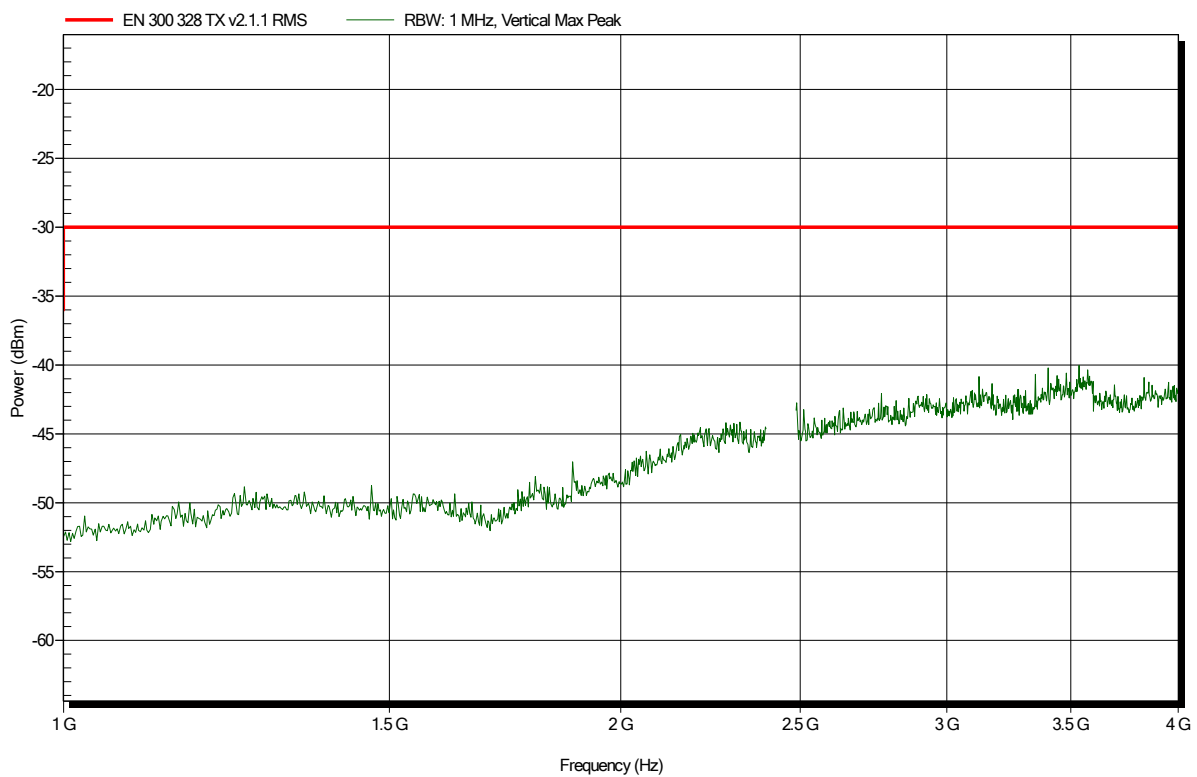


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: oono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m
 Mode: TX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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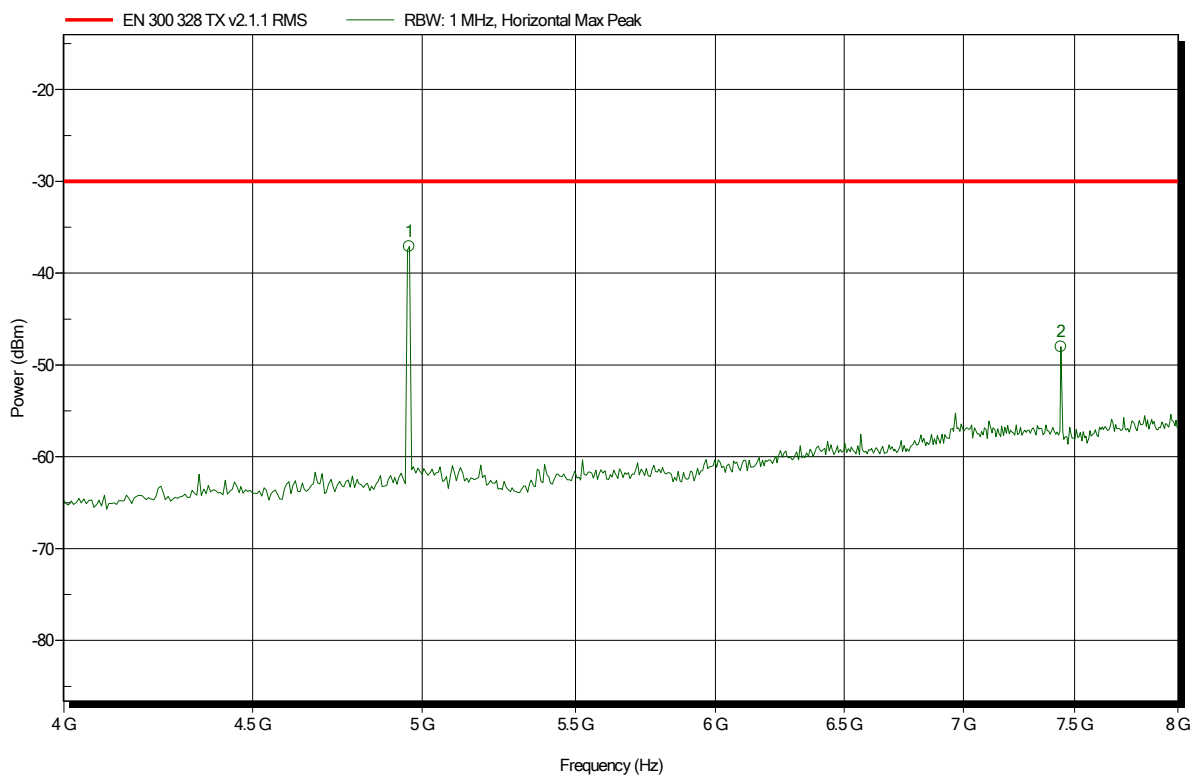


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m
 Mode: TX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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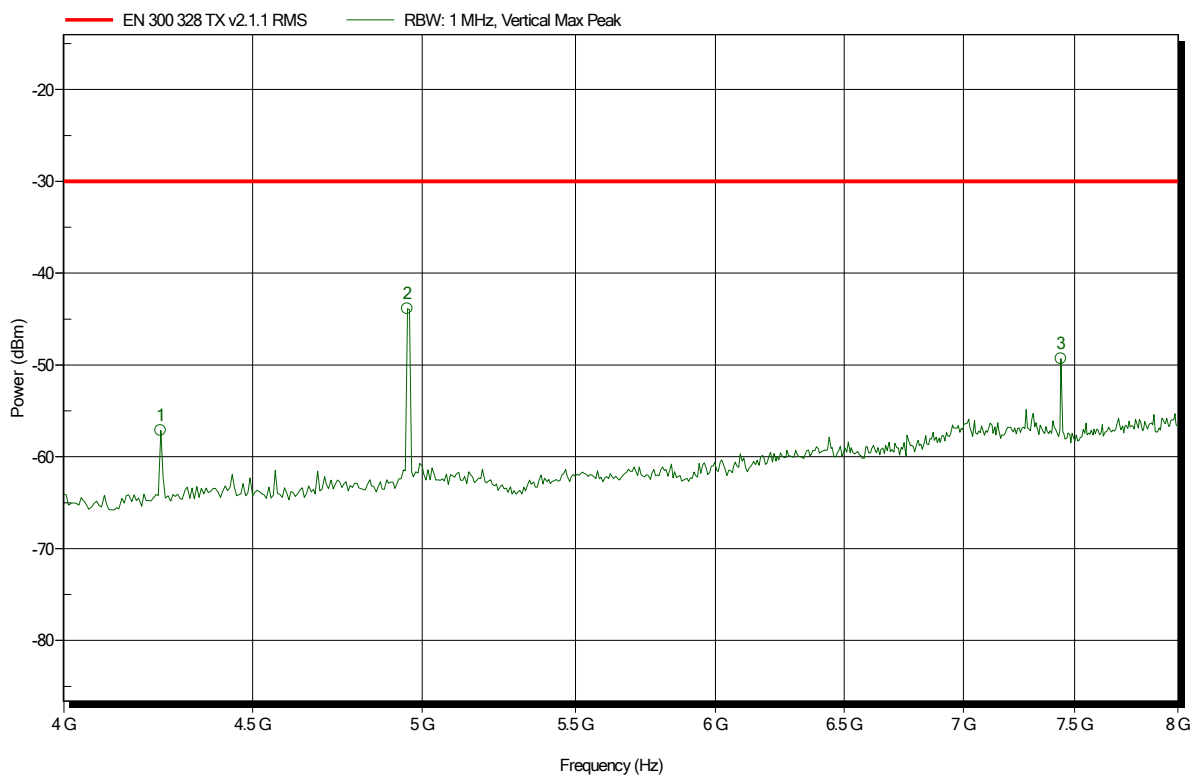
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.96 GHz	-37.1 dBm	-30 dBm	-7.08 dB	Pass
7.437 GHz	-48 dBm	-30 dBm	-18.02 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m
 Mode: TX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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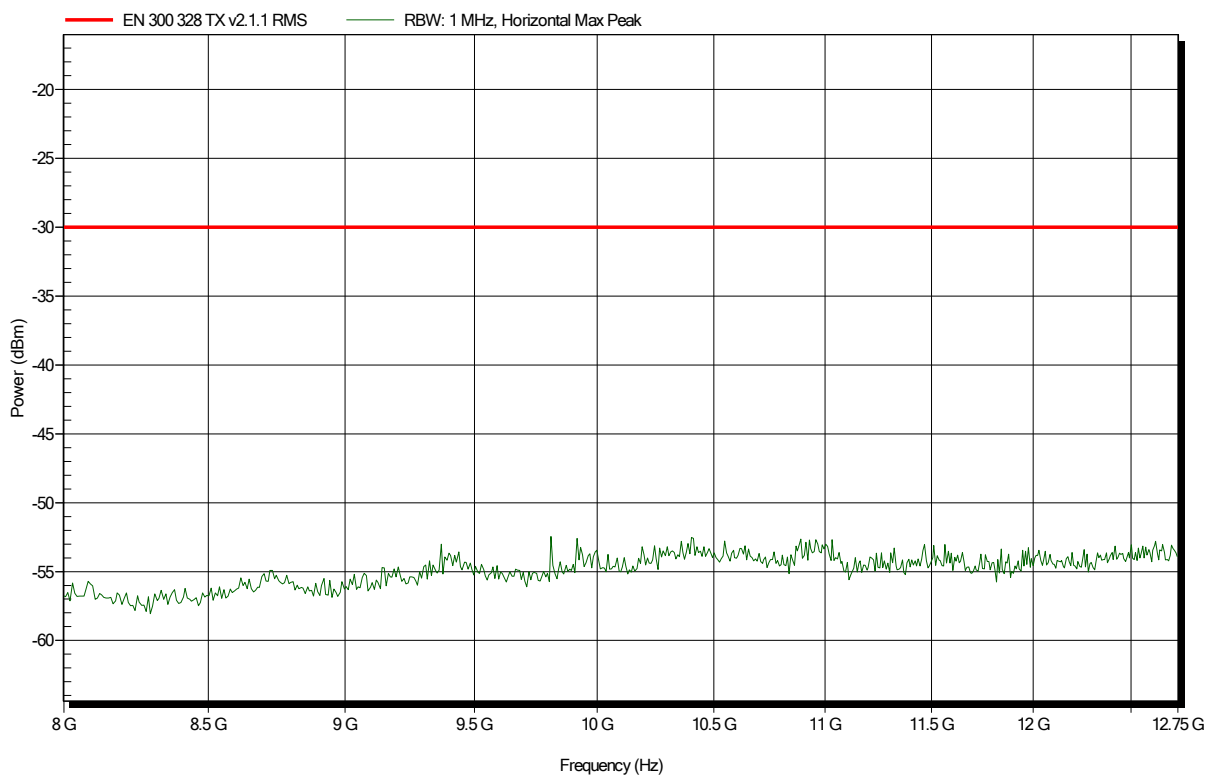
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.25 GHz	-57.1 dBm	-30 dBm	-27.11 dB	Pass
4.954 GHz	-43.8 dBm	-30 dBm	-13.85 dB	Pass
7.437 GHz	-49.3 dBm	-30 dBm	-19.29 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m
 Mode: TX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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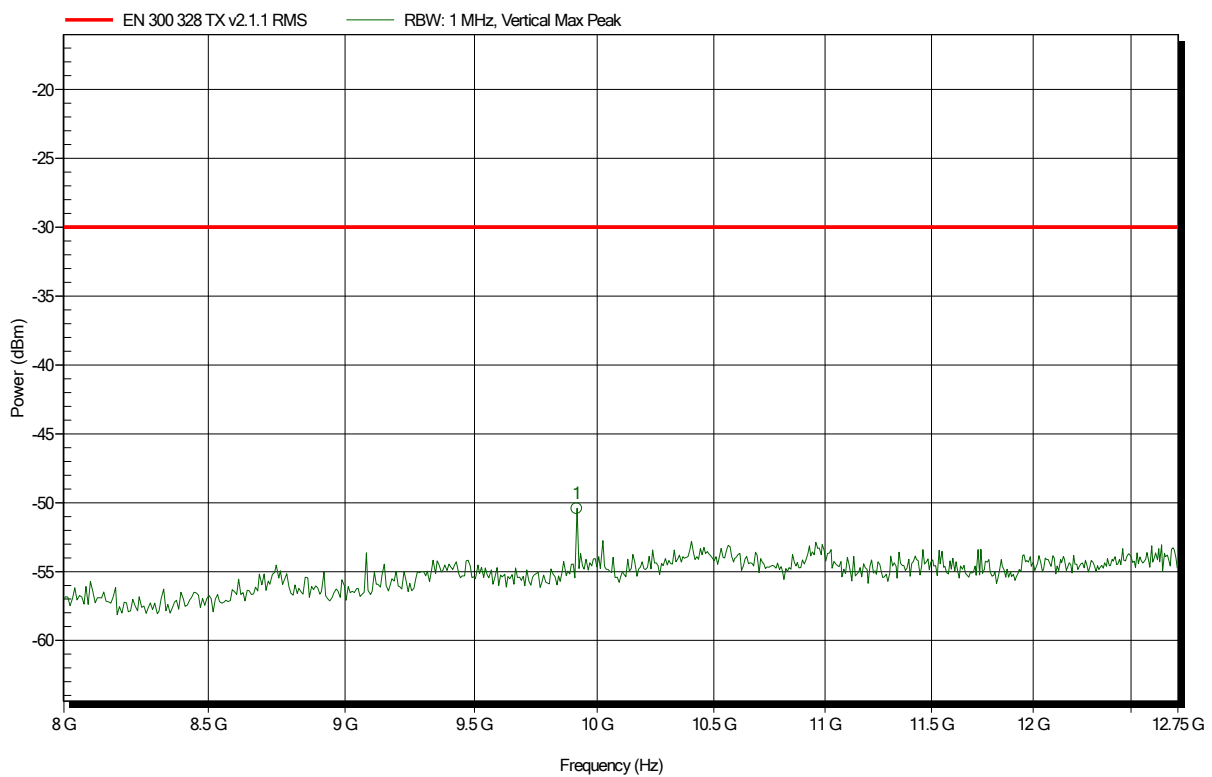


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m
 Mode: TX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
9.915 GHz	-50.4 dBm	-30 dBm	-20.42 dB	Pass

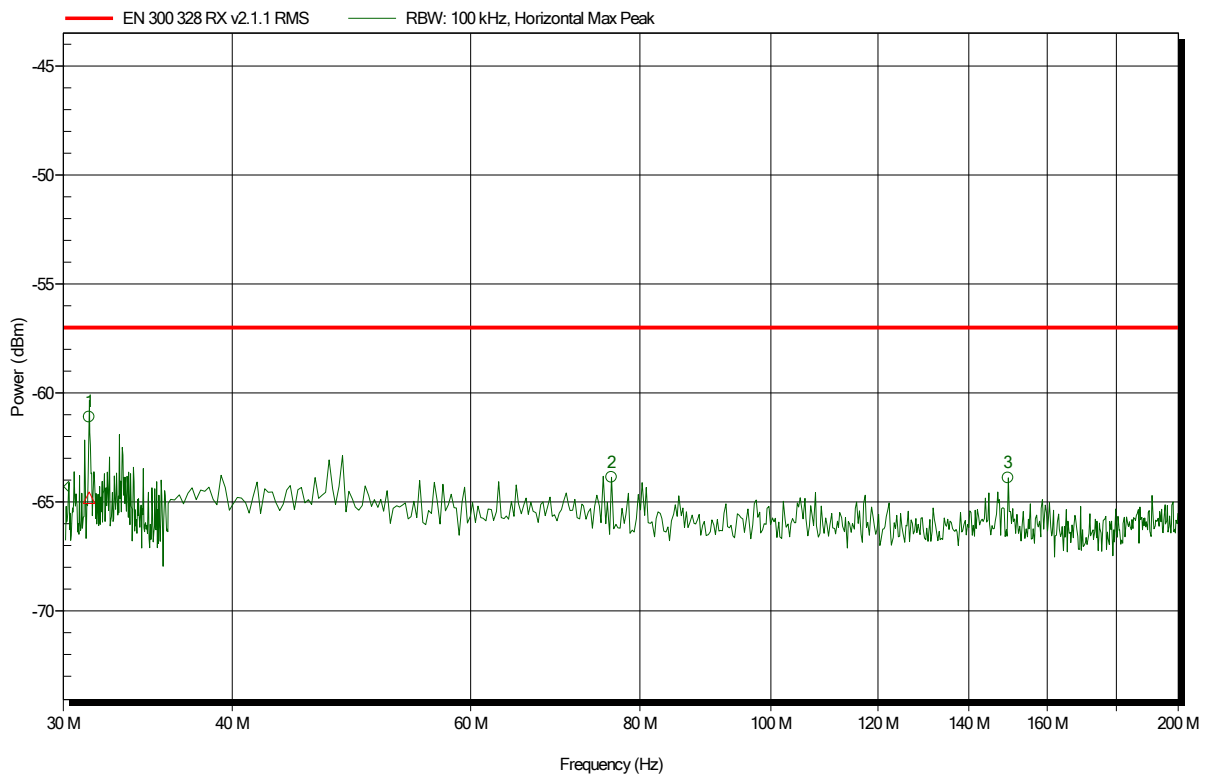
ANNEX B Receiver spurious emissions

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3 m
 Mode: RX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
149.68 MHz	-63.9 dBm	-57 dBm	-6.9 dB	Pass
31.363 MHz	-61.1 dBm	-57 dBm	-4.1 dB	Pass
76.24 MHz	-63.9 dBm	-57 dBm	-6.87 dB	Pass

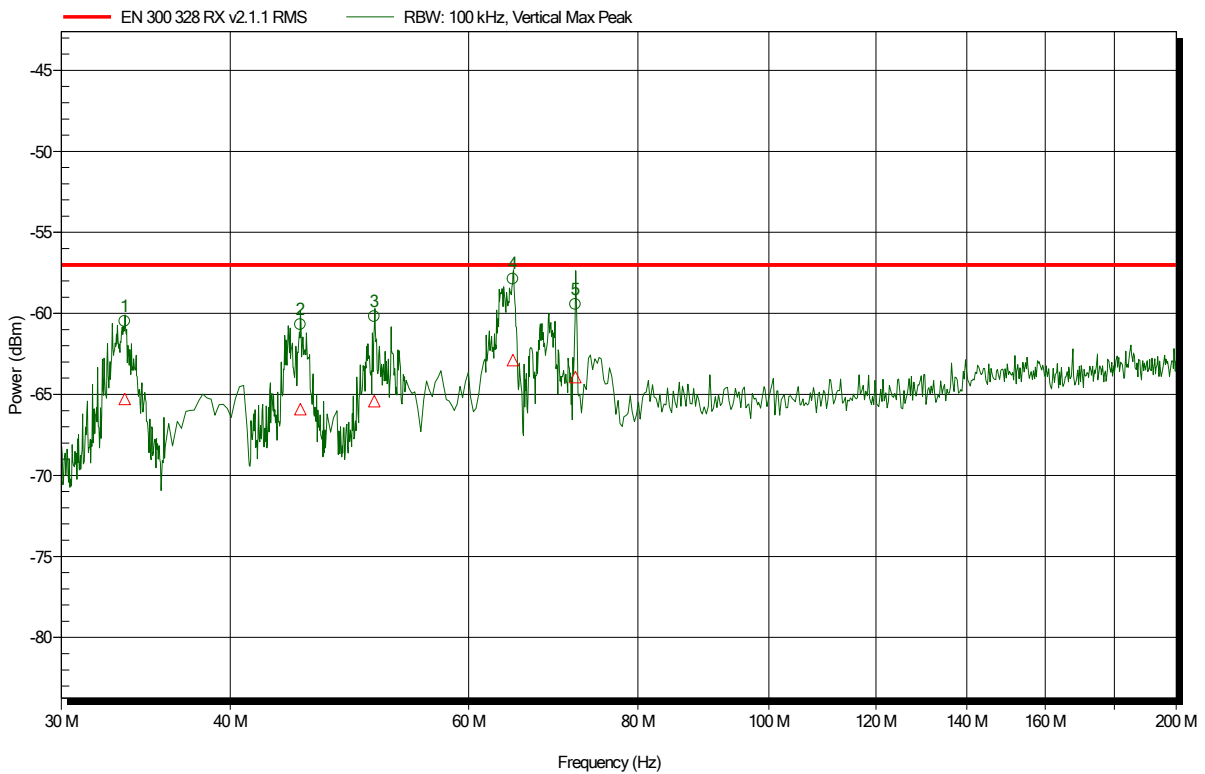
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
31.363 MHz	-64.8 dBm	-57 dBm	-7.81 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: oono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3 m
 Mode: RX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
33.431 MHz	-60.5 dBm	-57 dBm	-3.49 dB	Pass
45.066 MHz	-60.7 dBm	-57 dBm	-3.69 dB	Pass
51.106 MHz	-60.2 dBm	-57 dBm	-3.19 dB	Pass
64.715 MHz	-57.9 dBm	-57 dBm	-0.88 dB	Pass
71.96 MHz	-59.5 dBm	-57 dBm	-2.45 dB	Pass

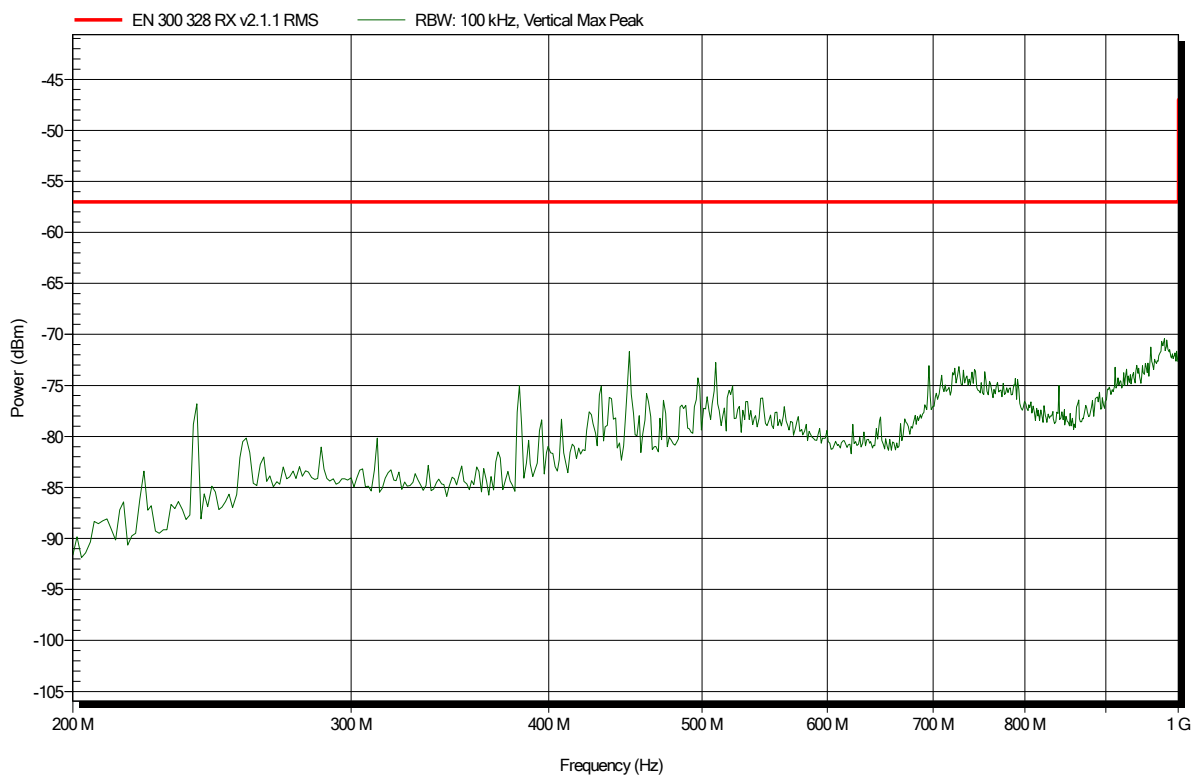
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
33.431 MHz	-65.3 dBm	-57 dBm	-8.28 dB	Pass
45.066 MHz	-65.9 dBm	-57 dBm	-8.91 dB	Pass
51.106 MHz	-65.4 dBm	-57 dBm	-8.41 dB	Pass
64.715 MHz	-62.9 dBm	-57 dBm	-5.89 dB	Pass
71.96 MHz	-63.9 dBm	-57 dBm	-6.93 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: RX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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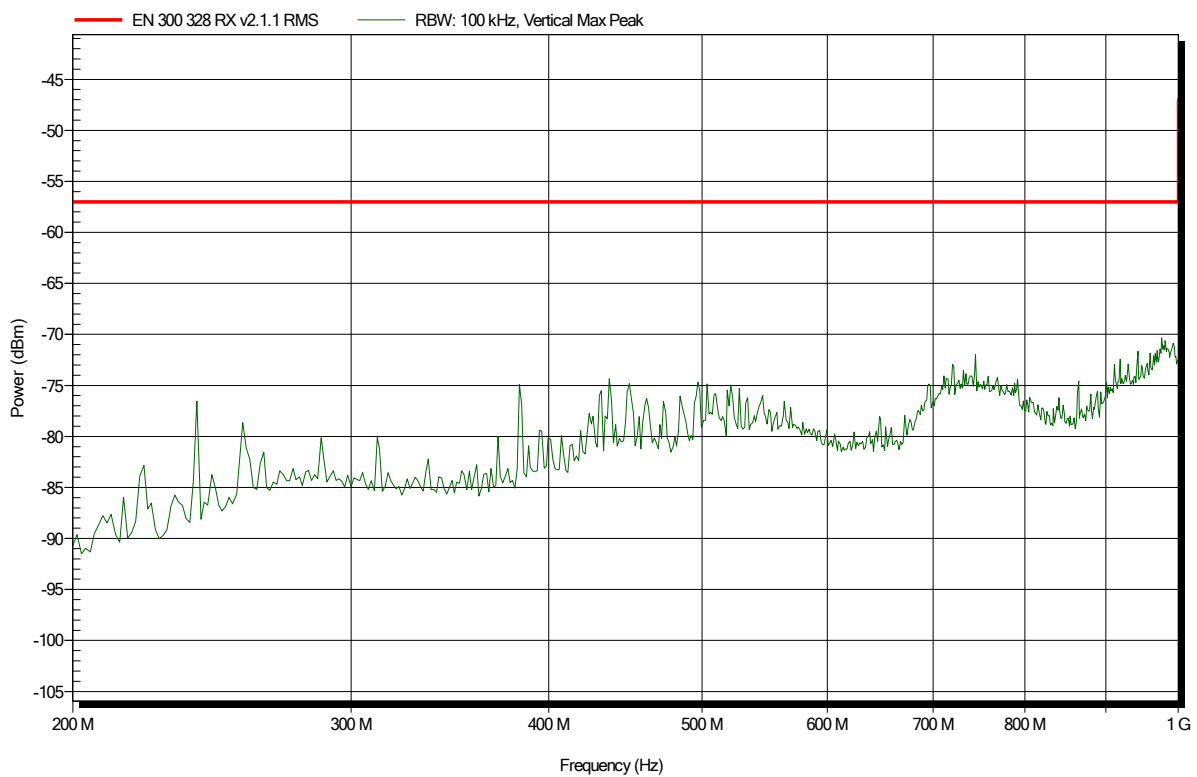


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: oono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: RX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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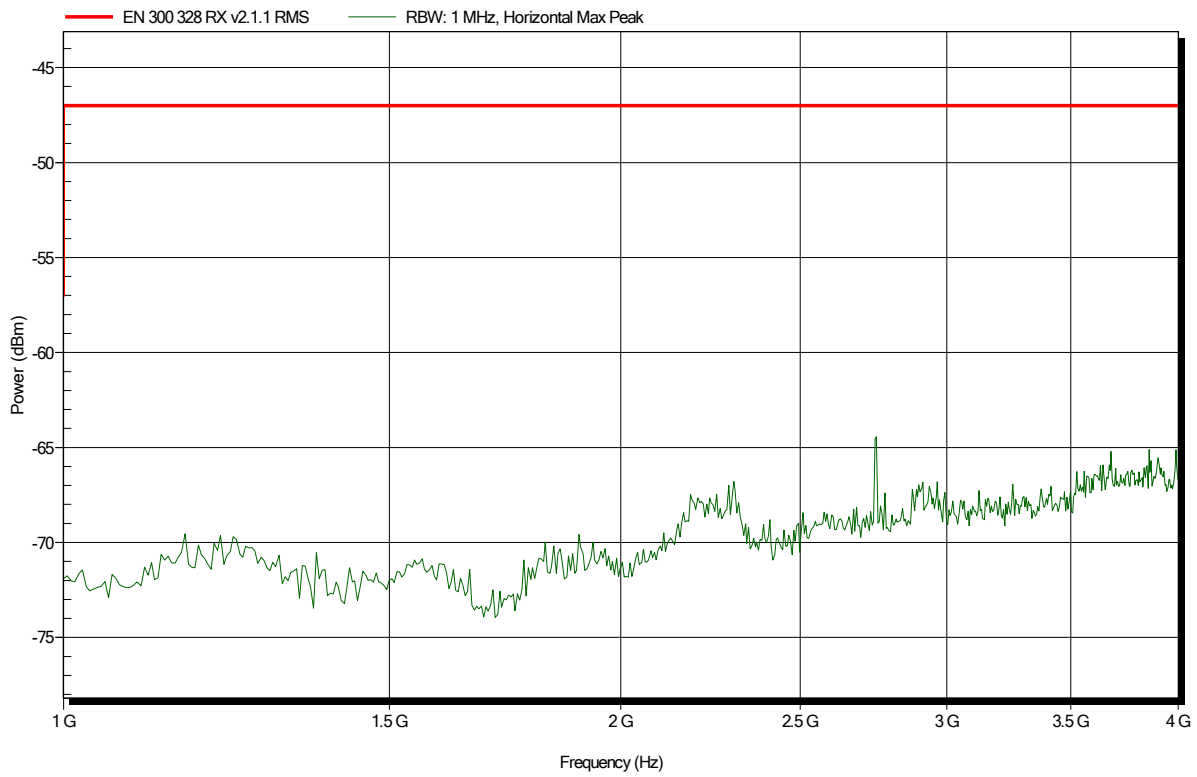


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m
 Mode: RX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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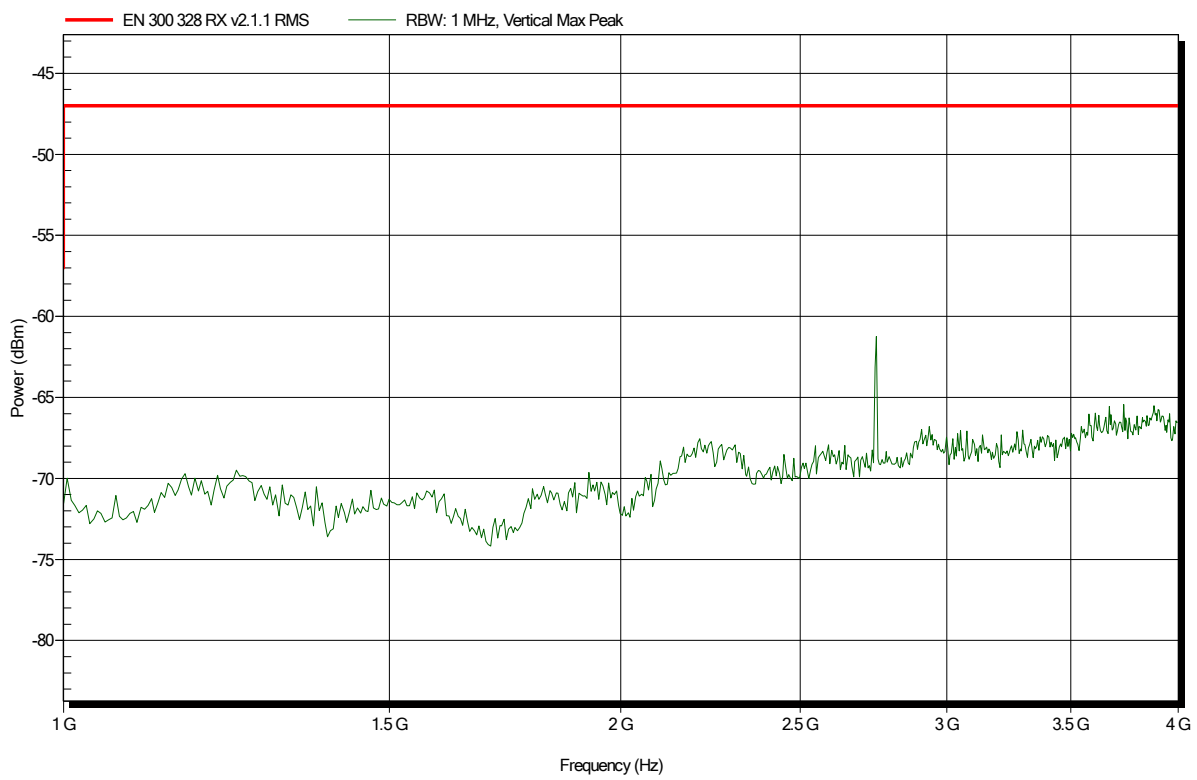


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m
 Mode: RX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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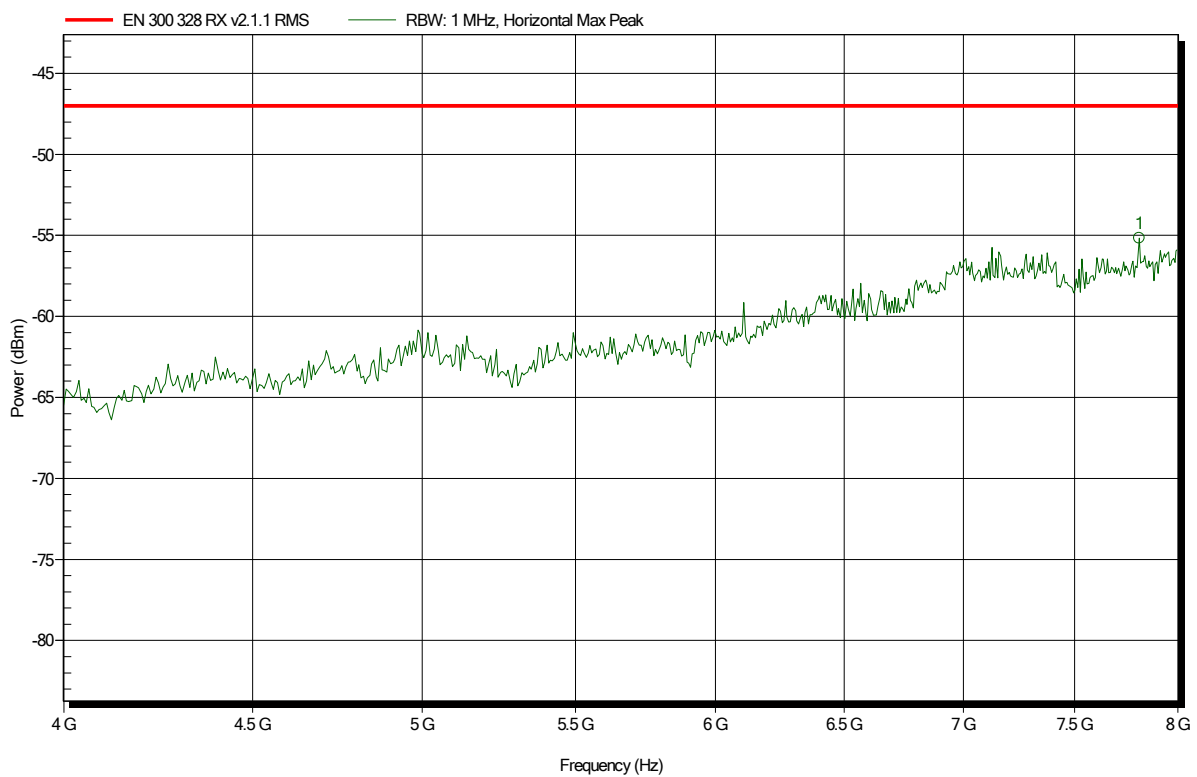


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m
 Mode: RX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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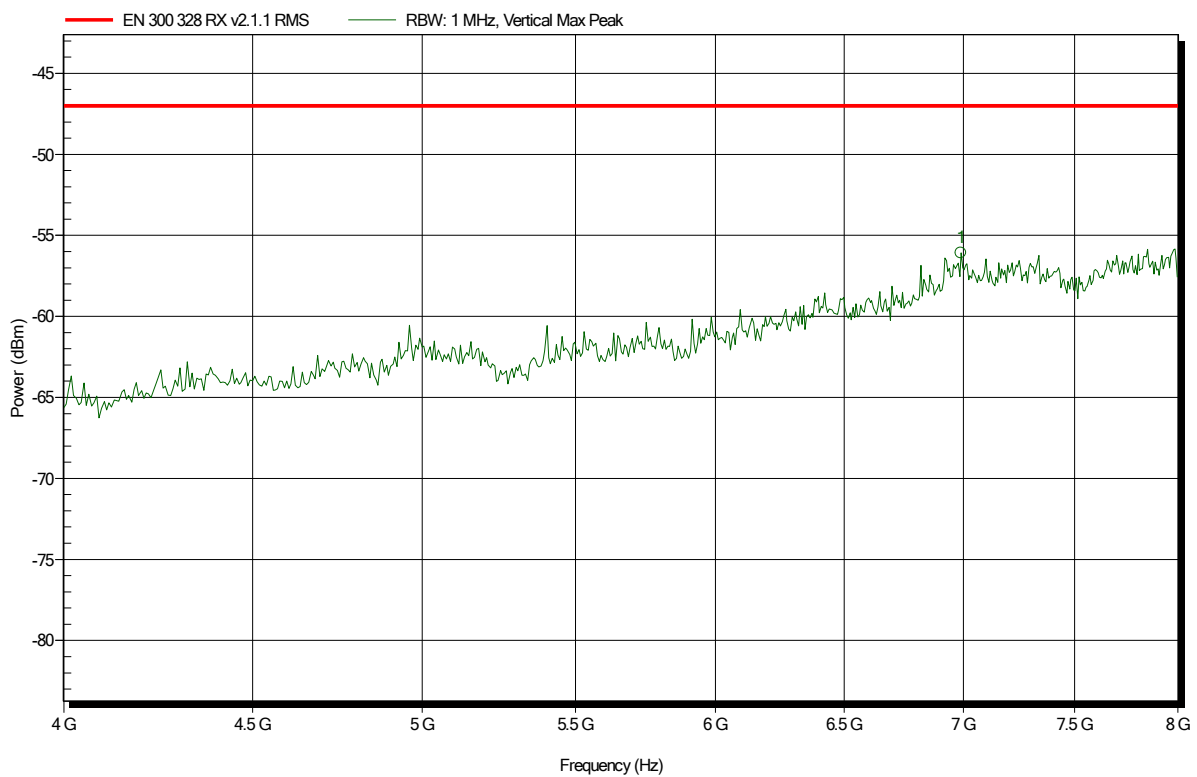
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.808 GHz	-55.2 dBm	-47 dBm	-8.17 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m
 Mode: RX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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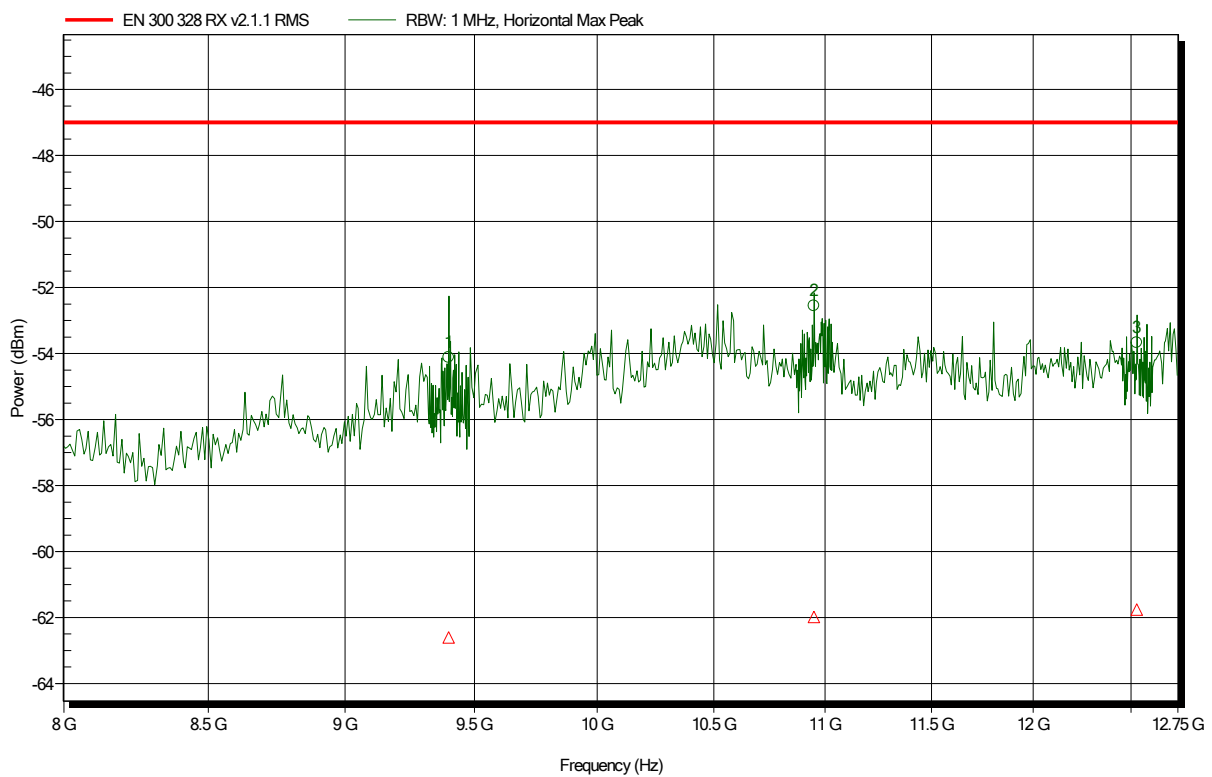
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
6.989 GHz	-56.1 dBm	-47 dBm	-9.08 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: oono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m
 Mode: RX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
10.949 GHz	-52.6 dBm	-47 dBm	-5.55 dB	Pass
12.53 GHz	-53.7 dBm	-47 dBm	-6.66 dB	Pass
9.398 GHz	-54.1 dBm	-47 dBm	-7.11 dB	Pass

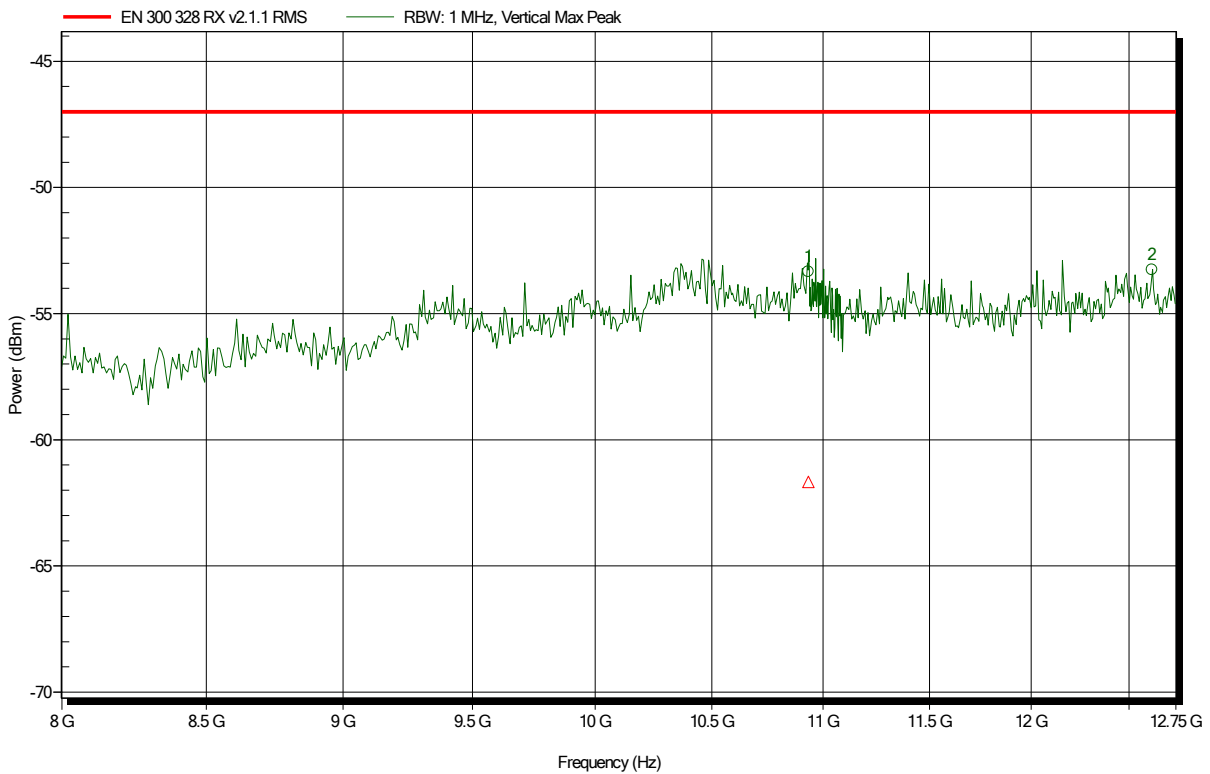
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
10.949 GHz	-62 dBm	-47 dBm	-14.98 dB	Pass
12.53 GHz	-61.8 dBm	-47 dBm	-14.75 dB	Pass
9.398 GHz	-62.6 dBm	-47 dBm	-15.6 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m
 Mode: RX; 2402 MHz
 Test Date: 2019-02-14
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
10.933 GHz	-53.3 dBm	-47 dBm	-6.34 dB	Pass
12.621 GHz	-53.3 dBm	-47 dBm	-6.25 dB	Pass

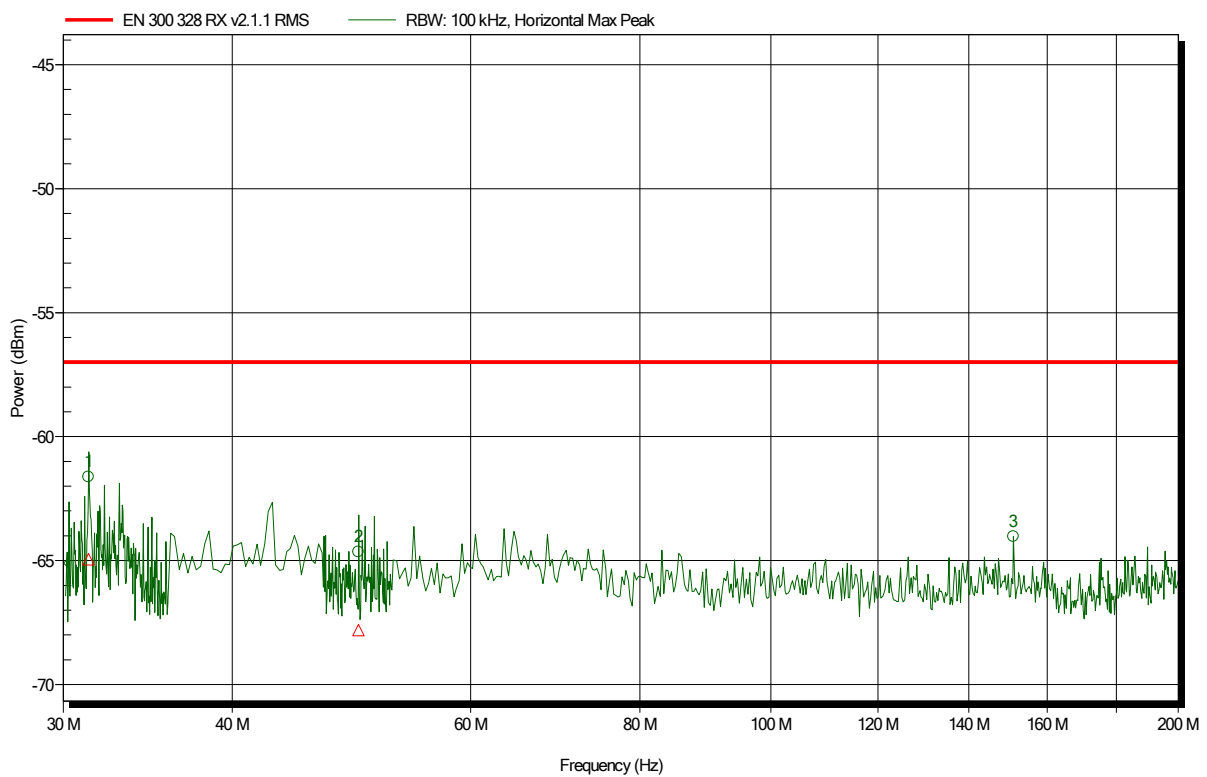
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
10.933 GHz	-61.7 dBm	-47 dBm	-14.67 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: oono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3 m
 Mode: RX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
151.04 MHz	-64 dBm	-57 dBm	-7.03 dB	Pass
31.314 MHz	-61.6 dBm	-57 dBm	-4.62 dB	Pass
49.584 MHz	-64.6 dBm	-57 dBm	-7.65 dB	Pass

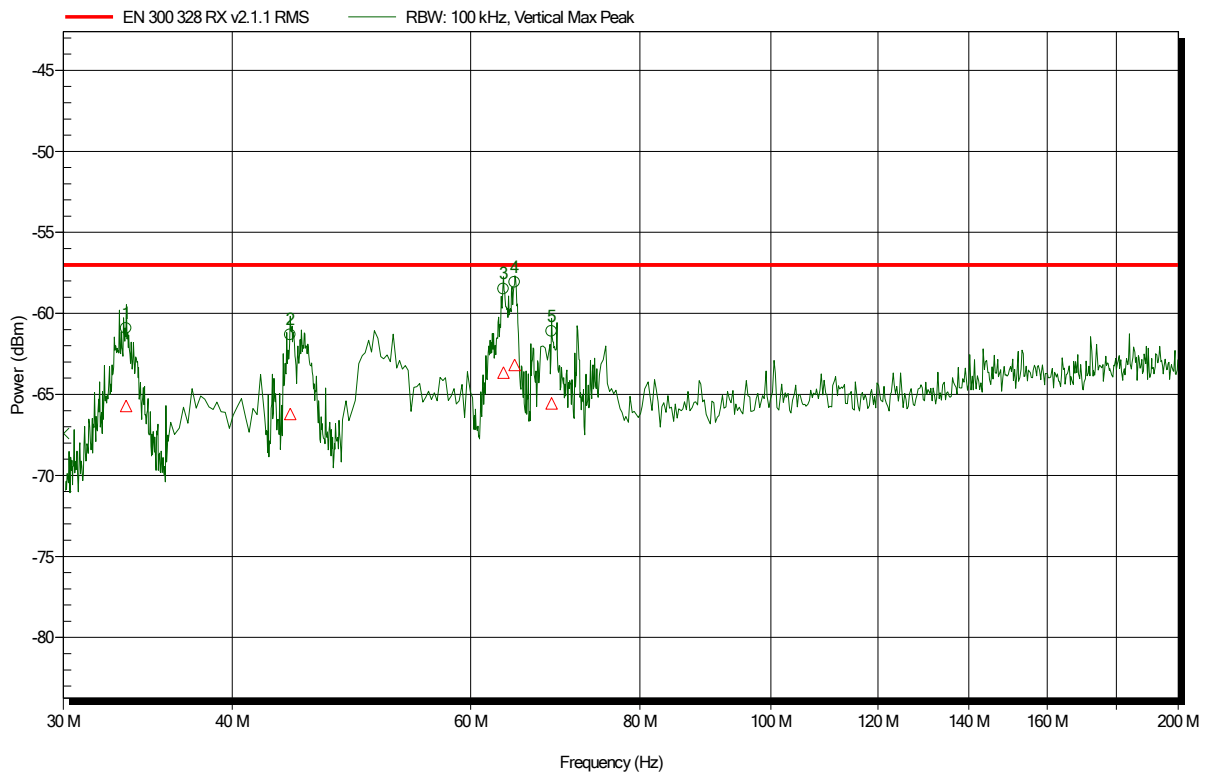
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
31.314 MHz	-65 dBm	-57 dBm	-7.95 dB	Pass
49.584 MHz	-67.8 dBm	-57 dBm	-10.81 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: oono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3 m
 Mode: RX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
33.383 MHz	-60.9 dBm	-57 dBm	-3.93 dB	Pass
44.137 MHz	-61.3 dBm	-57 dBm	-4.31 dB	Pass
63.438 MHz	-58.5 dBm	-57 dBm	-1.5 dB	Pass
64.678 MHz	-58.1 dBm	-57 dBm	-1.08 dB	Pass
68.845 MHz	-61.1 dBm	-57 dBm	-4.11 dB	Pass

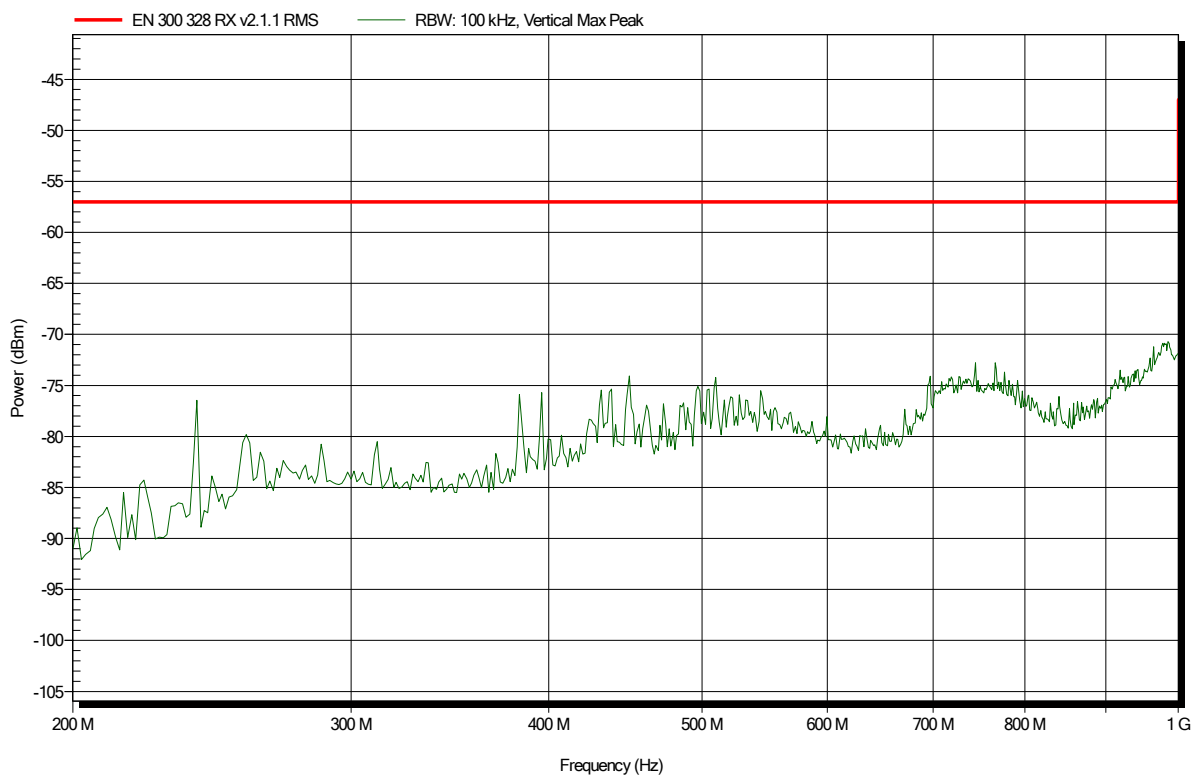
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
33.383 MHz	-65.7 dBm	-57 dBm	-8.71 dB	Pass
44.137 MHz	-66.2 dBm	-57 dBm	-9.21 dB	Pass
63.438 MHz	-63.7 dBm	-57 dBm	-6.66 dB	Pass
64.678 MHz	-63.2 dBm	-57 dBm	-6.18 dB	Pass
68.845 MHz	-65.6 dBm	-57 dBm	-8.55 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: RX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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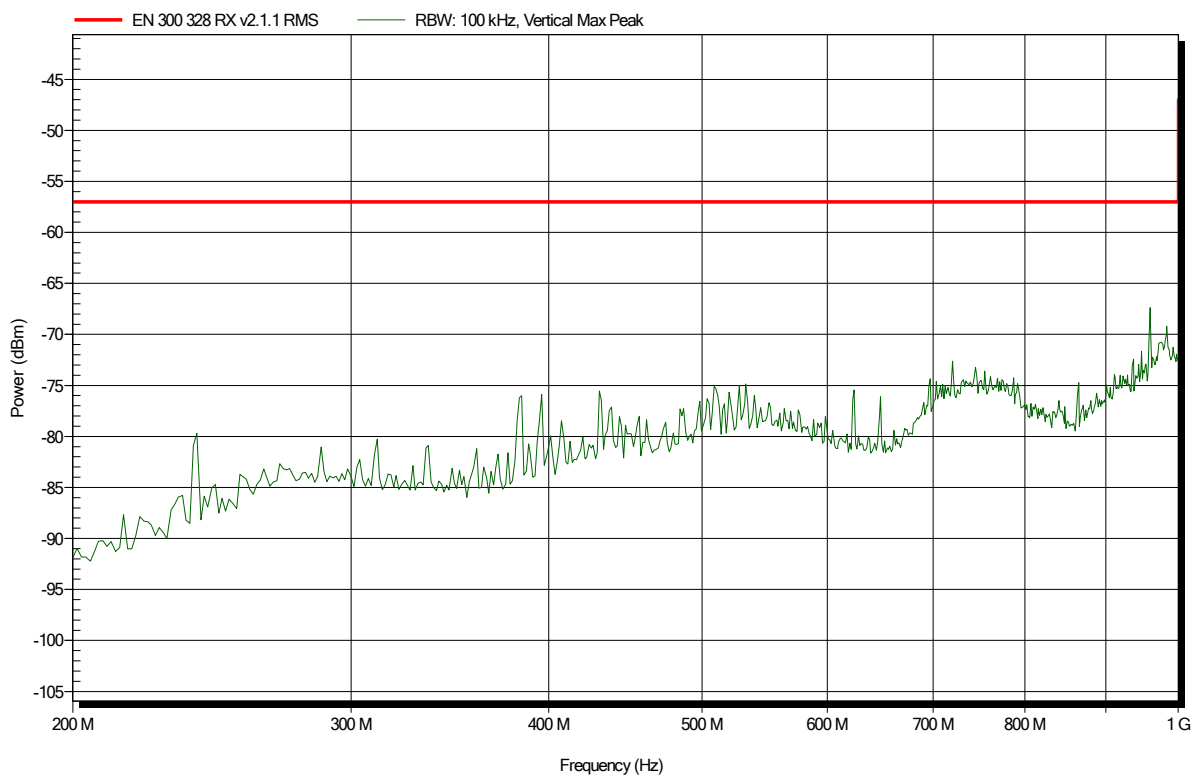


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: RX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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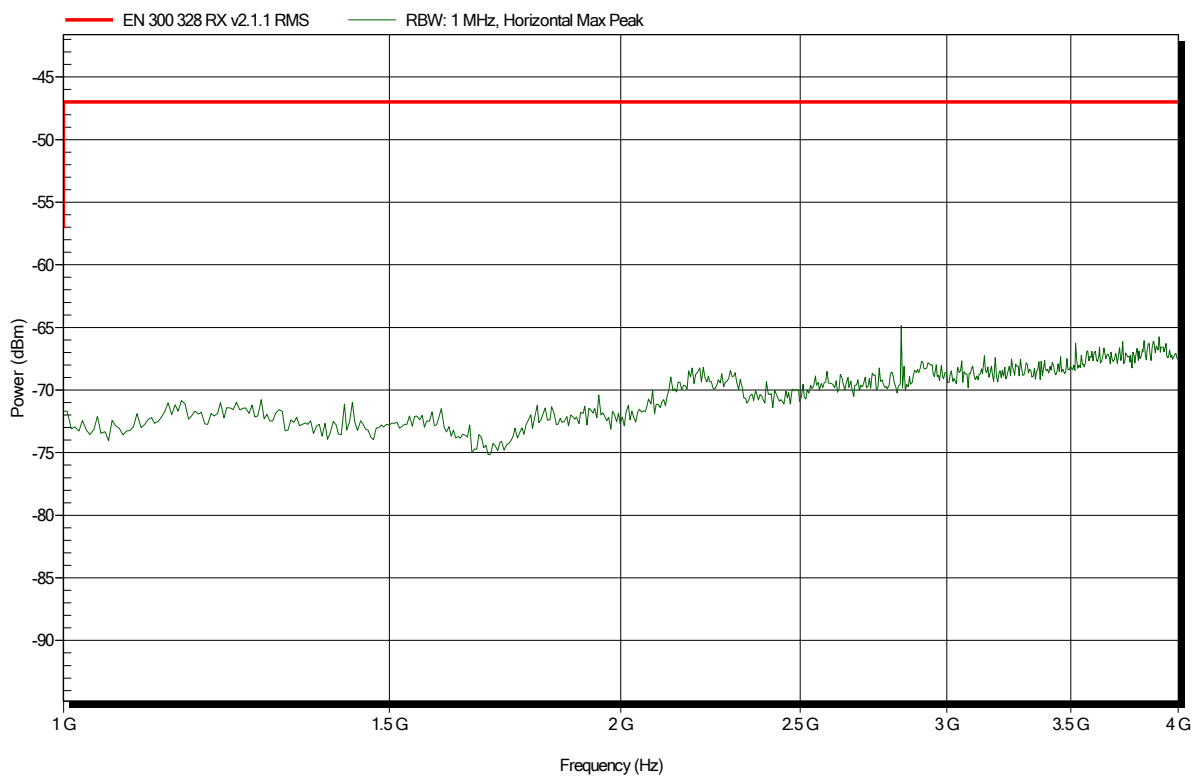


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m
 Mode: RX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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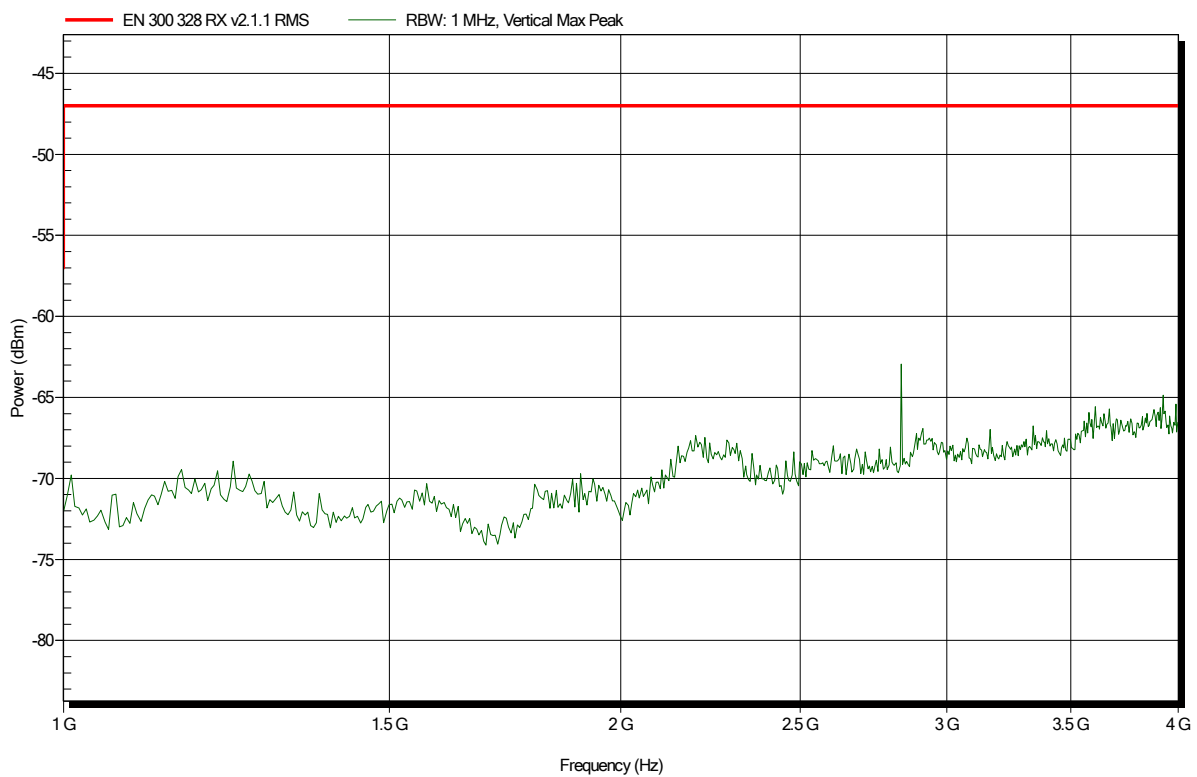


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: oono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m
 Mode: RX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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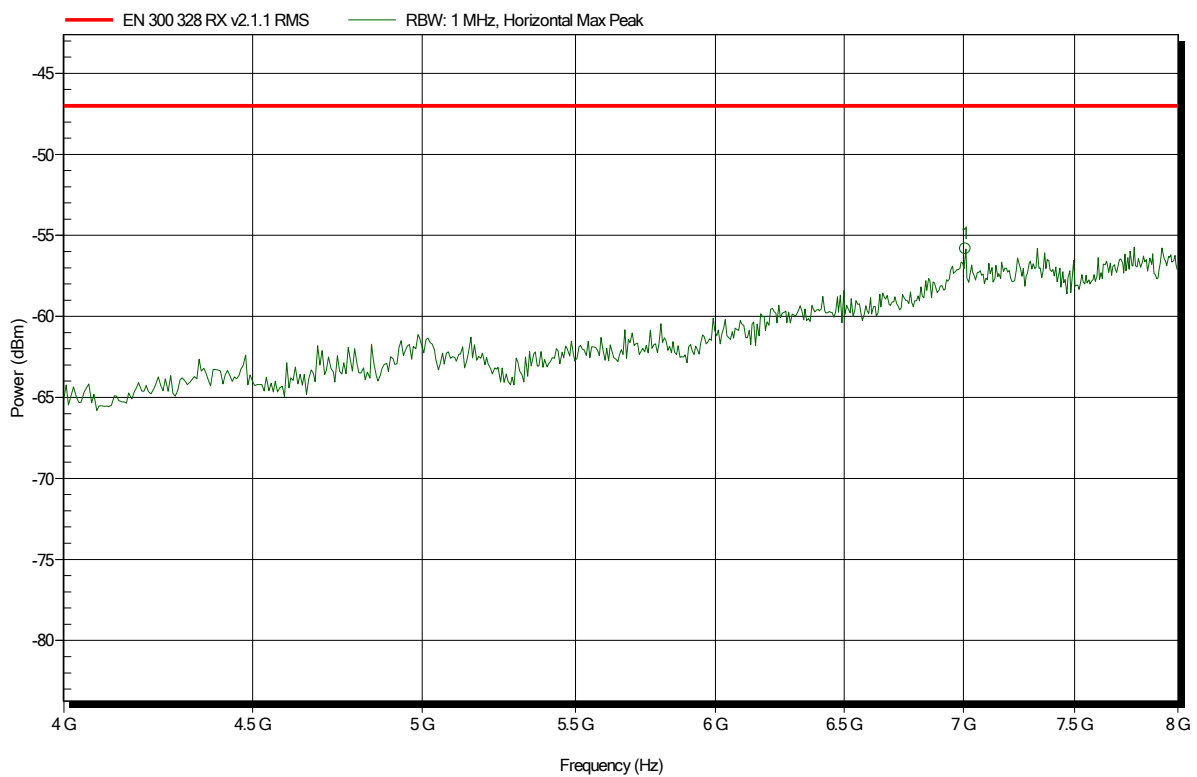


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m
 Mode: RX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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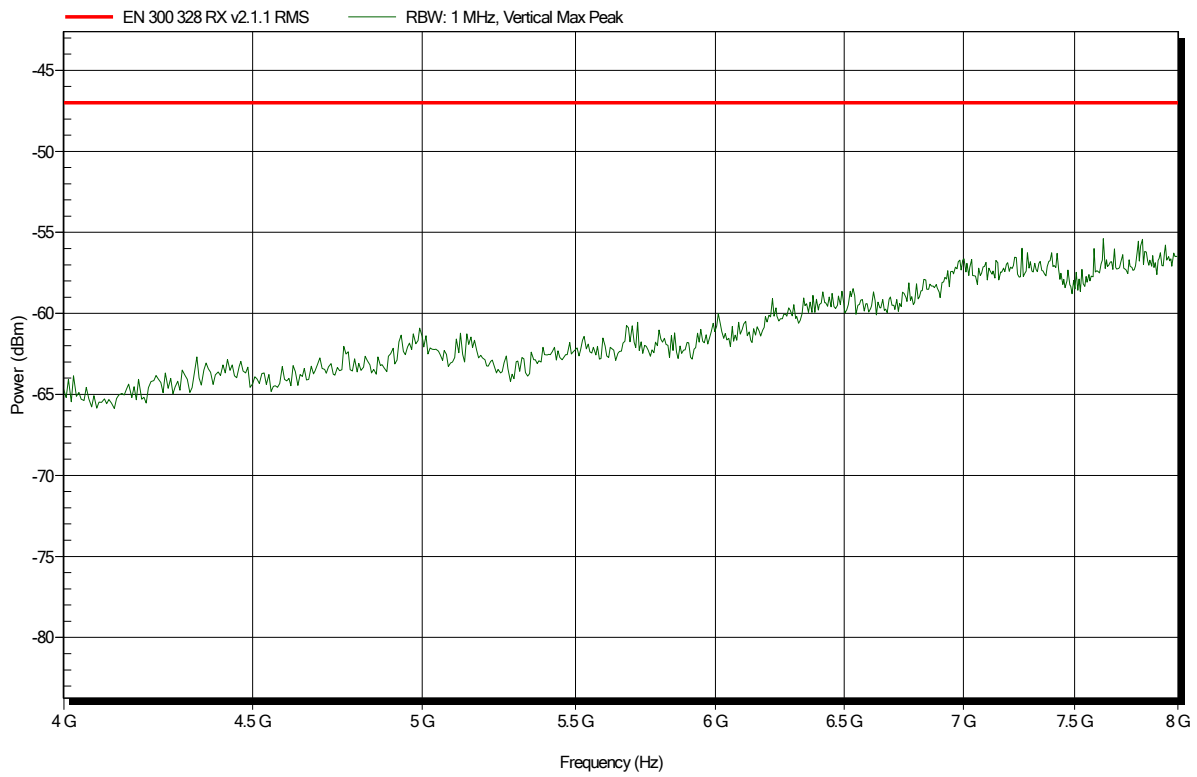
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.008 GHz	-55.8 dBm	-47 dBm	-8.82 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovoice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m
 Mode: RX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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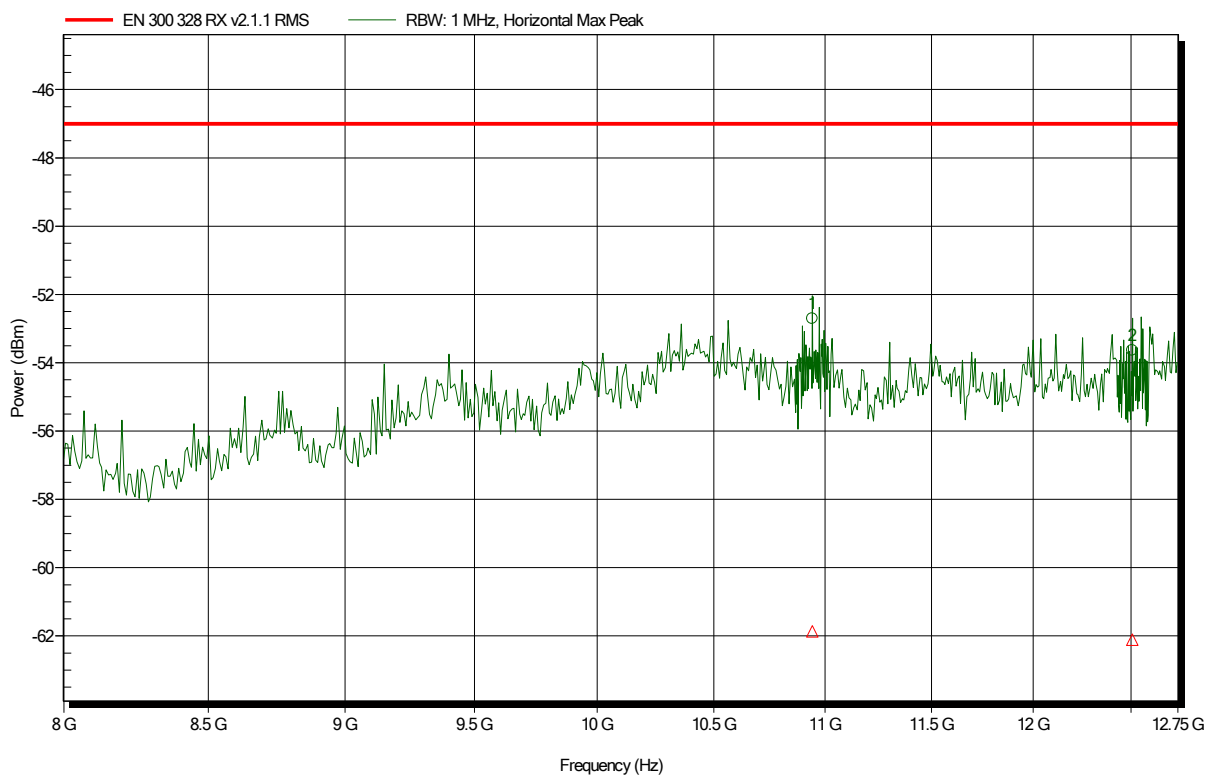


Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m
 Mode: RX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
10.941 GHz	-52.7 dBm	-47 dBm	-5.7 dB	Pass
12.507 GHz	-53.6 dBm	-47 dBm	-6.64 dB	Pass

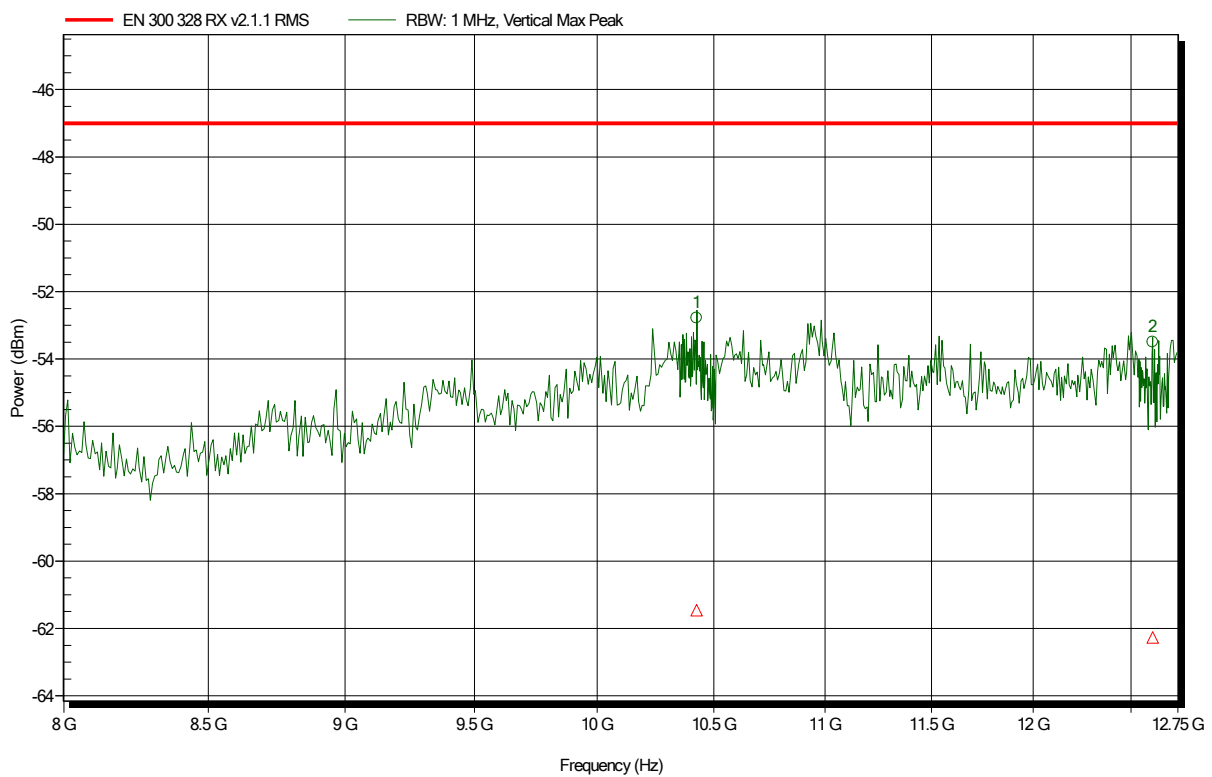
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
10.941 GHz	-61.9 dBm	-47 dBm	-14.86 dB	Pass
12.507 GHz	-62.1 dBm	-47 dBm	-15.11 dB	Pass

Spurious emissions according to ESTI EN 300 328 V2.1.1 (2016-11)

Project number: G0M-1901-7972

Applicant: Autovice ApS
 EUT Name: Traffic alarm/Bluetooth device
 Model: ooono
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.5°C, Vnom: 3.0 VDC (internal, lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m
 Mode: RX; 2480 MHz
 Test Date: 2019-02-14
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
10.424 GHz	-52.8 dBm	-47 dBm	-5.78 dB	Pass
12.613 GHz	-53.5 dBm	-47 dBm	-6.5 dB	Pass

Frequency	RMS	RMS Limit	RMS Difference	RMS Status
10.424 GHz	-61.5 dBm	-47 dBm	-14.46 dB	Pass
12.613 GHz	-62.3 dBm	-47 dBm	-15.27 dB	Pass