

FCC (USA)/ISED (Canada) TEST REPORT

FCC 47 CFR Part 15D

Unlicensed Personal Communications Service Devices

Industry Canada RSS-213

**2 GHz License-exempt Personal Communications Service
Devices (LE-PCS)**

Report Reference No: SON20220810
Testing Laboratory: ElectroMagnetic Investigations, LLC
Address: 8531 NE Cornell Road. Suite 600, Hillsboro, OR, USA
Accreditation: A2LA Accredited Testing Laboratory

Applicant's name: Sonetics Corporation
Address: 17600 SW 65th Ave.
Lake Oswego OR 97035
United States

Testing specification

Standard: FCC 47 CFR Part 15D
FCC 47 CFR Part 15C
FCC 47 CFR Part 15B
RSS-213, Issue 2, 2005-12
RSS-Gen, Issue 3, 2010-12
ANSI C63.17 :2013
ANSI C63.4 :2014

Equipment Under test (EUT)

Product description: DECT 6.0 Base Station
Model No. SON151
Additional Model(s): FL51Cv2, FL51PCv2, WB505Rv2
Hardware version: SON151 Rev A
Firmware / Software version: V0.1
FCC-ID: V9N950344001V1

Test result: Passed

Possible test case verdicts

Neither assessed nor tested:	N/N
Required by standard but not applicable:	N/A
Required by standard but not tested:	NOT PERFORMED
Not required by standard:	N/R
EUT meets the requirement:	P (Pass)
EUT does not meet the requirement:	F (Fail)

Testing

Test Lab Temperature:	20 – 28 C
Test Lab Humidity:	30 – 38 %
Date EUT received:	August 29, 2022
Date(s) of performance of tests:	August 29, 2022 to March 13, 2023
Complied by:	Ryan Benitez 
Tested by:	Ryan Benitez 
Approved by:	Henry Benitez 
Date of issue:	March 15, 2023
Total number of pages:	68

General remarks

The test results presented in this report relate only to the object tested. 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.

This report shall not be reproduced, except in full, without written approval of the issuing test laboratory.

Revision History

Version	Date Issued	Description of Revision

Authorizations

FCC (USA): Accepted by FCC for performance of radiated emissions and conducted emissions measurements. FCC ID: US1092.

Industry Canada: Accepted by Industry Canada for performance of radiated emissions and conducted emissions measurements. ISED Canada CAB ID US0203.

European Union (CE): ElectroMagnetic Investigations, LLC is equipped and capable of performing EMC CE compliance testing to European Union EMC CE requirements for Information Technology Equipment (ITE), Measurement, Control and Laboratory Equipment (MCL), and other equipment.

American Association of Lab Accreditations (A2LA): ElectroMagnetic Investigations is accredited to perform the tests contained within this report to the standards listed.



Certificate #2569.01

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1 Equipment (Test item) description

Description:	DECT 6.0 Base Station										
Model:	SON151										
Additional Model(s):	None										
Brand Name(s):	Sonetics Corporation										
Serial number:	PROTO1										
Hardware version:	Rev A										
Software / Firmware version:	V0.1										
FCC-ID:	V9N950344001V1										
IC:	7895A-950344001										
Equipment type:	End product										
Radio type:	DECT fixed part										
Number of radios:	1 transceiver built into device										
Radio technology:	DECT 6.0										
Operating frequency range:	1921.536 – 1928.448 MHz										
Assigned frequency band:	1920 – 1930 MHz										
Number of RF channels:	5										
Supported slots:	even and odd										
Number of time slots:	12 x Tx + 12 x Rx = 24										
Channels	<table> <tr> <td>F₀</td><td>CH:1 / 1928.448 MHz</td></tr> <tr> <td>F₁</td><td>CH:2 / 1926.720 MHz</td></tr> <tr> <td>F₂</td><td>CH:3 / 1924.992 MHz</td></tr> <tr> <td>F₃</td><td>CH:4 / 1923.264 MHz</td></tr> <tr> <td>F₄</td><td>CH:5 / 1921.532 MHz</td></tr> </table>	F ₀	CH:1 / 1928.448 MHz	F ₁	CH:2 / 1926.720 MHz	F ₂	CH:3 / 1924.992 MHz	F ₃	CH:4 / 1923.264 MHz	F ₄	CH:5 / 1921.532 MHz
F ₀	CH:1 / 1928.448 MHz										
F ₁	CH:2 / 1926.720 MHz										
F ₂	CH:3 / 1924.992 MHz										
F ₃	CH:4 / 1923.264 MHz										
F ₄	CH:5 / 1921.532 MHz										
Main test frequencies	<table> <tr> <td>F_{low}</td><td>CH:5 / 1921.532 MHz</td></tr> <tr> <td>F_{mid}</td><td>CH:3 / 1924.992 MHz</td></tr> <tr> <td>F_{high}</td><td>CH:1 / 1928.448 MHz</td></tr> </table>	F _{low}	CH:5 / 1921.532 MHz	F _{mid}	CH:3 / 1924.992 MHz	F _{high}	CH:1 / 1928.448 MHz				
F _{low}	CH:5 / 1921.532 MHz										
F _{mid}	CH:3 / 1924.992 MHz										
F _{high}	CH:1 / 1928.448 MHz										
Modulations	GFSK										
Emissions designator	F7D										
Nominal emission bandwidth	1.42 MHz										
Channel spacing	1728 kHz										
Spectrum access	Listen before transmit										
Nominal lower threshold	N/A										
Nominal upper threshold	-60 dBm										
Number of antennas	2 per transceiver										

Antenna 1	Type	integrated
	Model	printed f antenna
	Manufacturer	Sonetics
	Gain	0 dBi
Antenna 2	Type	external dedicated
	Model	HG1930RD-RSP
	Manufacturer	L-Com
	Gain	3 dBi
Antenna 3	Type	external dedicated
	Model	TRA6927M3NW001
	Manufacturer	Laird
	Gain	5.5 dBi – 2.6 dB cable loss = 2.9 dBi
Manufacturer	Sonetics Corporation 17600 SW 65th Ave. Lake Oswego OR 97035 United States	
Power supply	V _{nom}	12 V DC
	V _{min}	4.5 V DC
	V _{max}	15 V DC
AC/DC adaptor	Model	YMC06-3U
	Vendor	Ji Ming
	Input	100-240 V AC 50/60 Hz
	Output	12 V DC
Temperature	T _{nom}	25 C
	T _{min}	-40 C
	T _{max}	70 C

1.1 Photos – Equipment external

See dedicated report

1.2 Photos – Equipment internal

See dedicated report

1.3 Photos – Test setup

See dedicated report

1.4 Supporting equipment used during testing

Product type*	Device	Manufacturer	Model No.	Comments
None				
*Note: Use the following abbreviations: AE : Auxiliary/Associated Equipment SIM : Simulator (Not Subject to Test) CABL : Connecting cables				

1.5 Test modes

Mode #	Description	
TDMA	General conditions:	EUT powered by a laboratory power supply. Active connection to companion device.
	Radio conditions:	Mode = Transmit mode Modulation = GFSK Duty cycle = 1/24 Power level = Maximum
Receive	General conditions:	EUT powered by a laboratory power supply.
	Radio conditions:	Mode = standalone receive Modulation = GFSK
AC-Powerline	General conditions:	Active data connection between EUT and companion device. EUT connected to AM main via AC/DC Adaptor
	Radio conditions:	Mode = Transmit mode Modulation = GFSK Duty cycle = 1/24 Power level = Maximum

1.6 Test equipment used during testing

Conducted				
Description	Manufacturer	Model	Cal. Date	Cal. Due
Analyzer	Agilent	E4440A	2022/01/28	2023/07/28
DECT Tester	R&S	CMD60	2023/03/16	2024/03/16
Signal generator	R&S	SME06	2021/09/03	2026/09/03
Coupler	Narda	4222-16	2022/12/05	2023/12/05
Radiated spurious emissions				
Description	Manufacturer	Model	Cal. Date	Cal. Due
Analyzer	Agilent	E4440A	2022/01/28	2023/07/28
Analyzer	Agilent	E4443A	2023/01/30	2026/01/30
Antenna	Com-Power	AC-220	2021/08/30	2023/08/30
Antenna	Com-Power	AHA-118	2021/08/24	2023/08/24
Antenna	Com-Power	AH-1840	2022/11/11	2027/11/11
Pre-Amp	Amplifier Research	LN1000	2023/02/18	2024/02/18
AC powerline conducted emissions				
Description	Manufacturer	Model	Cal. Date	Cal. Due
Analyzer	Agilent	E4443A	2023/01/30	2026/01/30
LISN	Fischer Custom Communications	FCC-50-50-04-02	2020/12/08	2025/12/08

1.7 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dBμV. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric field strength to voltage that can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

$$\text{Reading on analyzer (dB}\mu\text{V)} + \text{A.F. (dB)} = \text{Net field strength (dB}\mu\text{V/m)}$$

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dBμV/m). The FCC limits are given in units of μV/m. The following formula is used to convert the units of μV/m to dBμV/m:

$$\text{Limit (dB}\mu\text{V/m)} = 20 * \log(\mu\text{V/m})$$

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A positive margin indicates the emission was below the limit. A negative margin indicates that the emission exceeds the emission was below the limit.

Example only:

Reading + A.F. =	Net Reading :	FCC limit – Net reading =	Margin
21.5 dBμV + 26 db =	47.5 dBμV/m :	57.0 dBμV/m – 47.5 dBμV/m =	9.5 dB

2 Result summary

FCC 47 CFR Part 15D, 15C, IC RSS-213. IC RSS-Gen					
Section	Requirement - Test	FCC	IC	ANSI	Result
3.1	Channel Frequencies	15.303	RSS-213 5.1	---	PASS
3.2	AC power line conducted emissions	15.107(a) 15.207(a)	RSS-213 5.4 RSS-Gen 7.2 / 8.8	C63.4 7	PASS
3.3	Antenna Requirement	15.317, 15.203	RSS-GEN 6.8	---	PASS
3.4	Digital modulation	15.319(b)	RSS -213 5.1	6.1.4	PASS
3.5	Occupied Bandwidth	N/A	RSS-GEN 6.7	6.1.3	PASS
3.6	Emission Bandwidth	15.323(a)	RSS-213 5.5	6.1.3	PASS
3.7	Peak Transmit Power and Antenna Gain	15.319(c)(e) 15.31(e)	RSS-213 5.6 RSS-GEN 8.3	6.1.2	PASS
3.8	Power Spectral Density	15.319(d)	RSS-213 5.7	6.1.5	PASS
3.9	Frequency stability	15.323(f)	RSS-213 5.3	6.2.2	N/T
3.10	In-band unwanted emissions	15.323(d)	RSS-213 5.8.2	6.1.6.1	PASS
3.11	Out-of-band-emissions	15.323(d)	RSS-213 5.8.1	6.1.6.2	PASS
3.12	Spurious Emissions (Radiated)	15.319(g) 15.109(a) 15.209(a)	RSS-GEN 7.3 / 8.9	C63.4	PASS
3.13	Automatic discontinuation of transmission	15.319(f)	RSS-213 5.2	---	N/T
3.14	Radiofrequency radiation exposure	15.319(i)	RSS-102	---	N/A
3.15	Monitoring threshold	15.323(c)(2)(5)(9)	RSS-213 5.2 (2)(5)(9)	7.3.1	N/T
3.16	LIC confirmation	15.323(c)(5)	RSS-213 5.2 (5)	7.3.2	N/T
3.17	LIC selection	15.323(c)(5)	RSS-213 5.2 (5)	7.3.2	N/T
3.18	Monitoring antenna	15.323(c)(8)	RSS-213 5.2 (8)	4	N/T
3.19	Monitoring time	15.323(c)(1)	RSS-213 5.2 (1)	7.3.3	N/T
3.20	Monitoring bandwidth	15.323(c)(7)	RSS-213 5.2 (7)	7.4	N/T
3.21	Monitoring reaction time	15.323(c)(7)	RSS-213 5.2 (7)	7.5	N/T
N/A	Access criteria test interval	15.323(c)(4)(6)	RSS-213 5.2 (6)	---	N/T
3.22	Access criteria functional test	15.323(c)(4)(6)	RSS-213 5.2 (6)	8.1.2 or 8.1.3	N/T
3.23	Acknowledgments	15.323(c)(4)	RSS-213 5.2 (4)	8.1 or 8.2	N/T

N/A	Maximum transmit duration	15.323(c)(3)	RSS-213 5.2 (3)	---	N/A
3.24	Maximum spectrum occupancy	15.323(c)(5)	RSS-213 5.2 (5)	---	PASS
N/A	Duplex connections	15.323(c)(10)	RSS-213 5.2 (10)	8.3	N/A
N/A	Alternative monitoring interval	15.323(c)(11)(12)	RSS-213 5.2 (11)(12)	8.4	N/A
3.25	Fair access	FCC 15.323(c)(12)	IC RSS-213 4.3.4(b)(12)	---	PASS
3.26	Frame period and jitter	15.323(e)	RSS-213 5.2 (13)	6.2.3	N/T
3.27	Frame repetition stability	15.323(e)	RSS-213 5.2 (13)	6.2.2	N/T

N/T – Not tested and not included in the scope of this test report. Refer to Intertek test report 22110137HKG.

3 Test conditions and results

3.1 Channel Frequencies

FCC 15.303, RSS-213 Issue 3, clause 5.1:

Within 1920 – 1930 MHz band for isochronous devices.

UPCS Channel	Frequency (MHz)
Upper Band Edge	1930.000
1 (Highest)	1928.448
2	1926.720
3	1924.992
4	1923.264
5 (Lowest)	1921.536
Lower Band Edge	1920.000

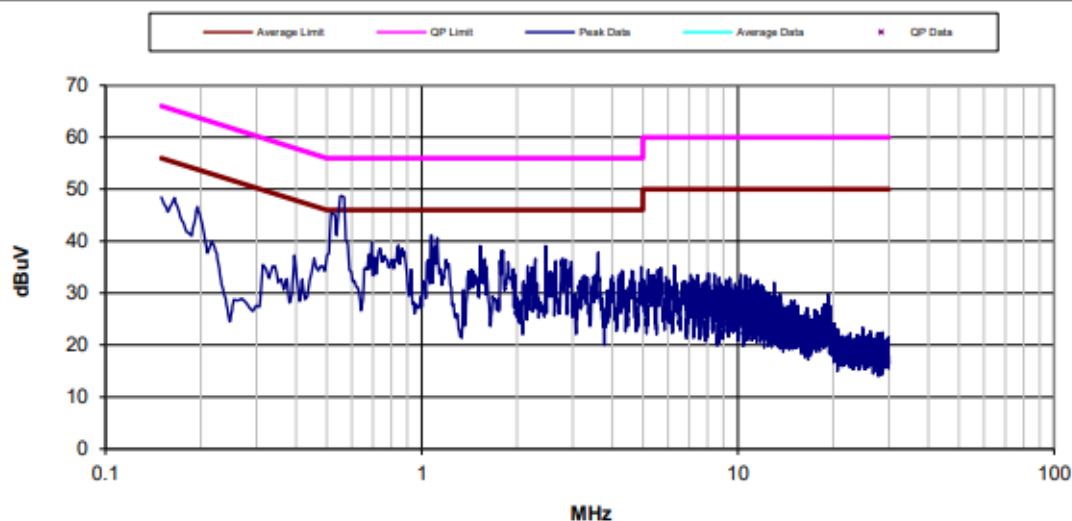
3.2 Test conditions and results – AC power line conducted emissions

Conducted emissions acc. to FCC 47 CFR 15D / IC RSS-213				Verdict: PASS	
Test performed by: ElectroMagnetic Investigations					
EUT requirement rule parts and clause			Reference		
			FCC 15.107(a), FCC 15.207(a) RSS-213 5.4, RSS-Gen 7.2 / 8.8		
Test according referenced standards			Reference Method		
			ANSI C63.4		
Fully configured sample scanned over the following frequency range			Frequency range		
			0.15 MHz to 30 MHz		
Points of Application			Application Interface		
AC Mains			LISN		
EUT test mode			AC-Powerline		
Limits and results					
Frequency [MHz]		Quasi-Peak [dBµV]	Result	Average [dBµV]	Result
0.15 to 0.5		66 to 56*	PASS	56 to 46*	PASS
0.5 to 5		56	PASS	46	PASS
5 to 30		60	PASS	50	PASS
Comments: *Limit decreases linearly with the logarithm of the frequency.					

Revision 11
6/30/2021

Customer:	Sonetics Corporation	Job Reference#:	SON20220810
Contact:	Michael Barger	Date:	8/31/2022
DUT:	DECT Base Station Model SON151	Temperature (°C):	27.9
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart B Class B		
	N/A		
Test Standard:	FCC Part 15 Class B		

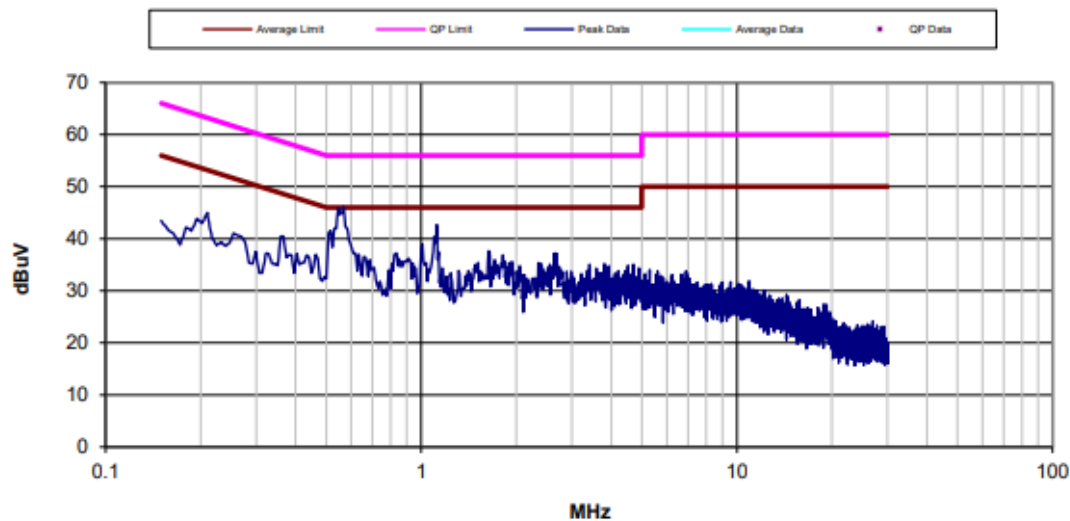
TEST RESULTS	TEST TYPE	LINE	RUN #
Pass	Compliance	Line	

[illegible]

Revision 11
6/30/2021

Customer:	Sonetics Corporation	Job Reference#:	SON20220810
Contact:	Michael Barger	Date:	8/31/2022
DUT:	DECT Base Station Model SON151	Temperature (°C):	27.9
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart B Class B		
	N/A		
Test Standard:	FCC Part 15 Class B		

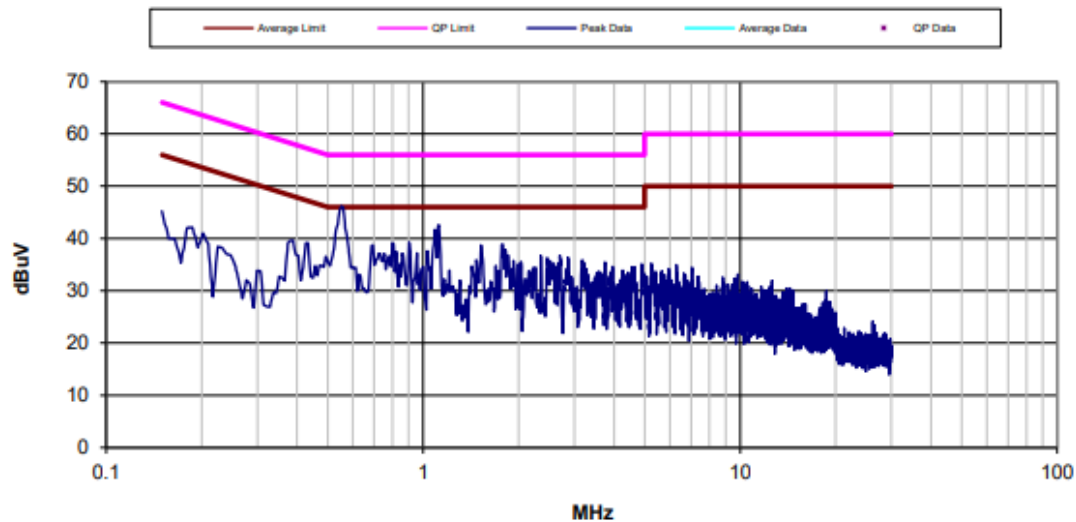
TEST RESULTS	TEST TYPE	LINE	RUN #
Pass	Compliance	Neutral	1

[illegible]

Revision 11
6/30/2021

Customer:	Sonetics Corporation	Job Reference#:	SON20220810
Contact:	Michael Barger	Date:	8/31/2022
DUT:	DECT Base Station Model SON151	Temperature (°C):	27.9
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart B Class B		
	N/A		
Test Standard:	FCC Part 15 Class B		

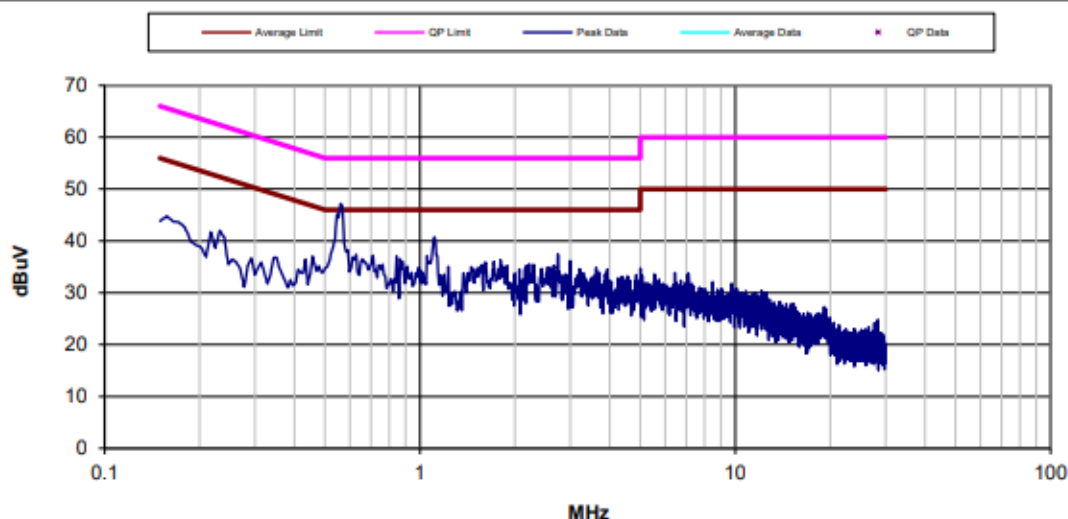
TEST RESULTS	TEST TYPE	LINE	RUN #
Pass	Compliance	Line	1

[illegible]

Revision 11
6/30/2021

Customer:	Sonetics Corporation	Job Reference#:	SON20220810
Contact:	Michael Barger	Date:	8/31/2022
DUT:	DECT Base Station Model SON151	Temperature (°C):	27.9
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart B Class B		
	N/A		
Test Standard:	FCC Part 15 Class B		

TEST RESULTS	TEST TYPE	LINE	RUN #
Pass	Compliance	Neutral	

[illegible]

3.3 Test conditions and results – Antenna requirement

Antenna requirement acc. to FCC 47 CFR 15D / IC RSS-GEN			Verdict: PASS
Test performed by: ElectroMagnetic Investigations			
EUT requirement rule parts and clause		Reference	
		FCC 15.317, FCC 15.203, RSS-GEN 6.8	
Test according to measurement reference		Reference	
		Visual inspection & declaration	
Requirements			
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.			
When an antenna conducted measurement is used to determine the RF output power of the device, the effective gain of the antenna intended for the device must be stated based on measurement or on data from the measured RF output power before using the power limits.			
Results			
Antenna No.	Type	Antenna gain [dBi]	Antenna gain in excess of 3 dBi
1	internal	0	0
2	external	3	0
3	external	2.9	0
Comment: Uses reverse SMA connector for antenna port.			
Antenna No. 3 is used with specific cabling to provide effective gain < 3dBi.			

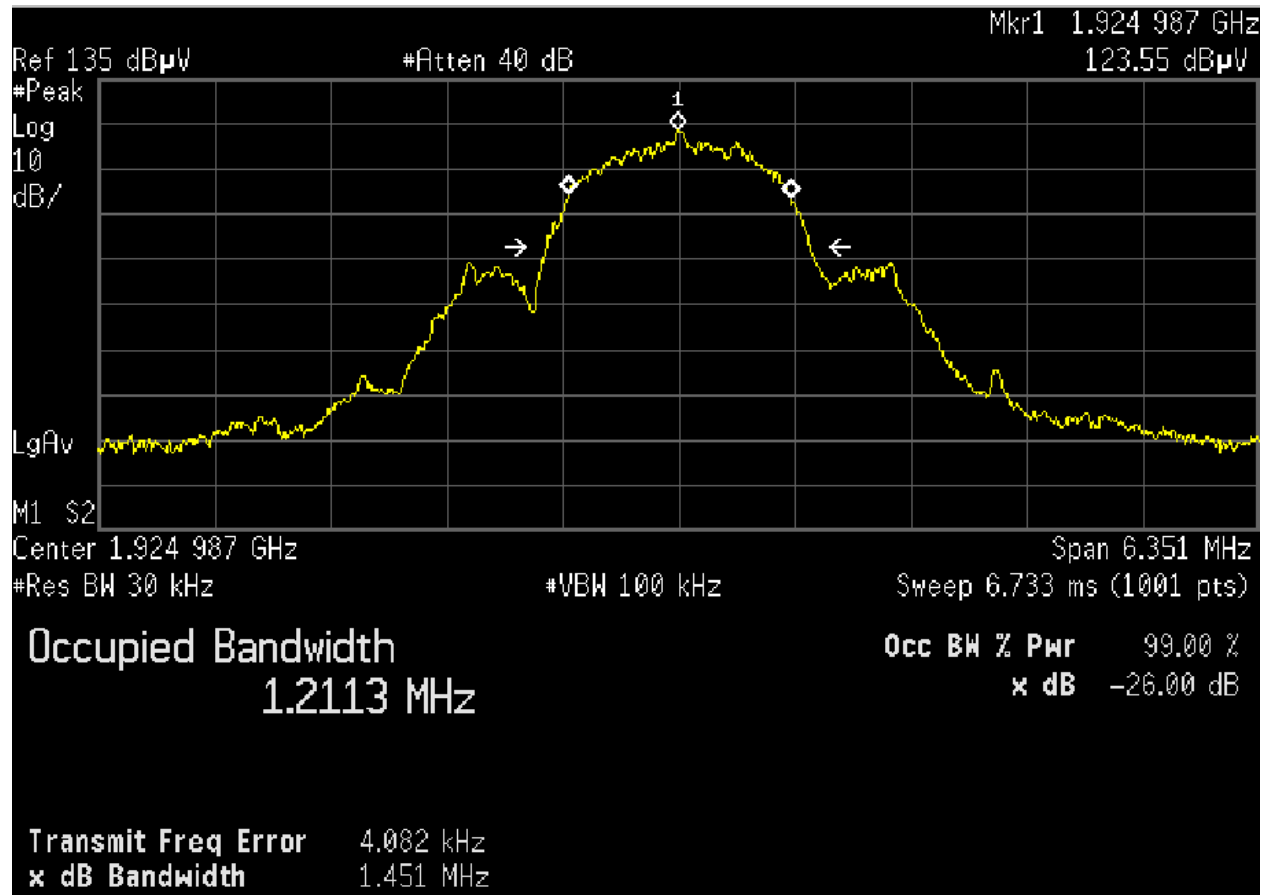
3.4 Test conditions and results – Digital modulation

Antenna requirement acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: Pass
Test performed by: ElectroMagnetic Investigations		
EUT requirement rule parts and clause	Reference	
	FCC 15.319(b), IC RCC-213 5.1	
Test according to measurement reference	Reference Method	
	Declaration	
Requirements		
All transmission must use only digital modulation techniques.		
Results		
The test sample is an isochronous digital modulated device that operates in 1920-1930 MHz band. This device based on DECT technology described in European Standards EN 300 175-2 and EN 300 175-3, now operating in frequency channels mentioned above.		
The operating modes are MC/TDMA/TDD (Multi carrier / Time Division Multiple Access / Time Division Duplex) using Digital GFSK modulation.		
For further details see operational description provided by manufacturer.		

3.5 Test conditions and results – Occupied bandwidth

Occupied Bandwidth acc. to IC RSS-GEN				Verdict: PASS
Test performed by: ElectroMagnetic Investigations				
Test according to measurement reference		Reference Method		
		IC RSS-GEN 6.7		
Tested frequencies		F _{mid}		
EUT test mode		TDMA		
Limits				
0.05 MHz <= Occupied Bandwidth < 2.5 MHz				
Test results				
Channel	Center frequency [MHz]	Lower edge [MHz]	Upper edge [MHz]	Occupied Bandwidth [MHz]
F _{mid}	1924.992	1924.386	1925.597	1.2113
Comments: refer to Intertek test report 22110137HKG for F _{LOW} and F _{HIGH}				

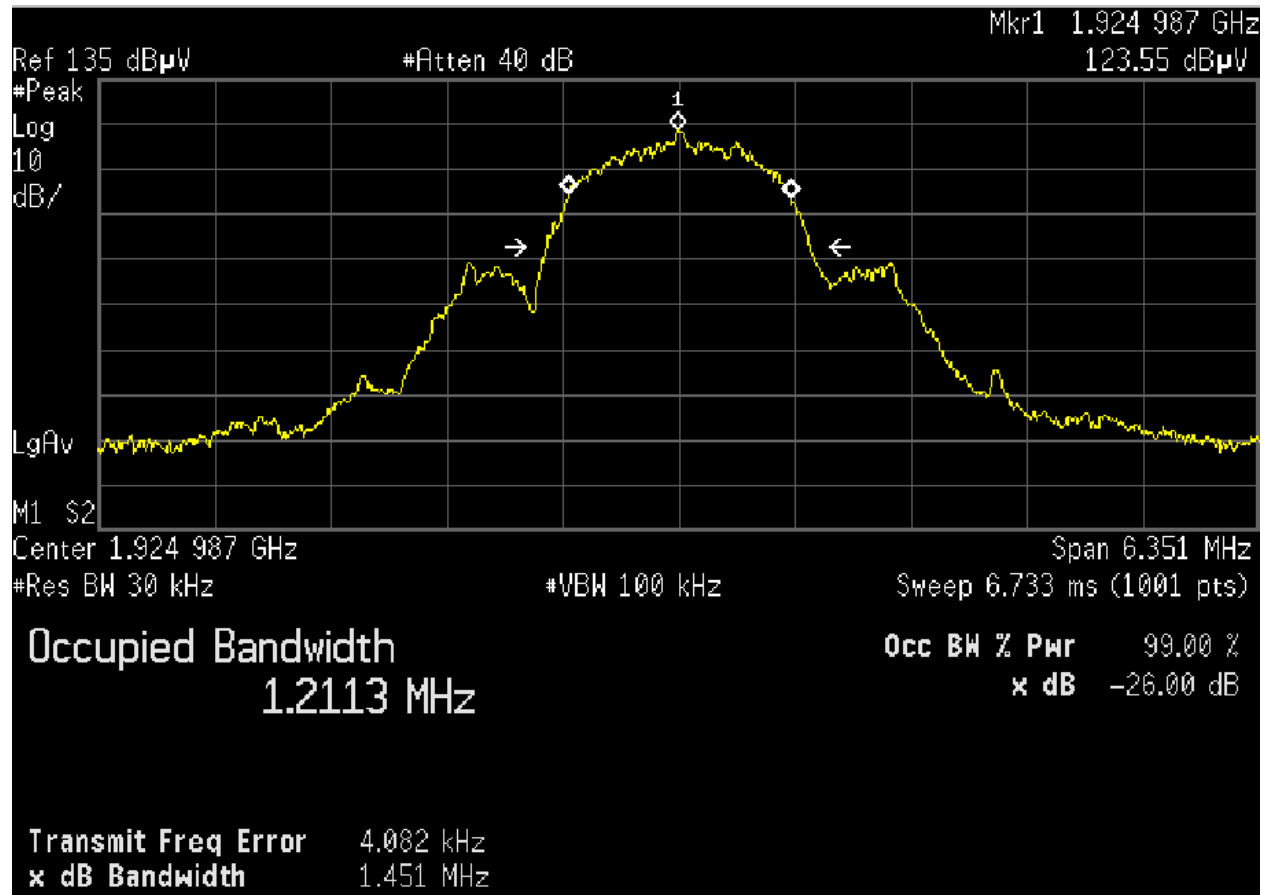
F_{mid}



3.6 Test conditions and results – Emission Bandwidth

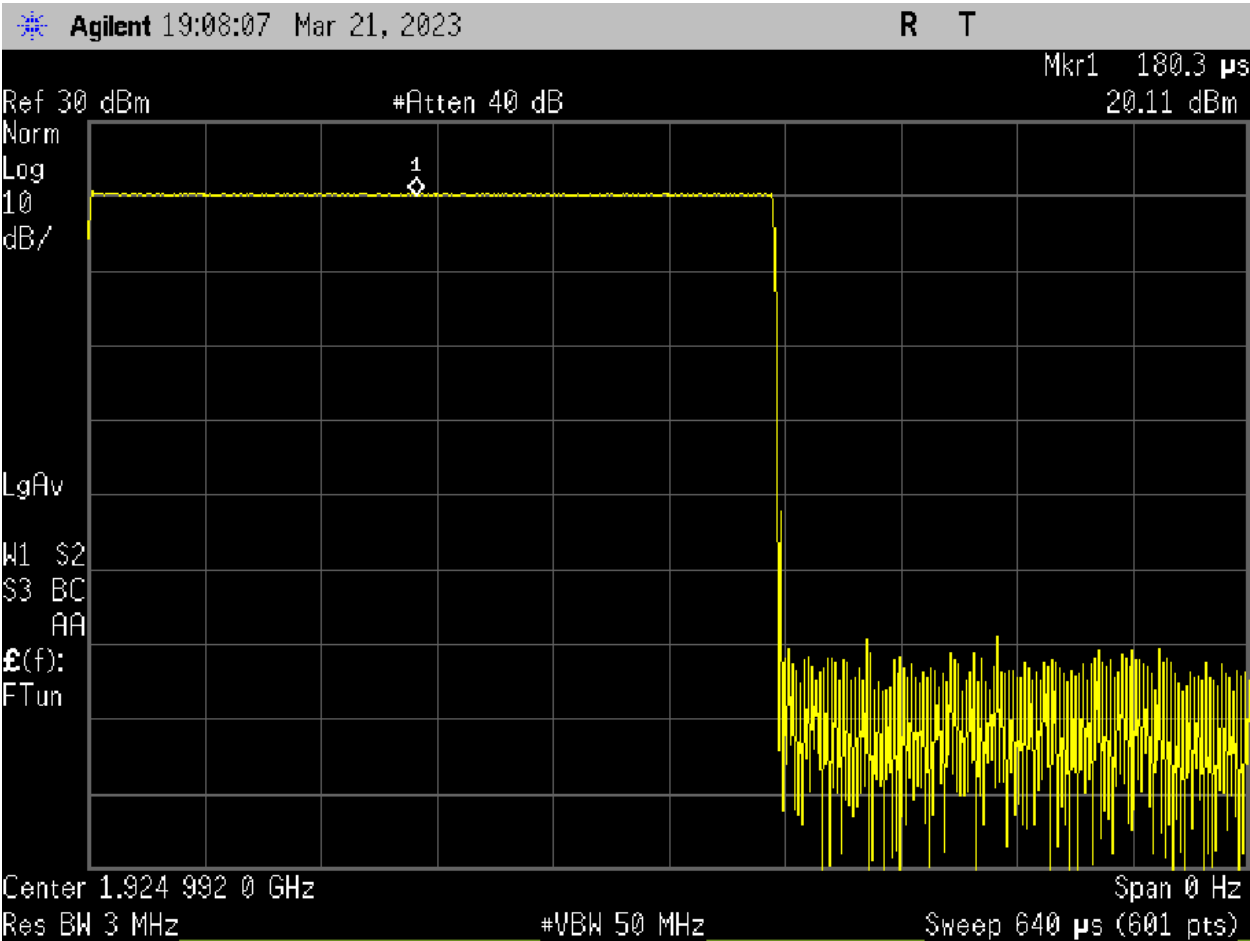
Emission Bandwidth acc. to FCC 47 CFR 15D and RSS-213				Verdict: PASS	
Test performed by: ElectroMagnetic Investigations					
Test according to measurement reference		Reference			
		FCC 15.323(a), IC RSS-213 5.5			
Test according to measurement reference		Reference Method			
		ANSI C63.17 6.1.3			
Tested frequencies		F_{low} / F_{high}			
EUT test mode		TDMA			
Limits					
$0.05 \text{ MHz} \leq \text{Emission Bandwidth} < 2.5 \text{ MHz}$					
Test results					
Channel	Center frequency [MHz]	Mode	Lower edge [MHz]	Upper edge [MHz]	Emission Bandwidth [MHz]
F_{low}	1921.536	-26 dB	NOT PERFORMED	NOT PERFORMED	NOT PERFORMED
F_{MID}	1924.992	-26 dB	1924.267	1925.718	1.451
F_{high}	1928.448	-26 dB	NOT PERFORMED	NOT PERFORMED	NOT PERFORMED
Comments: refer to Intertek test report 22110137HKG for F_{LOW} and F_{HIGH}					

F_{mid}

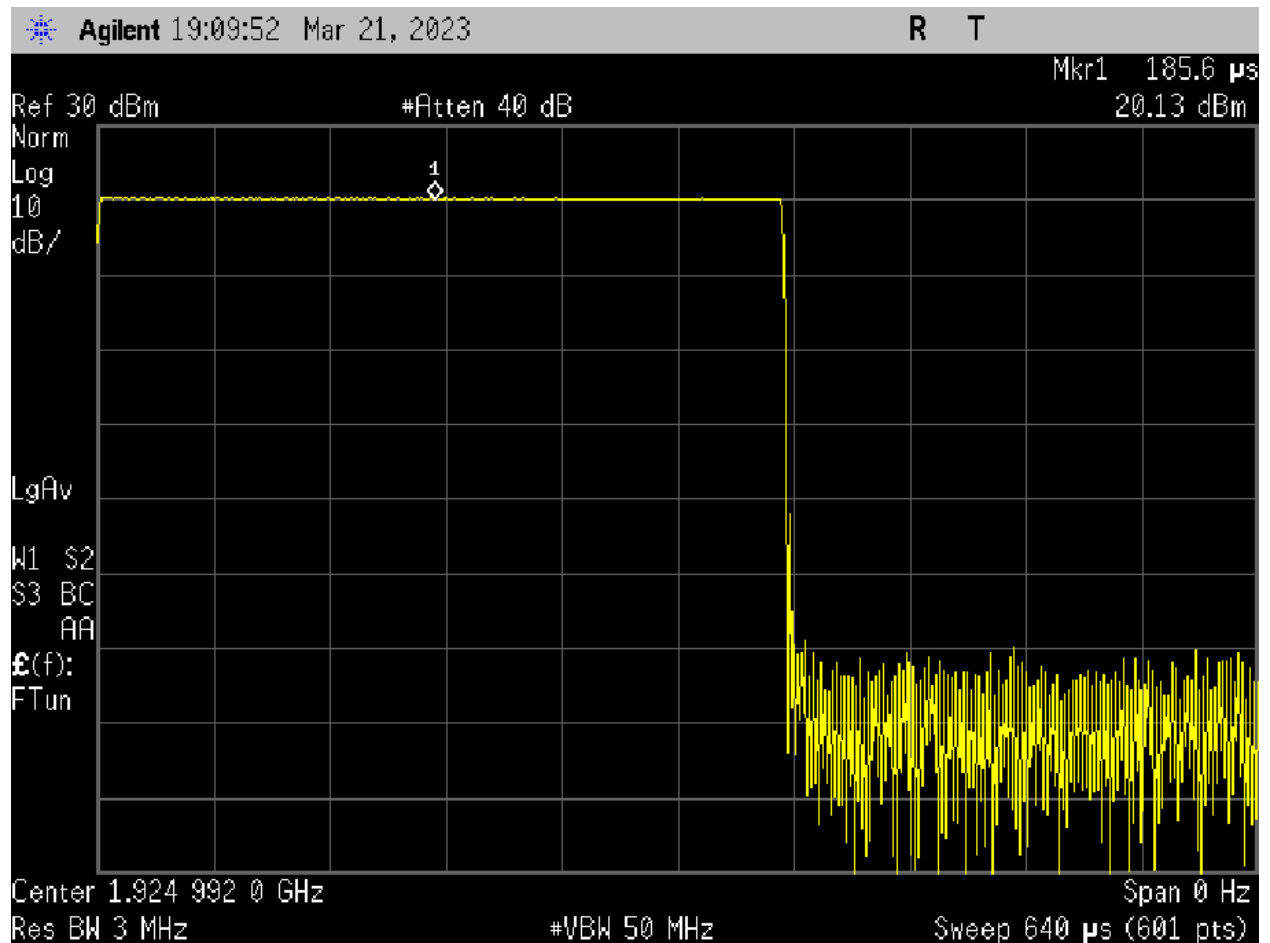


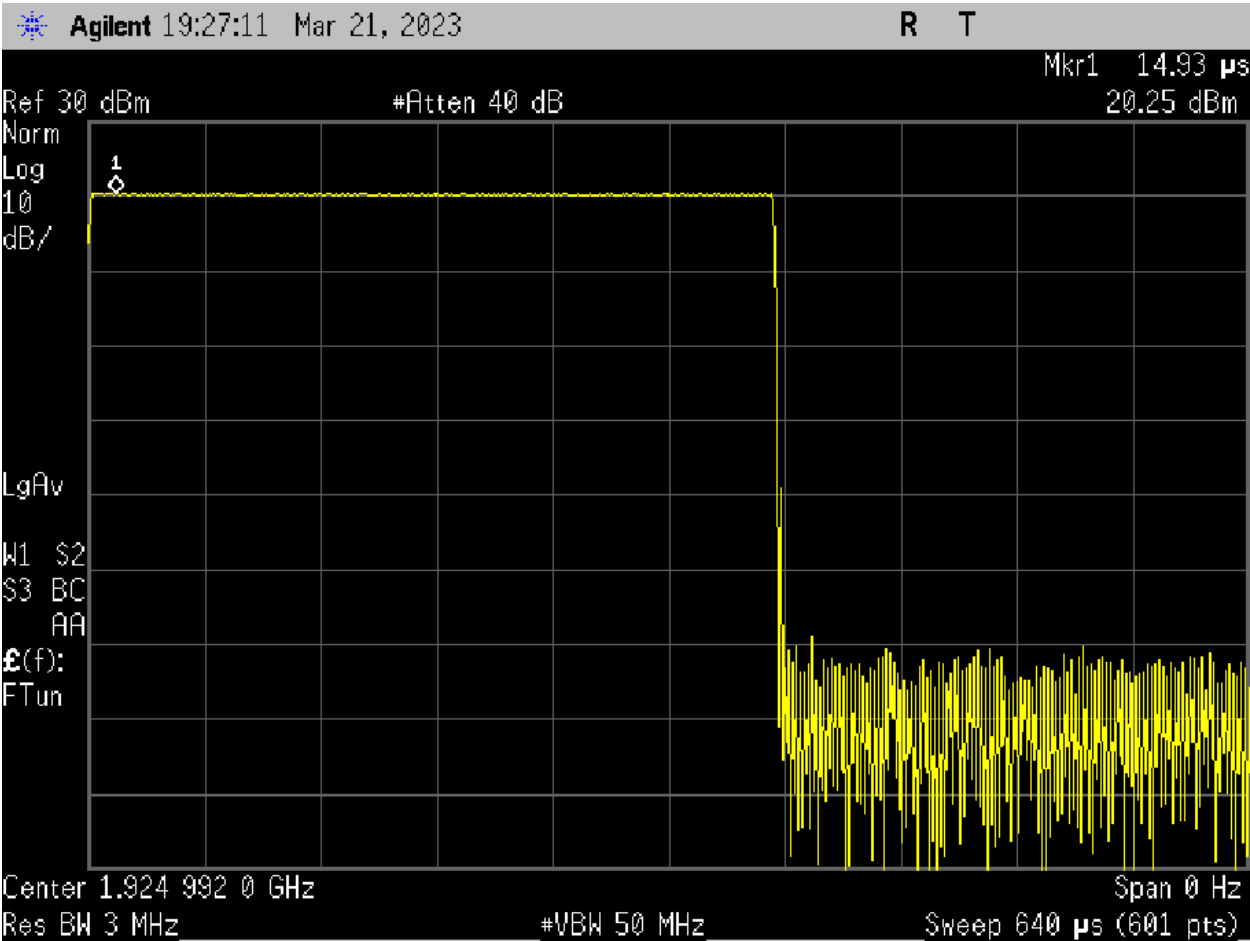
3.7 Test conditions and results – Peak transmit power

Peak transmit power acc. to FCC 47 CFR 15D / ICC RSS-213				Verdict: PASS	
Test performed by: ElectroMagnetic Investigations					
EUT requirement rule parts and clause			Reference		
			FCC 15.319(c),(e), IC RSS-5.6, IC RSS-GEN 8.3		
Test according to measurement reference			Reference Method		
			ANSI C63.17 6.1.2		
Tested frequencies			$F_{low} / F_{MID} / F_{high}$		
EUT test mode			TDMA		
Antenna excess gain			0 dB		
Limits					
Peak transmit power shall not exceed 100 microwatts multiplied by the square root of the emission bandwidth in hertz. The peak transmit power shall be reduced by the amount in decibels that the maximum directional gain of the antenna exceeds 3 dBi.					
Test results - FCC					
Channel	Frequency [MHz]	Peak Power [dBm]	Excess gain [dB]	Limit [dBm]	Margin [dB]
F_{MID}, V_{NOM}	1924.992	20.11	0	20.88	0.77
F_{MID}, V_{MIN}	1924.992	20.13	0	20.88	0.75
F_{MID}, V_{MAX}	1924.992	20.25	0	20.88	0.63
Test results – IC					
Channel	Frequency [MHz]	Peak Power [dBm]	Excess gain [dB]	Limit [dBm]	Margin [dB]
F_{MID}, V_{NOM}	1924.992	20.11	0	20.45	0.34
F_{MID}, V_{MIN}	1924.992	20.13	0	20.45	0.32
F_{MID}, V_{MAX}	1924.992	20.25	0	20.45	0.20
Comments: refer to report 22110137HKG for F_{low} / F_{high}					



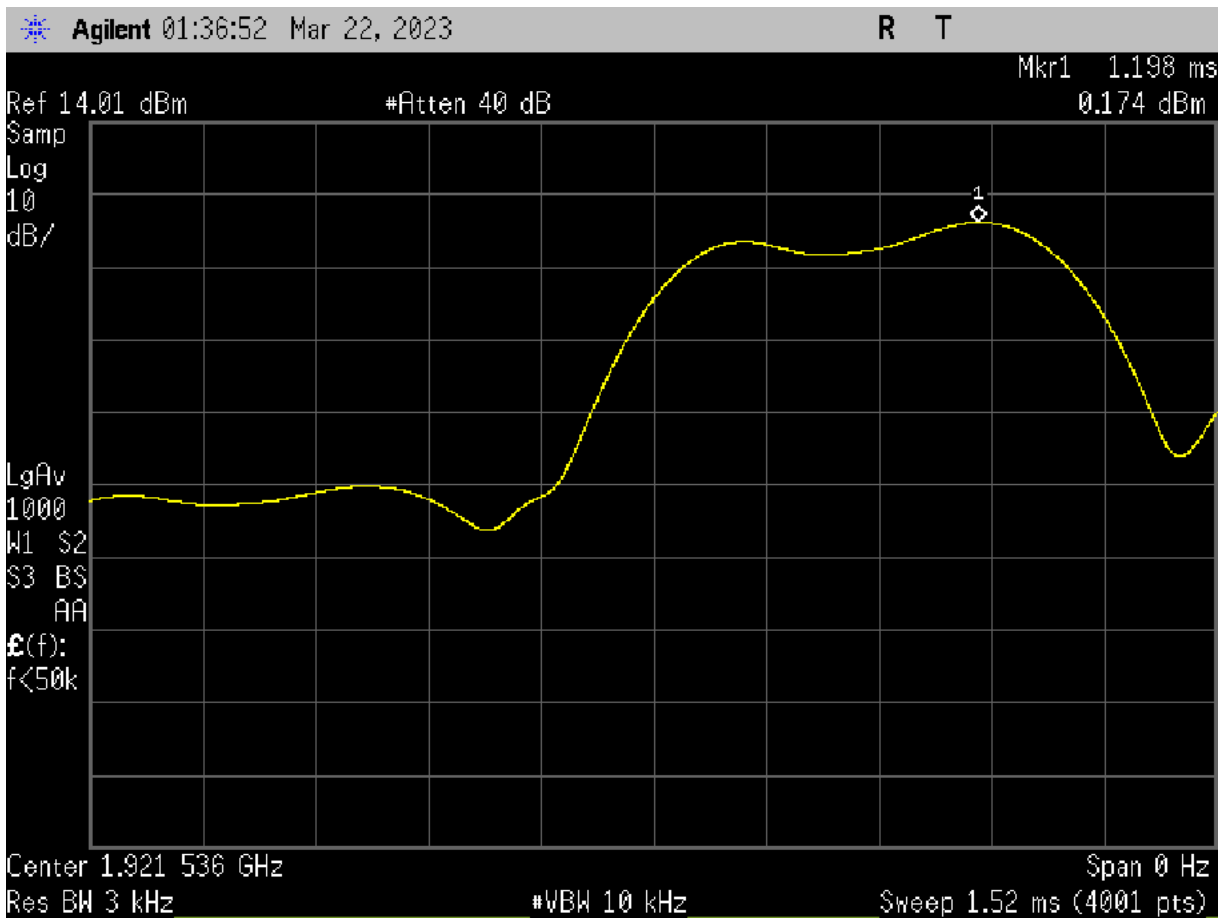
F_{MID}, V_{MIN}



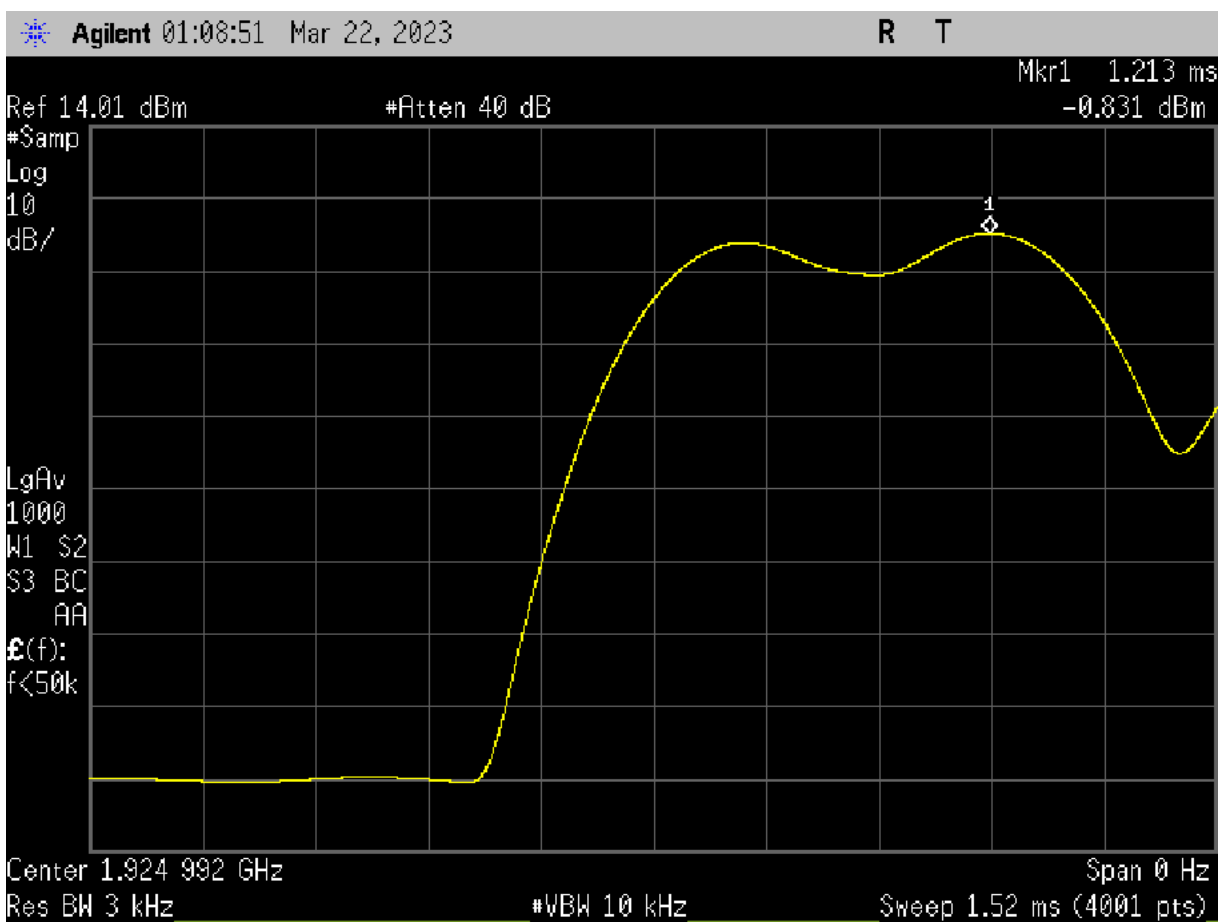


3.8 Test conditions and results – Power spectral density

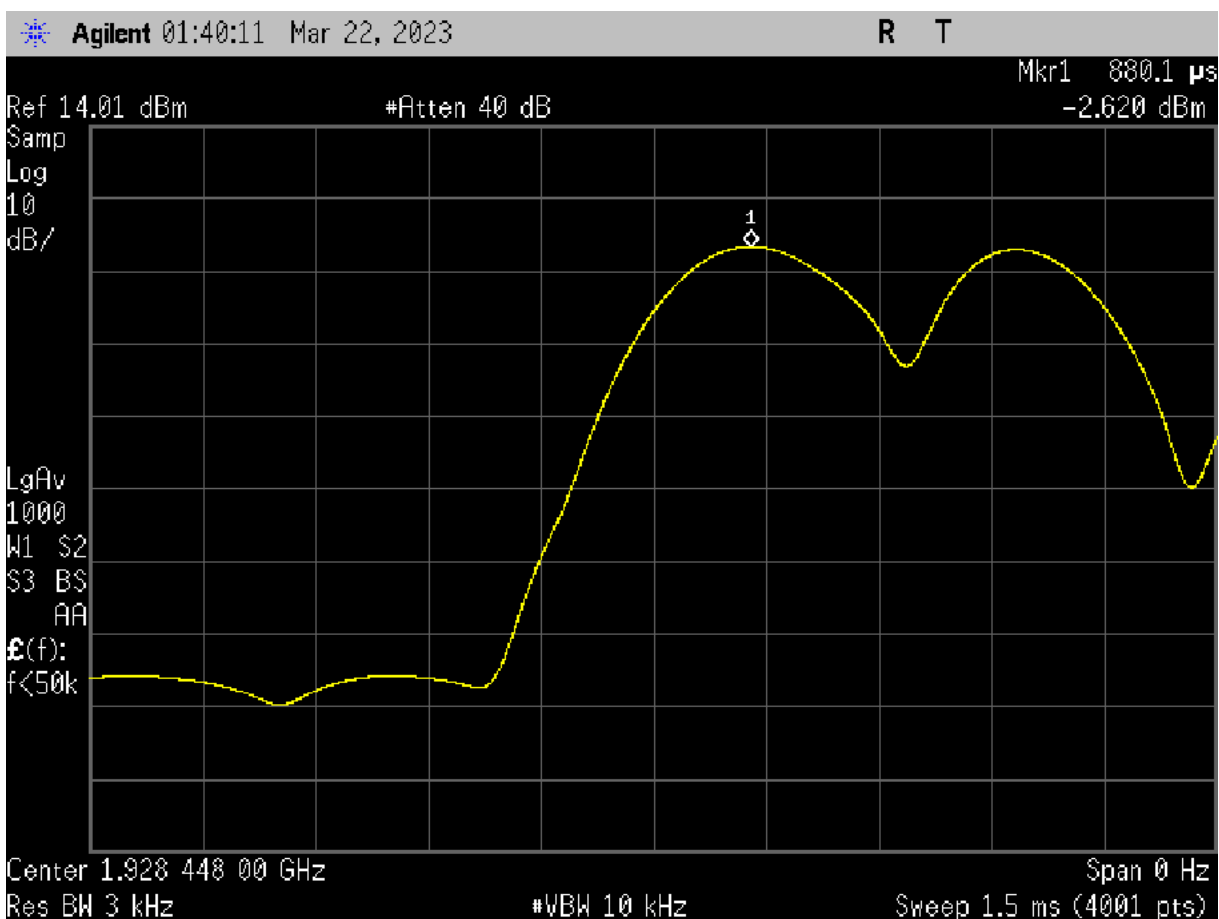
Power spectral density acc. to FCC 47 CFR 15D / IC RSS-213				Verdict: PASS
Test performed by: ElectroMagnetic Investigations				
EUT requirement rule parts and clause		Reference		
		FCC 15.319(d) / IC RSS-213 5.7		
Test according to measurement reference		Reference Method		
		ANSI C63.17 6.1.5		
Tested frequencies		F _{low} / F _{high}		
EUT test mode		TDMA		
Limits				
≤ mW (4.77 dBm) / 3 kHz				
Test results				
Channel	Frequency [MHz]	Peak Density [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
F _{low}	1921.536	0.175	4.77	4.595
F _{MID}	1924.992	-0.821	4.77	5.601
F _{high}	1928.448	-2.62	4.77	7.390
Comments:				



F_{MID}



F_{high}



3.9 Test conditions and results – Frequency stability

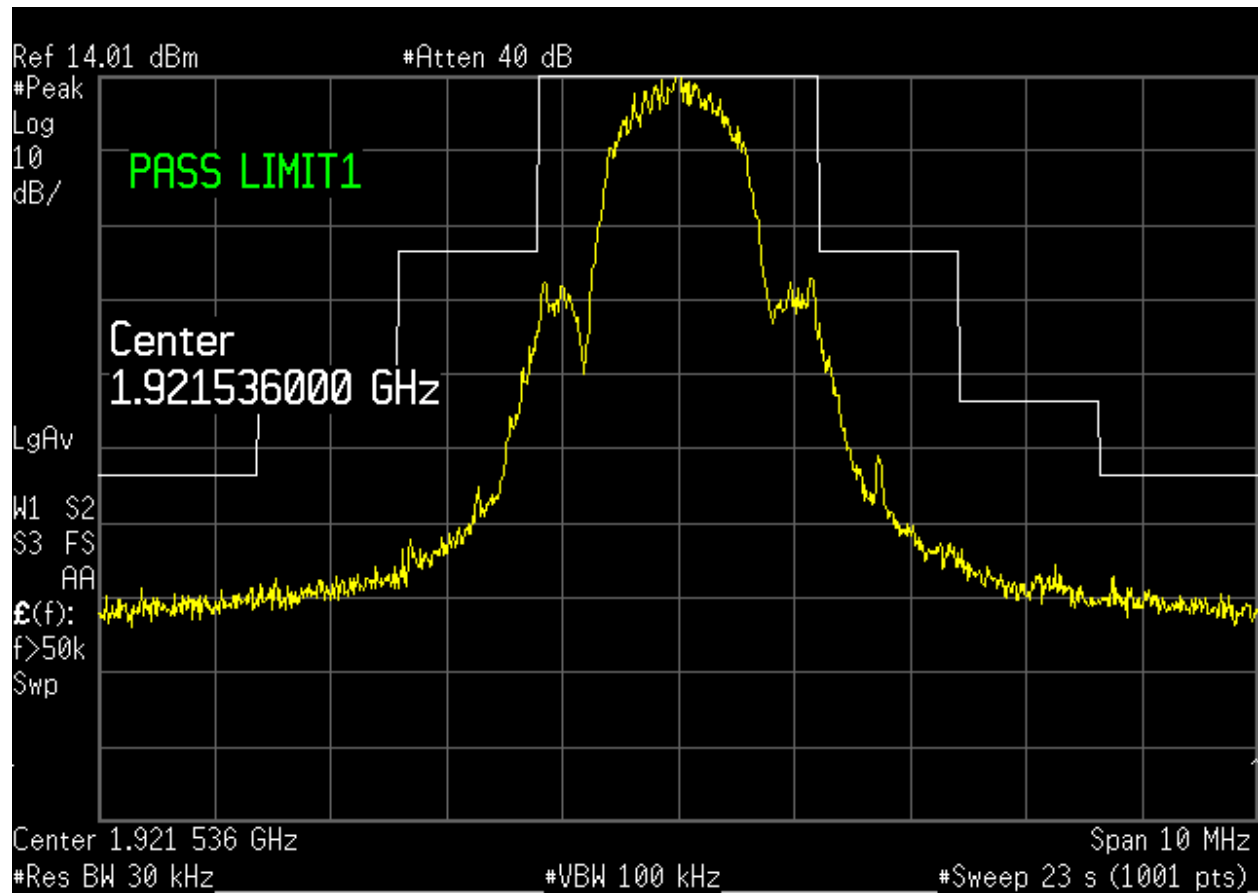
Frequency stability acc. to FCC 47 CFR 15D / IC RSS-213				Verdict: NOT PERFORMED	
EUT requirement rule parts and clause		Reference			
		FCC 15.323(f) / IC RSS213 5.3			
Test according to measurement reference		Reference Method			
		ANSI C63.17 6.2.1			
Tested frequencies		F _{mid}			
EUT test mode		TDMA			
Limits					
± 10 ppm / hour					
Test results					
Voltage	Temperature	Maximum Frequency deviation [ppm]		Limit [ppm]	Verdict
Nominal				±10	NOT PERFORMED
85%				±10	NOT PERFORMED
115%				±10	NOT PERFORMED
Nominal				±10	NOT PERFORMED
Nominal				±10	NOT PERFORMED
Comments: Test not performed – refer to Intertek test report 22110137HKG					

3.10 Test conditions and results – Transmitter in-band unwanted emissions

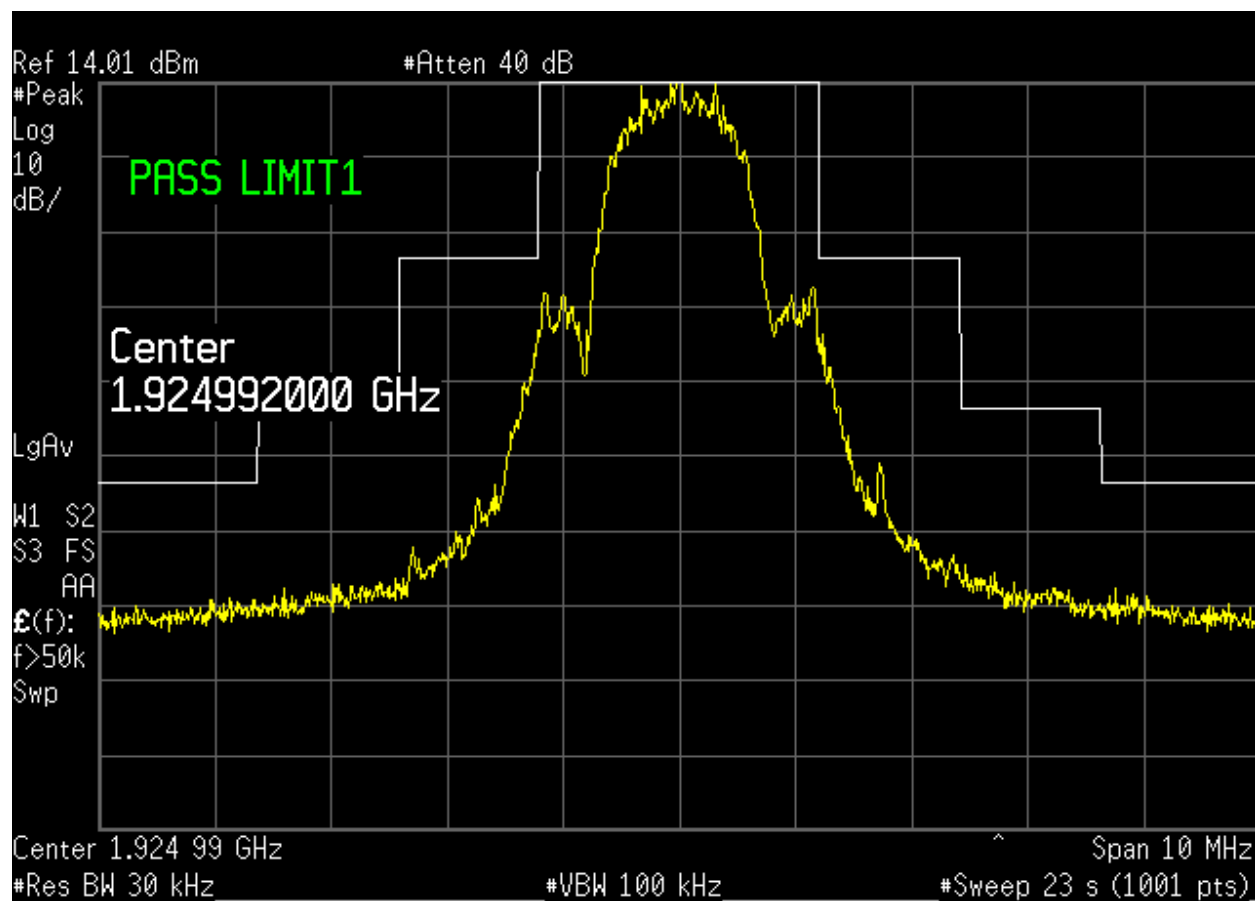
In-band unwanted emissions acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: PASS
Test performed by: ElectroMagnetic Investigations		
EUT requirement rule parts and clause	Reference	
	FCC 15.323(d) / IC RSS-213 5.8.2	
Test according to measurement reference	Reference Method	
	ANSI C63.17 6.1.6.1	
Tested frequencies	F_{low} / F_{high}	
Test frequency range	1920 – 1930 MHz	
Limits		
Frequency range [MHz]	Detector	Limit [dBc]
UPCS Band Edge to $(F_C - 3B)$	Peak	-60
$(F_C - 3B)$ to $(F_C - 2B)$	Peak	-50
$(F_C - 2B)$ to $(F_C - 1B)$	Peak	-30
$(F_C + 1B)$ to $(F_C + 2B)$	Peak	-30
$(F_C + 2B)$ to $(F_C + 3B)$	Peak	-50
$(F_C + 3B)$ to UPCS Band Edge	Peak	-60
B = emission / occupied bandwidth of selected channel F_C = Center frequency of selected channel		

Test results		
Channel	Frequency [MHz]	Verdict
F_{low}	1921.536	Pass
F_{Mid}	1924.992	Pass
F_{high}	1928.448	Pass
Comments:		

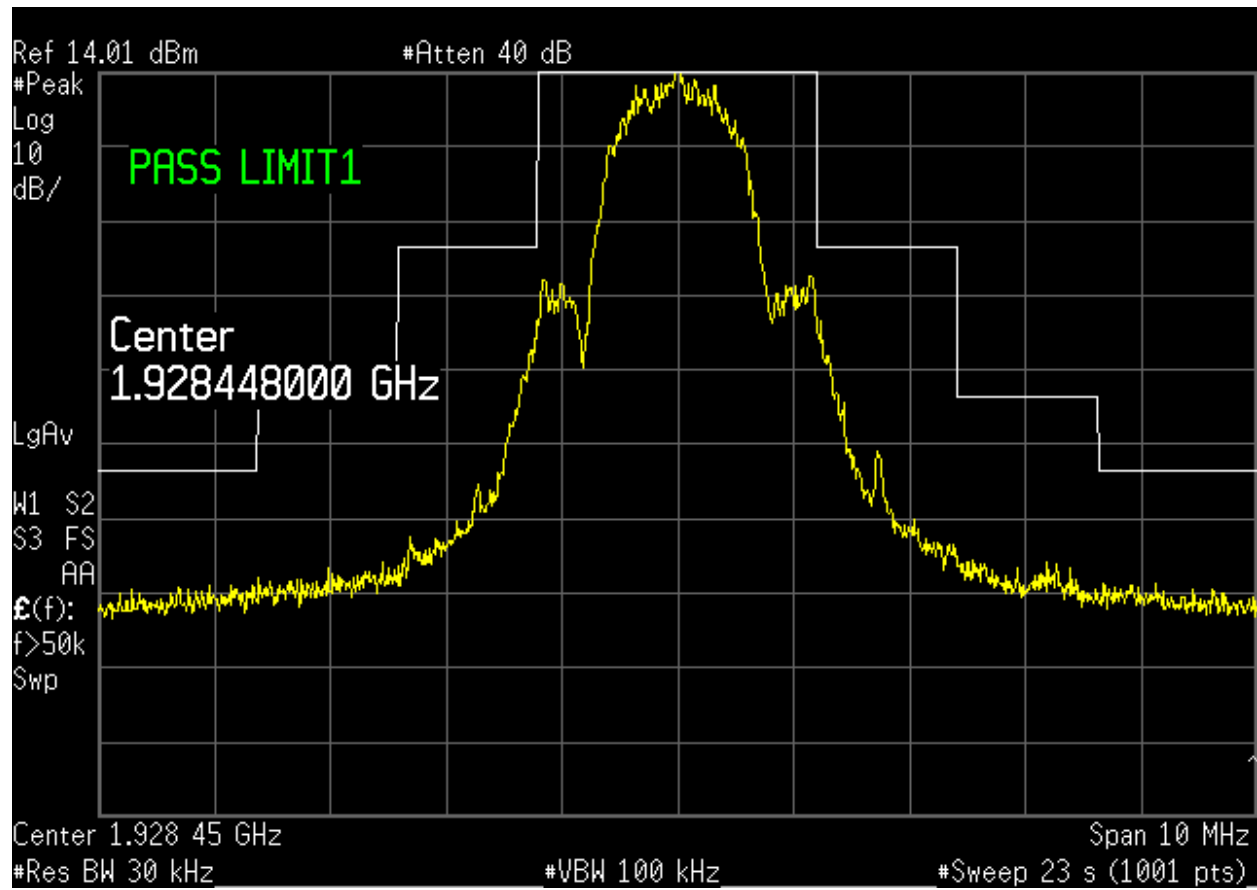
Flow



F_{MID}



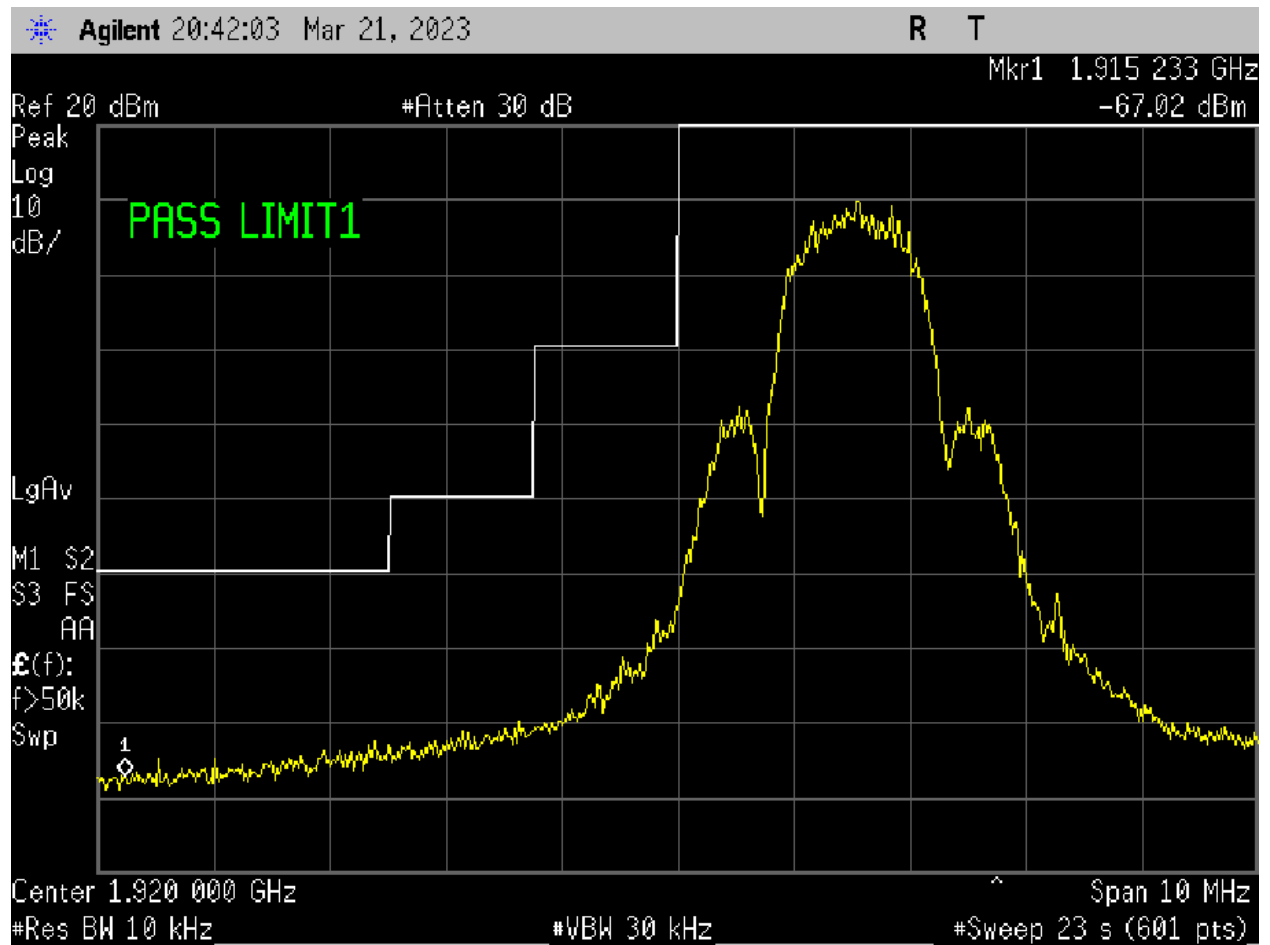
F_{HIGH}



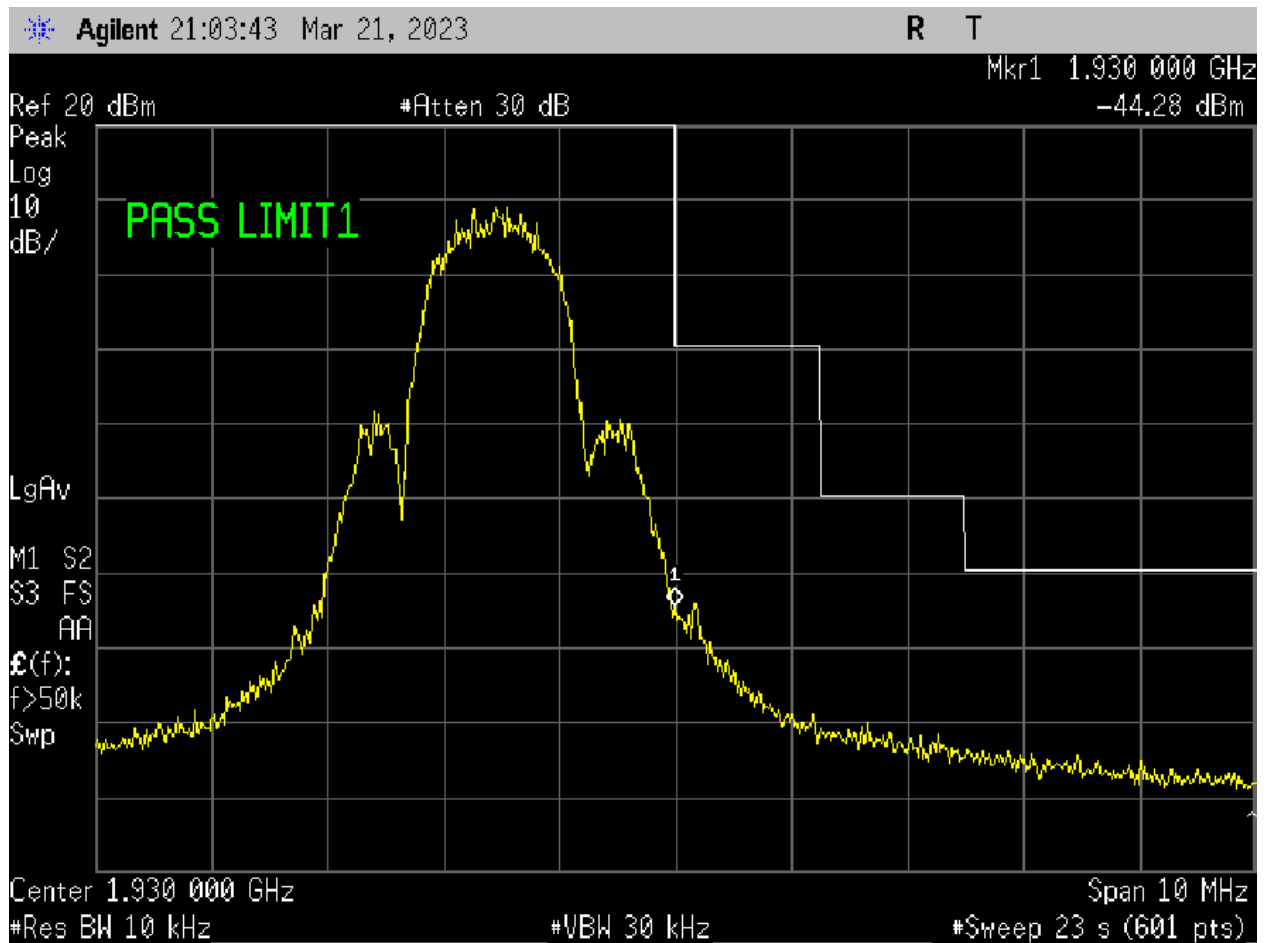
3.11 Test conditions and results – Transmitter out-of-band emissions

Out-of-band emissions acc. to FCC 47 CFR 15D / IC RSS-213			Verdict: PASS
Test performed by: ElectroMagnetic Investigations			
EUT requirement rule parts and clause		Reference	
		FCC 15.323(d) / IC RSS213 6.7.1	
Test according to measurement reference		Reference Method	
		ANSI C63.17 6.1.6	
Tested frequencies		F _{low} / F _{high}	
Test frequency range		30 MHz – 10 th Harmonic	
Limits			
Frequency range [MHz]	Detector	Limit	Limit Distance [meters]
30 – 88	Quasi-Peak	100 µV/m (40 dBµV/m)	3
88 – 216	Quasi-Peak	150 µV/m (43.5 dBµV/m)	3
216 – 960	Quasi-Peak	200 µV/m (46 dBµV/m)	3
960 – 1000	Quasi-Peak	500 µV/m (54 dBµV/m)	3
1000 – 1917.5	Average	500 µV/m (54 dBµV/m)	3
Below 1917.5	Peak	-39.5 dBm *	N/A
1917.5 - 1918.75	Peak	-29.5 dBm *	N/A
1918.75 – 1920	Peak	-9.5 dBm *	N/A
1930 – 1931.25	Peak	-9.5 dBm *	N/A
1931.25 – 1932.5	Peak	-29.5 dBm *	N/A
Above 1932.5	Peak	-39.5 dBm *	N/A
1932.5 - 20000	Average	500 µV/m (54 dBµV/m)	3
Radiated emissions which fall in the restricted bands, ad defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).			
When average radiated emission measurements are specified, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.			
*Measurement is performed with conducted measurement setup			
Comments: refer to Intertek test report 22110137HKG			
Internal antenna tested to supplement 22110137HKG report.			

Flow



F_{HIGH}



Antenna: integrated / Channel: 1

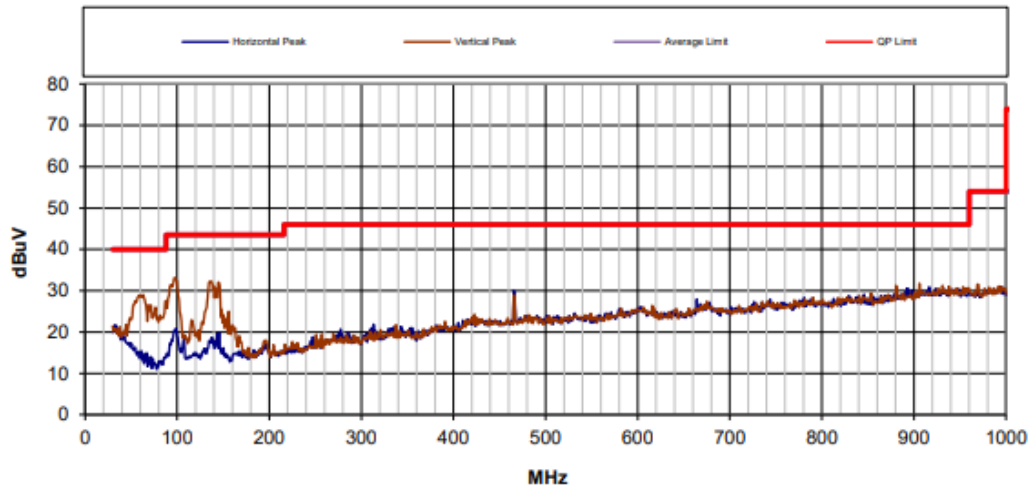


RADIATED EMISSIONS DATA SHEET

Revision 11
6/30/2021

Customer:	Sonetics Corporation	Job Reference#:	SON20220810
Contact:	Michael Barger	Date:	3/10/2023
DUT:	DECT Base Station Model SON151	Temperature (°C):	18.4
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart B Class B		
	N/A		
Test Standard:	FCC Part 15 Class B		

TEST RESULTS	TEST TYPE	DISTANCE	RUN #
Pass	Compliance	3 meters	1



COMMENTS SIGNATURE

Ant: Internal Chan: 1; *Ryan Benitez*

Horizontal								
Freq (MHz)	Peak (dBμV)	QP (dBμV)	Factors (dB)	Peak Limit (dBμV)	QP Limit (dBμV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
32.68	19.42	14.94	22.41	40.00	40.00	203°/400cm	20.58	25.06
995.28	29.06	24.35	31.48	53.98	53.98	-1°/257cm	24.92	29.63
Vertical								
Freq (MHz)	Peak (dBμV)	QP (dBμV)	Factors (dB)	Peak Limit (dBμV)	QP Limit (dBμV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
96.91	34.18	27.55	14.57	43.52	43.52	-1°/125cm	9.34	15.97
137.04	31.17	23.46	15.15	43.52	43.52	315°/100cm	12.35	20.06
905.64	28.36	23.53	30.92	46.02	46.02	203°/353cm	17.66	22.49



RADIATED EMISSIONS DATA SHEET

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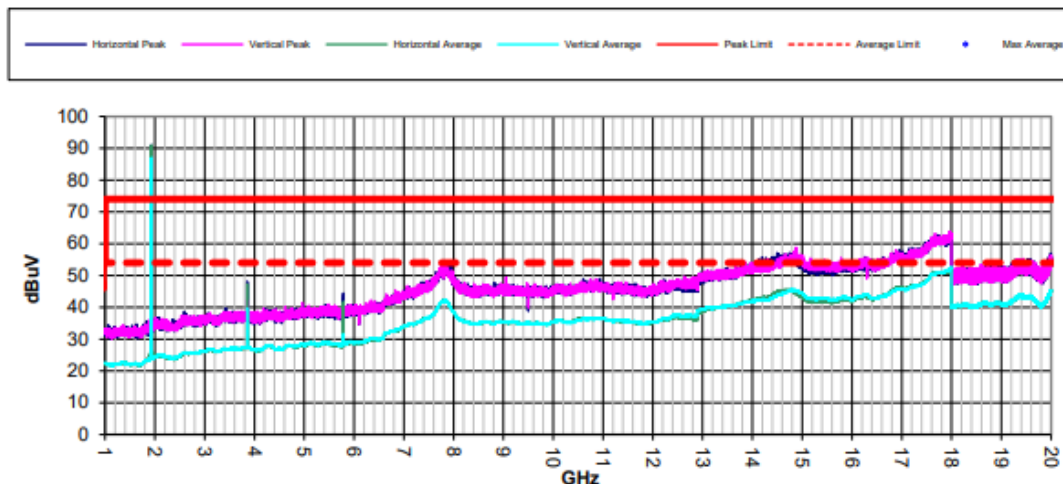
6/30/2021

Customer:	Sonetics Corporation	Job Reference#:	SON20220810
Contact:	Michael Barger	Date:	3/9/2023
DUT:	DECT Base Station Model SON151	Temperature (°C):	18.6
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro

TEST STANDARDS

Product Standard:	FCC Part 15 Subpart B Class B
Test Standard:	FCC Part 15 Class B

TEST RESULTS	TEST TYPE	Distance	RUN #
Pass	Compliance	3 meters	1

**COMMENTS****SIGNATURE**

Ant: internal; Chan: 1

Tabulated data

Freq (GHz)	Peak (dBμV)	Final (dBμV)	Peak Limit (dBmV)	Final Limit (dBμV)	Orientation	Peak Margin (dB)	Average Margin (dB)
1.928	91.045	91.021	73.98	53.98	Horizontal	N/A	N/A
3.856	48.14	47.311	73.98	53.98	Horizontal	25.84	6.669
3.858	48.137	47.272	73.98	53.98	Horizontal	25.843	6.708
4.958	46.012	44.136	73.98	53.98	Horizontal	27.968	9.844
5.786	44.956	41.775	73.98	53.98	Vertical	29.024	12.205
7.783	54.286	42.406	73.98	53.98	Horizontal	19.694	11.574
7.820	54.47	42.432	73.98	53.98	Horizontal	19.51	11.548
7.827	54.473	42.436	73.98	53.98	Horizontal	19.507	11.544
7.831	54.474	42.438	73.98	53.98	Horizontal	19.506	11.542
9.058	54.956	43.673	73.98	53.98	Horizontal	19.024	10.307
10.750	55.619	45.374	73.98	53.98	Horizontal	18.361	8.606
14.498	57.912	49.143	73.98	53.98	Vertical	16.068	4.837
14.881	58.858	49.528	73.98	53.98	Vertical	15.122	4.452
17.966	63.842	52.631	73.98	53.98	Vertical	10.138	1.349
17.976	63.514	52.641	73.98	53.98	Vertical	10.466	1.339

Antenna: integrated / Channel: 5

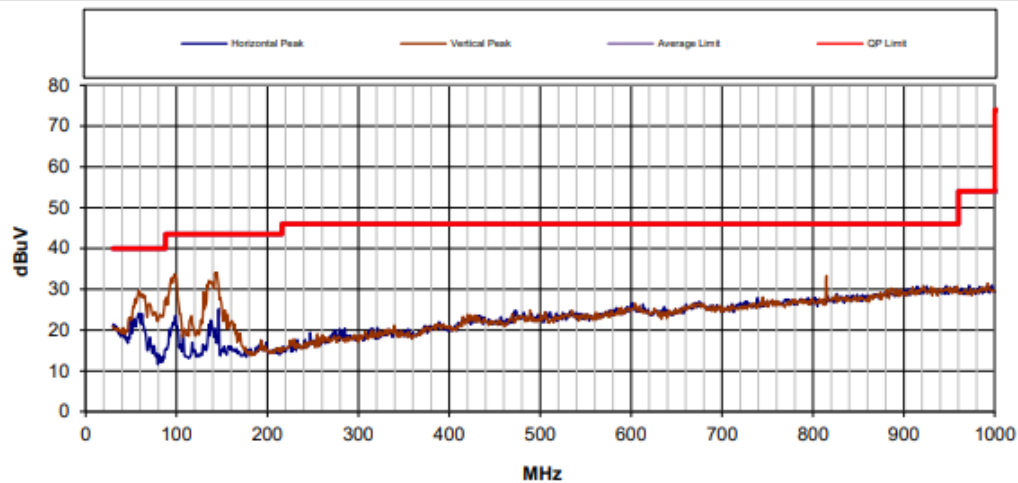


RADIATED EMISSIONS DATA SHEET

Revision 11
6/30/2021

Customer:	Sonetics Corporation	Job Reference#:	SON20220810
Contact:	Michael Barger	Date:	3/13/2023
DUT:	DECT Base Station Model SON151	Temperature (°C):	18.1
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart B Class B		
	N/A		
Test Standard:	FCC Part 15 Class B		

TEST RESULTS	TEST TYPE	DISTANCE	RUN #
Pass	Compliance	3 meters	3



COMMENTS SIGNATURE

Ant: Internal Chan: 5; *Ryan Benitez*

Horizontal								
Freq (MHz)	Peak (dBμV)	QP (dBμV)	Factors (dB)	Peak Limit (dBμV)	QP Limit (dBμV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
57.96	15.46	9.74	15.60	40.00	40.00	315°/101cm	24.54	30.26
98.68	17.08	12.67	14.77	43.52	43.52	316°/174cm	26.44	30.85
146.20	13.43	9.06	14.84	43.52	43.52	315°/100cm	30.09	34.46
996.74	27.46	24.51	31.50	53.98	53.98	118°/326cm	26.52	29.47
Vertical								
Freq (MHz)	Peak (dBμV)	QP (dBμV)	Factors (dB)	Peak Limit (dBμV)	QP Limit (dBμV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
97.92	34.36	27.84	14.68	43.52	43.52	0°/102cm	9.16	15.68
144.86	27.71	24.15	14.84	43.52	43.52	315°/102cm	15.81	19.37
814.89	27.16	21.62	29.72	46.02	46.02	96°/324cm	18.86	24.40



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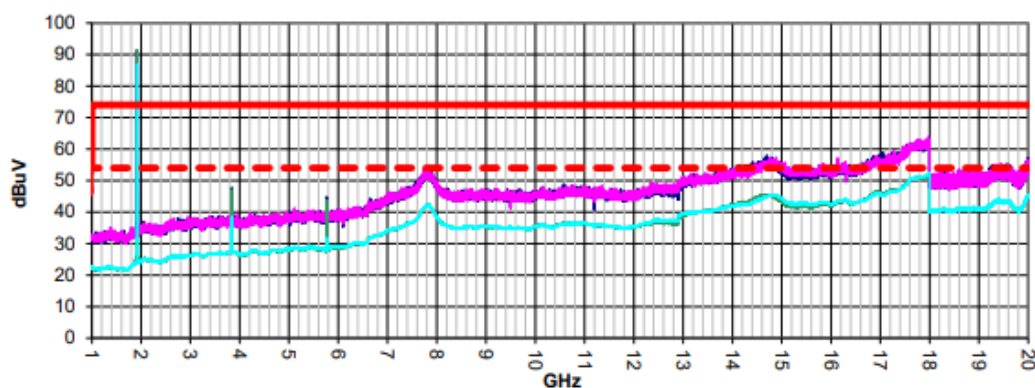
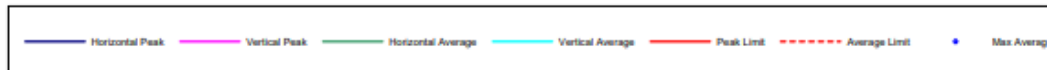
Customer:	Sonetics Corporation	Job Reference#:	SON20220810
Contact:	Michael Barger	Date:	3/9/2023
DUT:	DECT Base Station Model SON151	Temperature (°C):	18.6
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro

TEST STANDARDS

Product Standard: FCC Part 15 Subpart B Class B

Test Standard: FCC Part 15 Class B

TEST RESULTS	TEST TYPE	Distance	RUN #
Pass	Compliance	3 meters	1

**COMMENTS****SIGNATURE**

Ant: internal; Chan: 5

Tabulated data

Freq (GHz)	Peak (dBμV)	Final (dBμV)	Peak Limit (dBmV)	Final Limit (dBμV)	Orientation	Peak Margin (dB)	Average Margin (dB)
1.921	91.409	91.384	73.98	53.98	Horizontal	N/A	N/A
3.842	47.737	47.184	73.98	53.98	Horizontal	26.243	6.796
3.844	47.735	47.181	73.98	53.98	Horizontal	26.245	6.799
5.765	47.861	43.802	73.98	53.98	Vertical	26.119	10.178
7.739	53.726	42.552	73.98	53.98	Vertical	20.254	11.428
7.798	53.756	42.515	73.98	53.98	Vertical	20.224	11.465
7.819	53.767	42.502	73.98	53.98	Vertical	20.213	11.478
7.829	53.772	42.495	73.98	53.98	Vertical	20.208	11.485
10.571	55.169	45.09	73.98	53.98	Vertical	18.811	8.89
14.700	58.107	49.249	73.98	53.98	Horizontal	15.873	4.731
14.886	58.405	49.436	73.98	53.98	Horizontal	15.575	4.544
17.762	63.353	52.333	73.98	53.98	Vertical	10.627	1.647
17.971	63.788	52.544	73.98	53.98	Horizontal	10.192	1.436

3.12 Test conditions and results – Receiver spurious emissions

Receiver spurious emissions acc. to IC RSS-213				Verdict: PASS	
Test performed by: ElectroMagnetic Investigations					
EUT requirement rule parts and clause		Reference			
		IC RSS-GEN 7.3 / 8.9			
Test according to measurement reference		Reference Method			
		ANSI C63.4			
Tested frequencies		Scan (All)			
Test frequency range		30 MHz – 5 th Harmonic			
EUT test mode		Receive			
Limits					
Frequency range [MHz]		Detector	Limit [μV/m]	Limit [dBμV/m]	Limit Distance [meters]
30 – 88		Quasi-Peak	100	40	3
88 – 216		Quasi-Peak	150	43.5	3
216 – 960		Quasi-Peak	200	46	3
960 – 1000		Quasi-Peak	500	54	3
>1000		Average	500	54	3
Comments:					
*Physical distance between EUT and measurement antenna.					
**Emission level corresponds to ambient noise floor.					

Antenna: integrated / Channel 3



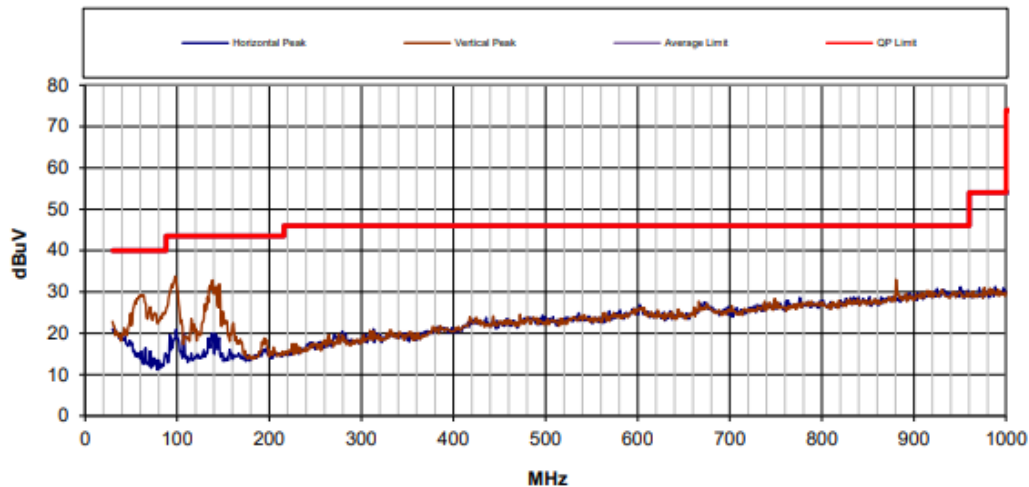
RADIATED EMISSIONS DATA SHEET

Revision 11

6/30/2021

Customer:	Sonetics Corporation	Job Reference#:	SON20220810
Contact:	Michael Barger	Date:	3/10/2023
DUT:	DECT Base Station Model SON151	Temperature (°C):	18.4
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart B Class B		
	N/A		
Test Standard:	FCC Part 15 Class B		

TEST RESULTS	TEST TYPE	DISTANCE	RUN #
Pass	Compliance	3 meters	2



COMMENTS

SIGNATURE

Ant: Internal Chan: 3;

Ryan Benitez

Horizontal

Freq (MHz)	Peak (dBuV)	QP (dBuV)	Factors (dB)	Peak Limit (dBuV)	QP Limit (dBuV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
988.30	28.09	24.35	31.51	53.98	53.98	94°/146cm	25.89	29.63

Vertical

Freq (MHz)	Peak (dBuV)	QP (dBuV)	Factors (dB)	Peak Limit (dBuV)	QP Limit (dBuV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
97.61	33.51	27.40	14.64	43.52	43.52	104°/100cm	10.01	16.12
138.52	31.99	23.62	15.08	43.52	43.52	-1°/100cm	11.53	19.90
880.64	27.95	25.92	30.44	46.02	46.02	260°/198cm	18.07	20.10



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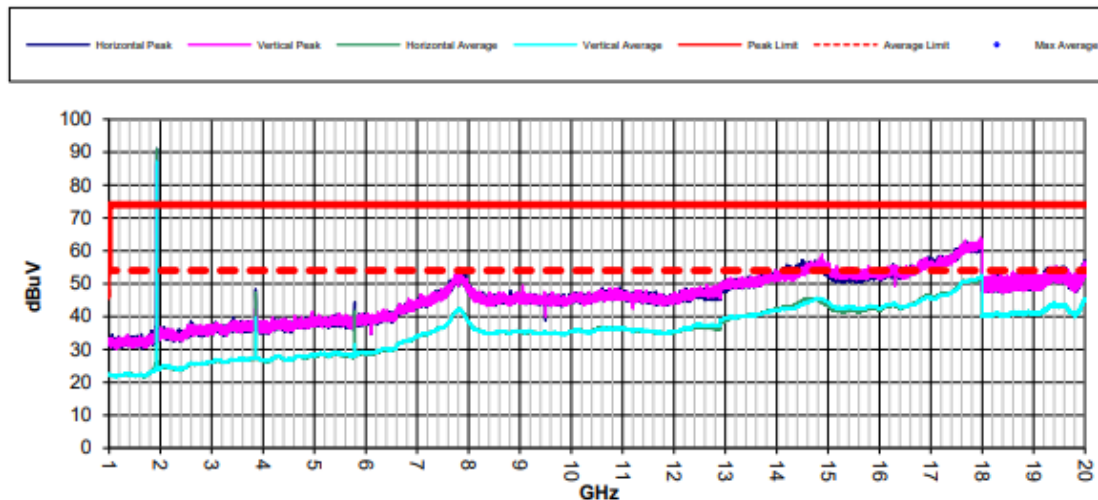
6/30/2021

Customer:	Sonetics Corporation	Job Reference#:	SON20220810
Contact:	Michael Barger	Date:	3/9/2023
DUT:	DECT Base Station Model SON151	Temperature (°C):	18.6
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro

TEST STANDARDS

Product Standard:	FCC Part 15 Subpart B Class B
Test Standard:	FCC Part 15 Class B

TEST RESULTS	TEST TYPE	Distance	RUN #
Pass	Compliance	3 meters	1

**COMMENTS****SIGNATURE**

Ant: internal; Chan: 3

Tabulated data

Freq (GHz)	Peak (dBuV)	Final (dBuV)	Peak Limit (dBmV)	Final Limit (dBuV)	Orientation	Peak Margin (dB)	Average Margin (dB)
1.928	91.045	91.021	73.98	53.98	Horizontal	N/A	N/A
3.856	48.14	47.311	73.98	53.98	Horizontal	25.84	6.669
3.858	48.137	47.272	73.98	53.98	Horizontal	25.843	6.708
4.958	46.012	44.136	73.98	53.98	Horizontal	27.968	9.844
5.786	44.956	41.775	73.98	53.98	Vertical	29.024	12.205
7.783	54.286	42.406	73.98	53.98	Horizontal	19.694	11.574
7.820	54.47	42.432	73.98	53.98	Horizontal	19.51	11.548
7.827	54.473	42.436	73.98	53.98	Horizontal	19.507	11.544
7.831	54.474	42.438	73.98	53.98	Horizontal	19.506	11.542
9.058	54.956	43.673	73.98	53.98	Horizontal	19.024	10.307
10.750	55.619	45.374	73.98	53.98	Horizontal	18.361	8.606
14.498	57.912	49.143	73.98	53.98	Vertical	16.068	4.837
14.881	58.858	49.528	73.98	53.98	Vertical	15.122	4.452
17.966	63.842	52.631	73.98	53.98	Vertical	10.138	1.349
17.976	63.514	52.641	73.98	53.98	Vertical	10.466	1.339



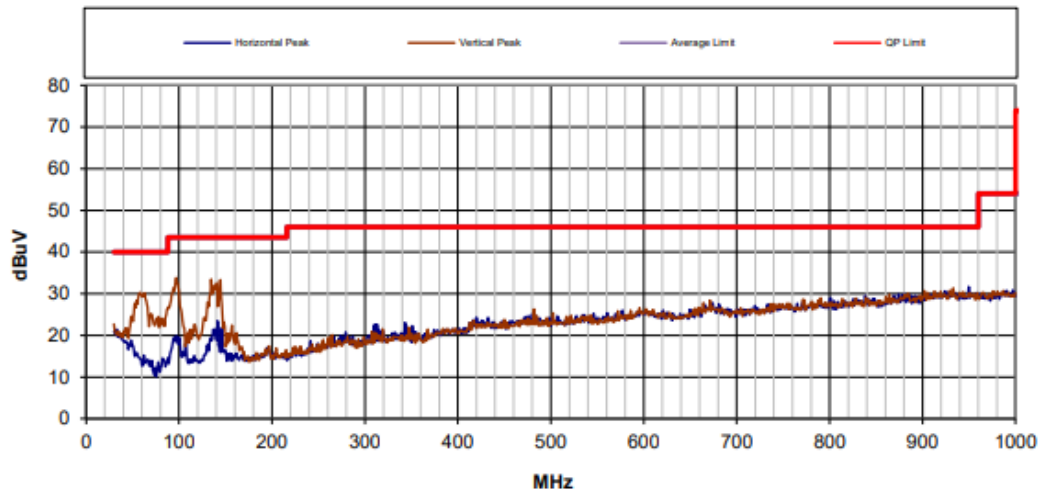
RADIATED EMISSIONS DATA SHEET

Revision 11

6/30/2021

Customer:	Sonetics Corporation	Job Reference#:	SON20220810
Contact:	Michael Barger	Date:	3/10/2023
DUT:	DECT Base Station Model SON151	Temperature (°C):	18.4
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart B Class B		
	N/A		
Test Standard:	FCC Part 15 Class B		

TEST RESULTS	TEST TYPE	DISTANCE	RUN #
Pass	Compliance	3 meters	2



COMMENTS						SIGNATURE			
Ant: Black Chan: 3;									
Horizontal									
Freq (MHz)	Peak (dBμV)	QP (dBμV)	Factors (dB)	Peak Limit (dBμV)	QP Limit (dBμV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)	
32.92	19.00	14.99	22.34	40.00	40.00	315°/400cm	21.00	25.01	
949.38	28.70	24.11	31.23	46.02	46.02	109°/400cm	17.32	21.91	
Vertical									
Freq (MHz)	Peak (dBμV)	QP (dBμV)	Factors (dB)	Peak Limit (dBμV)	QP Limit (dBμV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)	
96.98	33.06	27.06	14.58	43.52	43.52	113°/100cm	10.46	16.46	
134.53	28.50	23.12	15.33	43.52	43.52	248°/100cm	15.02	20.40	
932.88	28.67	24.28	31.50	46.02	46.02	185°/100cm	17.35	21.74	



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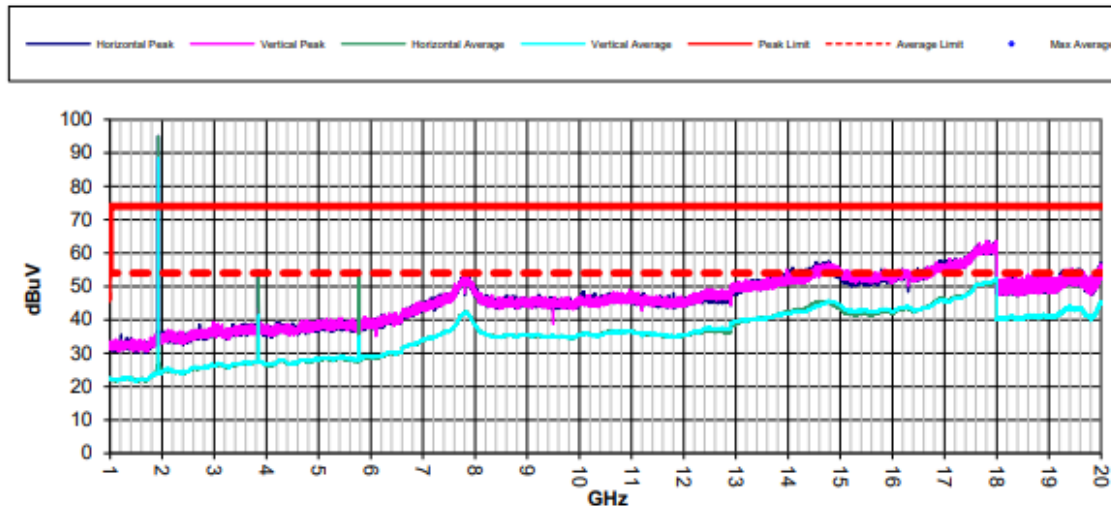
Customer:	Sonetics Corporation	Job Reference#:	SON20220810
Contact:	Michael Barger	Date:	3/10/2023
DUT:	DECT Base Station Model SON151	Temperature (°C):	18.4
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro

TEST STANDARDS

Product Standard: FCC Part 15 Subpart B Class B

Test Standard: FCC Part 15 Class B

TEST RESULTS	TEST TYPE	Distance	RUN #
Pass	Compliance	3 meters	1

**COMMENTS****SIGNATURE**

Ant: Black; Chan: 3	<i>Ryan Benitez</i>
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Tabulated data

Freq (GHz)	Peak (dBμV)	Final (dBμV)	Peak Limit (dBmV)	Final Limit (dBμV)	Orientation	Peak Margin (dB)	Average Margin (dB)
1.925	94.982	94.97	73.98	53.98	Horizontal	N/A	N/A
3.849	54.855	53.497	73.98	53.98	Horizontal	19.125	0.483
3.851	54.855	53.497	73.98	53.98	Horizontal	19.125	0.483
5.775	54.856	53.489	73.98	53.98	Horizontal	19.124	0.491
7.785	54.325	42.661	73.98	53.98	Vertical	19.655	11.319
7.802	54.295	42.561	73.98	53.98	Vertical	19.685	11.419
7.834	54.239	42.371	73.98	53.98	Vertical	19.741	11.609
7.839	54.23	42.375	73.98	53.98	Vertical	19.75	11.605
10.959	55.388	45.424	73.98	53.98	Horizontal	18.592	8.556
14.775	57.33	49.235	73.98	53.98	Horizontal	16.65	4.745
14.790	57.338	49.25	73.98	53.98	Horizontal	16.642	4.73
17.803	63.64	52.259	73.98	53.98	Vertical	10.34	1.721
17.833	63.588	52.289	73.98	53.98	Vertical	10.392	1.691

Antenna: TRA6927M3NW001 / Channel 3

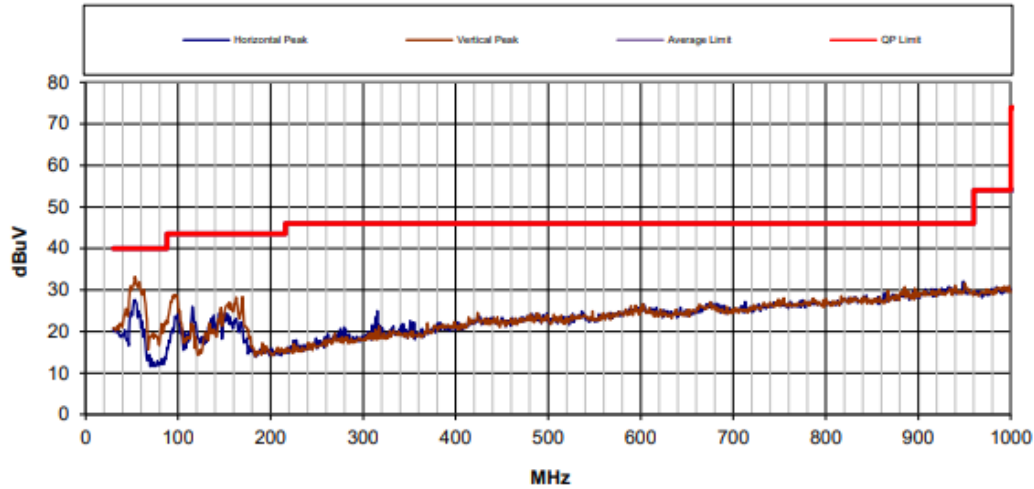


RADIATED EMISSIONS DATA SHEET

Revision 11
6/30/2021

Customer:	Sonetics Corporation	Job Reference#:	SON20220810
Contact:	Michael Barger	Date:	3/12/2023
DUT:	DECT Base Station Model SON151	Temperature (°C):	18.3
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart B Class B		
	N/A		
Test Standard:	FCC Part 15 Class B		

TEST RESULTS	TEST TYPE	DISTANCE	RUN #
Pass	Compliance	3 meters	2



COMMENTS						SIGNATURE		
Laird: Internal Chan: 3;								
Horizontal								
Freq (MHz)	Peak (dBµV)	QP (dBµV)	Factors (dB)	Peak Limit (dBµV)	QP Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
53.23	17.77	11.75	17.20	40.00	40.00	316°/100cm	22.23	28.25
115.59	23.38	17.31	15.82	43.52	43.52	37°/374cm	20.14	26.21
948.48	30.53	24.06	31.23	46.02	46.02	222°/200cm	15.49	21.96
Vertical								
Freq (MHz)	Peak (dBµV)	QP (dBµV)	Factors (dB)	Peak Limit (dBµV)	QP Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
53.67	33.61	26.86	17.06	40.00	40.00	248°/101cm	6.39	13.14
97.10	28.69	22.93	14.60	43.52	43.52	167°/149cm	14.83	20.59
169.57	28.01	19.55	15.73	43.52	43.52	157°/101cm	15.51	23.97
950.50	28.93	24.07	31.22	46.02	46.02	293°/212cm	17.09	21.95



RADIATED EMISSIONS DATA SHEET

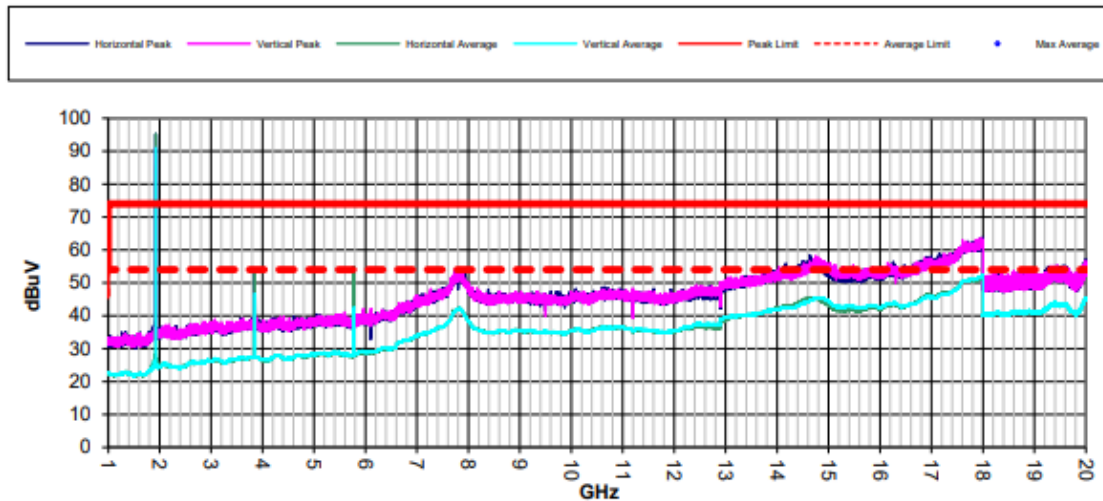
Revision 11
6/30/2021

Customer:	Sonetics Corporation	Job Reference#:	SON20220810
Contact:	Michael Barger	Date:	3/9/2023
DUT:	DECT Base Station Model SON151	Temperature (°C):	18.6
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro

TEST STANDARDS

Product Standard:	FCC Part 15 Subpart B Class B
Test Standard:	FCC Part 15 Class B

TEST RESULTS	TEST TYPE	Distance	RUN #
Pass	Compliance	3 meters	1



COMMENTS

SIGNATURE

Ant: Laird; Chan: 3	
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Tabulated data

Freq (GHz)	Peak (dBuV)	Final (dBuV)	Peak Limit (dBmV)	Final Limit (dBuV)	Orientation	Peak Margin (dB)	Average Margin (dB)
1.925	95.11	95.074	73.98	53.98	Horizontal	N/A	N/A
3.849	52.977	53.078	73.98	53.98	Horizontal	21.003	0.902
3.851	52.977	53.043	73.98	53.98	Horizontal	21.003	0.937
5.775	52.731	52.672	73.98	53.98	Horizontal	21.249	1.308
7.746	54.03	42.849	73.98	53.98	Vertical	19.95	11.131
7.822	53.899	42.39	73.98	53.98	Vertical	20.081	11.59
7.831	53.885	42.397	73.98	53.98	Vertical	20.095	11.583
7.832	53.882	42.399	73.98	53.98	Vertical	20.098	11.581
10.648	49.068	45.153	73.98	53.98	Vertical	24.912	8.827
11.193	48.685	45.7	73.98	53.98	Horizontal	25.295	8.28
12.436	49.351	46.947	73.98	53.98	Vertical	24.629	7.033
12.688	50.306	47.199	73.98	53.98	Vertical	23.674	6.781
14.636	58.375	49.154	73.98	53.98	Horizontal	15.605	4.826
14.753	58.562	49.271	73.98	53.98	Horizontal	15.418	4.709
17.918	63.608	52.447	73.98	53.98	Horizontal	10.372	1.533

3.13 Test conditions and results – Automatic discontinuation of transmission

Automatic discontinuation of transmission acc. to FCC 15D / RSS-213		Verdict: NOT PERFORMED
EUT requirement rule parts and clause	Reference	
	IC RSS-213 5.2	
Test according to measurement reference	Reference Method	
	ANSI C63.4	
EUT equipment type	Scan (All)	
Requirements		
The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. This is not intended to preclude transmission of control and signaling information or use of repetitive codes used by certain digital technologies to complete frame or burst intervals.		

Result		
Test	Reaction	Verdict
Power removed: EUT	NOT PERFORMED	NOT PERFORMED
Power removed: Companion device	NOT PERFORMED	NOT PERFORMED
Switch -off: EUT	NOT PERFORMED	NOT PERFORMED
Switch -off: Companion device	NOT PERFORMED	NOT PERFORMED
Hook-on: EUT	NOT PERFORMED	NOT PERFORMED
Hook-on: Companion device	NOT PERFORMED	NOT PERFORMED
Comments: Test not performed – refer to Intertek test report 22110137HKG		

3.14 Test conditions and results – Radiofrequency radiation exposure

Radiofrequency radiation exposure acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: N/A
Test performed by: ElectroMagnetic Investigations		
EUT requirement rule parts and clause	Reference	
	FCC 15.319(c)(i) / IC RSS-GEN 5.6	
Requirements		
FCC: Unlicensed PCS devices are subject to the radiofrequency radiation exposure requirements specified in §§1.1307(b), 2.1091 and 2.1093. All equipment shall be considered to operate in a “general population/uncontrolled” environment. Applications for equipment authorization of devices operating under this section must contain a statement confirming compliance with these requirements for both fundamental emissions and unwanted emissions. Technical information showing the basis for thus statement must be submitted to the Commission upon request.		
IC: Category I and Category II equipment shall comply with the applicable requirements of RSS-102.		
Result		
Reference		Verdict
RF Exposure is addressed in a separate exhibit.		N/A

3.15 Test conditions and results – Monitoring threshold

Monitoring threshold acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: NOT PERFORMED
EUT requirement rule parts and clause	Reference	
	FCC 15.323(c)(2),(5),(9) / IC RSS-213 4.3.4(b)(2),(5),(9)	
Test according to referenced standards	Reference Method	
	ANSI C63.17 7.3.4	
Number of duplex channels used	5 carrier with 12 duplex timeslots = 60 duplex channels	
Requirements		
The monitoring threshold must not be more than 30 dB above the thermal noise power (KTB) of a bandwidth equivalent to the emission/occupied bandwidth of the device.		
Devices that have a power output lower than the maximum permitted under this standard may increase their detection threshold by 1 dB for each 1 dB that the transmitter power is below the maximum permitted.		
IC: If access to spectrum is not available as determined by the above, a minimum of 40 duplex system access channels are defined for the system, the time and spectrum windows with a power level below a monitoring threshold of 50 dB above the terminal noise power determined for the occupied bandwidth may be accessed.		
$T_u[\text{dBm}] = -174 + 10 * \log_{10}(\text{Bandwidth [Hz]}) M_U + P_{\text{MAX}}[\text{dBm}] - P_{\text{EUT}}[\text{dBm}]$ $T_l[\text{dBm}] = -174 + 10 * \log_{10}(\text{Bandwidth [Hz]}) M_L + P_{\text{MAX}}[\text{dBm}] - P_{\text{EUT}}[\text{dBm}]$		
With $M_U = 50$ dB and $M_L = 30$ dB, P_{MAX} as given under “Peak transmit power” and bandwidth as emission or occupied bandwidth. The power threshold limit is given by $T_U + U_M$ ($U_M = 6$ dB).		
Comments: Test not performed – refer to Intertek test report 22110137HKG		

3.16 Test conditions and results – LIC confirmation

LIC confirmation acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: NOT PERFORMED
EUT requirement rule parts and clause	Reference	
	FCC 15.323(c)(5) / IC RSS-213 4.3.4(b)(5)	
Test according referenced standards	Reference Method	
	ANSI C63.17 7.3.2	
Requirements		
A device utilizing the provisions of FCC 47 CFR 15.323(c)(5) / IC RSS-213(b)(5) must have monitored all access channels defined for its system within the last 10 seconds and must verify, within the 20 milliseconds (40 milliseconds for devices designed to use a 20 millisecond frame period) immediately preceding actual channel access, that the detected power of the selection time and spectrum windows is no higher than the previously detected value.		
Test Result		
Evaluation		Verdict
The requirement is verified using the “Monitoring time” and “LIC Selection” test.		NOT PERFORMED
Comments: Test not performed – refer to Intertek test report 22110137HKG		

3.17 Test conditions and results – LIC selection

LIC confirmation acc. to FCC 47 CFR 15D / IC RSS-213			Verdict: NOT PERFORMED
EUT requirement rule parts and clause	Reference		
	FCC 15.323(c)(5) / IC RSS-213 4.3.4(b)(5)		
Test according referenced standards	Reference Method		
	ANSI C63.17 7.3.3		
Requirements			
FCC: if access to spectrum is not available as determined by the above, and a minimum of 20 duplex system access channels are defined for the system, the time and spectrum windows with the lowest power levels may be accessed.			
IC: If access to spectrum is not available as determined by the above, and a minimum of 40 duplex system access channels are defined for the system, the time and spectrum windows with a power level below a monitoring threshold of 50 dB above the thermal noise power determined for the occupied bandwidth may be accessed.			
Test Result			
Interferer Level f_1	Interferer Level f_2	Communication channel	Verdict
$T_L + U_M + 7 \text{ dB}$	$T_L + U_M$	f_2	NOT PERFORMED
$T_L + U_M$	$T_L + U_M + 7 \text{ dB}$	f_1	NOT PERFORMED
$T_L + U_M + 1 \text{ dB}$	$T_L + U_M - 6 \text{ dB}$	f_2	NOT PERFORMED
$T_L + U_M - 6 \text{ dB}$	$T_L + U_M + 1 \text{ dB}$	f_1	NOT PERFORMED
Comments: T_L corresponds to the lower threshold power value			
Test not performed – refer to Intertek test report 22110137HKG			

3.18 Test conditions and results – Monitoring antenna

Monitoring antenna acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: NOT PERFORMED
EUT requirement rule parts and clause	Reference	
	FCC 15.319(c)(8) / IC RSS-213 (b)(8)	
Test according referenced standards	Reference Method	
	ANSI C63.17 4.6	
Monitoring antenna	The same as transmitting antenna	
Requirements		
The monitoring system shall use the same antenna used for transmission, or antenna that yields equivalent reception at the location.		

Results	
Connection status	Verdict
N/A (monitoring antenna identical to transmitting antenna)	NOT PERFORMED
Comments: Test not performed – refer to Intertek test report 22110137HKG	

3.19 Test conditions and results – Monitoring time

Monitoring Time acc. to FCC 47 CFR 15D / IC RSS-213			Verdict: NOT PERFORMED
EUT requirement rule parts and clause	Reference		
	FCC 15.323(c)(1) / IC RSS-213 4.3.4(b)(1)		
Test according referenced standards	Reference Method		
	ANSI C63.17 7.3.4		
Requirements			
Immediately prior to initiating transmission, devices must monitor the combined time and spectrum windows in which they intend to transmit for a period of at least 10 milliseconds for systems designed to use a 10 millisecond or shorter frame period or at least 20 milliseconds for systems designed to use a 20 millisecond frame period.			
Test results			
Initial transmit channel	Interferer level	Final transmit channel	Verdict
F ₂	0	F ₂	NOT PERFORMED
F ₂	T _U + U _M	F ₁	NOT PERFORMED
Comments: Test not performed – refer to Intertek test report 22110137HKG			

3.20 Test conditions and results – Monitoring bandwidth

Monitoring bandwidth acc. to FCC 47 CFR 15D / IC RSS-213			Verdict: NOT PERFORMED
EUT requirement rule parts and clause	Reference		
	FCC 15.323(c)(7) / IC RSS-213 4.3.4(b)(7)		
Test according referenced standards	Reference Method		
	ANSI C63.17 7.4		
Requirements			
The monitoring system bandwidth must be equal or greater than the emission bandwidth of the intended transmission.			
Test results			
Initial transmit channel	Interferer level	Transmission status	Verdict
F _{LOW} + 30% BW	T _U + U _M + 10 dB	None	NOT PERFORMED
F _{LOW} - 30% BW	T _U + U _M + 10 dB	None	NOT PERFORMED
F _{HIGH} + 30% BW	T _U + U _M + 10 dB	None	NOT PERFORMED
F _{HIGH} - 30% BW	T _U + U _M + 10 dB	None	NOT PERFORMED
Comments: Test not performed – refer to Intertek test report 22110137HKG			

3.21 Test conditions and results – Monitoring reaction time

Monitoring reaction time acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: NOT PERFORMED
EUT requirement rule parts and clause	Reference	
	FCC 15.323(c)(7) / IC RSS-213 4.3.4(b)(7)	
Test according referenced standards	Reference Method	
	ANSI C63.17 7.5	
Requirements		
The monitor shall have a maximum reaction time less than 50xSQRT (1.25/emission(occupied) bandwidth in MHz) microseconds for signal at the applicable threshold level but shall not be required to be less than 50 microseconds. If a signal is detected that is 6 dB or more above the applicable threshold level the maximum reaction time shall be 35xSQRT (1.25/emission(occupied) bandwidth in MHz) microseconds but shall not be required to be less than 35 microseconds.		

Test results
Test not performed – refer to Intertek test report 22110137HKG

3.22 Test conditions and results – Access criteria functional test

Access criteria functional test acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: NOT PERFORMED
EUT requirement rule parts and clause	Reference	
	FCC 15.323(c)(6) / IC RSS-213 4.3.4(b)(6)	
Test according referenced standards	Reference Method	
	ANSI C63.17 8.1.2 / 8.1.3	
Option implemented	No	
Requirements		
If the selected combined time and spectrum windows are unavailable the device may either monitor and select different windows or seek to use the same window after waiting an amount of time randomly chosen from a uniform distribution between 10 and 150 milliseconds commencing from the time when the channel becomes available.		

Test results – Access criteria functional test option not implemented				
Initial channel / timeslot	Interferer level	Final Channel / timeslot		Verdict
F ₁ / Slot 2	0	F ₁ / Slot 2		NOT PERFORMED
F ₁ / Slot 2	T _U + U _M	F ₁ / Slot 4		NOT PERFORMED
Test results – Access criteria functional test option implemented				
Minimum waiting time [ms]	Lower limit [ms]	Maximum waiting time [ms]	Upper limit [ms]	Verdict
N/A	10	N/A	150	NOT PERFORMED
Comments: Test not performed – refer to Intertek test report 22110137HKG				

3.23 Test conditions and results – Acknowledgements

Acknowledgements acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: NOT PERFORMED
EUT requirement rule parts and clause	Reference	
	FCC 15.323(c)(4) / IC RSS-213 4.3.4(b)(4)	
Test according to referenced standards	Reference Method	
	ANSI C63.17 8.2.1	
EUT can initiate a communication session	No	
Requirements		
Once access to specific combined time and spectrum windows is obtained an acknowledgement from a system participant must be received by the initial transmitter within one second or transmission muse cease. Periodic acknowledgements must be received at least every 30 seconds or transmission must cease.		

Test results		
Maximum initial transmission [s]	Transmission time limit [s]	Verdict
1.25	30	NOT PERFORMED
Maximum transmission time [s]	Transmission time limit [s]	Verdict
7.0	30	NOT PERFORMED
Comments: Test not performed – refer to Intertek test report 22110137HKG		

3.24 Test conditions and results – Maximum spectral occupancy

Maximum spectral occupancy acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: PASS
Test performed by: ElectroMagnetic Investigations		
EUT requirement rule parts and clause	Reference	
	FCC 15.323(c)(5) / IC RSS-213 4.3.4(b)(5)	
Test according to referenced standards	Reference Method	
	Customer declaration	
Requirements		
Once access to specific combined time and spectrum windows is obtained an acknowledgement from a system participant must be received by the initial transmitter within one second or transmission muse cease. Periodic acknowledgements must be received at least every 30 seconds or transmission must cease.		
Test result		
Evaluation		Verdict
According to the technical documentation the total number of time and spectrum windows is: 5 x 12 = 60 According to customer declaration the total number of concurrent time and spectrum windows is: 12 The number of concurrent allocated time and spectrum windows is less than one third of the total time and spectrum windows of the EUT		PASS
Comments:		

3.25 Test conditions and results – Fair access

Fair access acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: PASS
Test performed by: ElectroMagnetic Investigations		
EUT requirement rule parts and clause	Reference	
	FCC 15.323(c)(11) / IC RSS-213 4.3.4(b)(11)	
Test according to measurement reference	Reference Method	
	Customer declaration	
Requirements		
The provisions of FCC 47 CFR 15.323(c)(10), IC RSS-213(b)(10) or FCC 47 CFR 15.323(c)(11), IC RSS – 213(b)(11) shall not be used to extend the range of spectrum occupied over space or time for the purpose of denying fair access to spectrum to other devices.		
Declaration		
The manufacturer declares that the device does not work in a mode which denies fair access to spectrum for other participants.		

3.26 Test conditions and results – Frame period and jitter

Frame period and jitter acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: NOT PERFORMED
EUT requirement rule parts and clause	Reference	
	FCC 15.323(e)(1),(4) / IC RSS-213 4.3.4(c)(1),(4)	
Test according to referenced standards	Reference Method	
	ANSI C63.17 6.2.3	
Requirements		
The frame period (a set of consecutive time slots in which the position of each time slot can be identified by reference to a synchronizing source) of an intentional radiator operating in the sub-band shall be 20 milliseconds/X where X is a positive whole number.		
The jitter (time-related, abrupt, spurious variations in the duration of the duration of the frame interval) introduced at the two ends of a communication link shall not exceed 25 microseconds for any two consecutive transmissions.		
Test results – Frame period		
Mean value [ms]	Divider X (10 ms/X)	Verdict
10 – 0.000095 = 9.999905	1	NOT PERFORMED
Test results – Jitter		
Maximum difference between frames [µs]	Limit [µs]	Verdict
N/A	25 – 0.000095 = 24.999905	NOT PERFORMED
Comments: Test not performed – refer to Intertek test report 22110137HKG		

3.27 Test conditions and results – Frame and repetition stability

Frame and TDMA repetition stability acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: NOT PERFORMED	
EUT requirement rule parts and clause	Reference		
	FCC 15.323(e)(2),(3) / IC RSS-213 4.3.4(c)(2),(3)		
Test according referenced standards	Reference Method		
	ANSI C63.17 6.2.2		
Access scheme used	Time Division Multiple Access		
Requirements			
Each device that implements time division for the purpose of maintaining a duplex connection on a given frequency carrier shall maintain a frame repetition rate with a frequency stability of at least 50 parts per millions (ppm). Each device which further divides access in time in order to support multiple communication links on a given frequency carrier shall maintain a frame repetition rate with a frequency stability of at least 10 ppm.			
Test results			
Access scheme	Error [ppm]	Limit [ppm]	Verdict
Time Division Access	NOT PERFORMED	50	NOT PERFORMED
Time Division multiple Access	NOT PERFORMED	10	NOT PERFORMED
Comments: Test not performed – refer to Intertek test report 22110137HKG			

END OF REPORT