Application for Certification
For a Transmitter.

Icon Health & Fitness
1500 South 1000 West
West Logan, UT 84321

DTS Transmitter

M/N: SBACCEL

FCC ID: OMCSBACCEL
IC : 3673A-SBACCEL

REPORT # UT16043A-001

This report was prepared in accordance with the requirements of the FCC Rules and Regulations Part 2, Subpart J, 2.1033, Part 15.247, RSS-247 Issue 2, and other applicable sections of the rules as indicated herein.

Prepared By:

DNB Engineering, Inc.
1100 E Chalk Creek Road
Coalville, UT 84017

10 Nov 2020

TABLE OF CONTENTS

Paragraph numbers in this report follow the application section numbers found in the FEDERAL COMMUNICATIONS COMMISSION Rules and Regulations, Part 2, Subpart J for Certification of electronic equipment.

1.0 ADMINISTRATIVE DATA

1.1 Certifications and Qualifications

I certify that DNB Engineering, Inc conducted the tests performed in order to obtain the technical data presented in this application. Also, based on the results of the enclosed data, I have concluded that the equipment tested meets or exceeds the requirements of the Rules and Regulations governing this application.

1.2 Measurement Repeatability Information

The test data presented in this report has been acquired using the guidelines set forth in FCC Part 2.1031 through 2.1057, Part 15. The test results presented in this document are valid only for the equipment identified herein under the test conditions described. Repeatability of these test results will only be achieved with identical measurement conditions. These conditions include: The same test distance, EUT Height, Measurement Site Characteristics, and the same EUT System Components. The system must have the same Interconnecting Cables arranged in identical placement to that in the test set-up, with the system and/or EUT functioning in the identical mode of operation (i.e. software and so on) as on the date of the test. Any deviation from the test conditions and the environment on the date of the test may result in measurement repeatability difficulties.

All changes made to the EUT during the course of testing as identified in this test report must be incorporated into the EUT or identical models to ensure compliance with the FCC regulations.

C. L. Payne III (Para. 1.1)
Facility Manager
Coalville Facility.
DNB Engineering, Inc.
Tel. (435) 336-4433
FAX (435) 336-4436

1.3 Test Equipment List

TEST EQUIPMENT LIST - CONDUCTED EMISSIONS					
Description	**Manufacturer**	**Model No.**	**Asset #**	**Serial #**	**Cal Due**
LISN	Fisher Custom Communications	FCCLISN5032401	U-286	2020	03 Feb 2021
Spectrum Analyzer	Rhode & Schwarz	FSV30	U-248	101367	27 Aug 2021
TILE Software	ETS Lindgren	3.4.11.13	U-317	8112006	07 Mar 2021

TEST EQUIPMENT LIST - RADIATED EMISSIONS					
Description	**Manufacturer**	**Model No.**	**Asset #**	**Serial #**	**Cal Due**
Pre-Amplifier	Hewlett Packard	8447D	U-068	2727A06184	04 Aug 2021
Pre-Amplifier	DNB	S-21G	U-095	U-095-1	03 Feb 2021
BiConiLog Antenna	ETS - Lindgren	3142E	U-255	154973	03 Sep 2021
DRG Horn Antenna	AH Systems	SAS-571	U-071	417	11 Jul 2021
Spectrum Analyzer	Rhode & Schwarz	FSV30	U-248	101367	27 Aug 2021
TILE Software	ETS- Lindgren	3.4.11.13	U-317	8112006	07 Mar 2021

TEST EQUIPMENT LIST - ANTENNA CONDUCTED					
Description	**Manufacturer**	**Model No.**	**Asset #**	**Serial #**	**Cal Due**
Spectrum Analyzer	Rhode & Schwarz	FSV30	U-248	101367	27 Aug 2021

1.4 Test Summary Cross Reference

Test Item	FCC Requirement	IC Requirement	Test Method	Result
Antenna Requirement	15.203/15.247	RSS-Gen 6.8	---	Pass
Conducted Emissions (General Provisions)	15.207	RSS-Gen 8.8	ANSI C63.10-2013	N/A
Radiated Emissions (General Provisions)	15.209	RSS-Gen 8.9	ANSI C63.10-2013	Pass
Output Power (DTS)	15.247 (b,2)	RSS-247 5.4 d)	ANSI C63.10-2013 Clause 11.9.1.1	Pass
Power Spectral Densisty	15.247 (e)	RSS-247 5.2 b)	ANSI C63.10-2013 Clause 11.10.2	Pass
Band-edge RF Conducted	15.247 (d)	RSS-247 5.5	ANSI C63.10-2013 Clause 11.13.2	Pass
DTS Bandwidth	15.247 (a,2)	RSS-247 5.2 a)	ANSI C63.10-2013 Clause 11.8.1	Pass
99% Occupied Bandwidth	N/A	RSS-Gen 6.7	ANSI C63.10 Clause 6.9.3	Pass
Conducted Spurious	15.247 (d)	RSS-247 5.5	ANSI C63.10-2013 Clause 11.11.3	Pass
Radiated Spurious Emissions	15.247 (d)	RSS-247 5.5	ANSI C63.10-2013Clause 11.12.2.7	Pass
Restricted Bands	15.247 (d)	RSS-Gen 8.10	ANSI C63.10-2013 Clause 11.12.2	Pass

RSS-GEN Issue 5 Mar 2019
RSS-247 Issue 2 Feb 2017

Preliminary scans were performed to determine worst case modulation, packet length, and data rates. Only worst case data has been recorded within the body of the test report.

1.5 Measurement Uncertainty

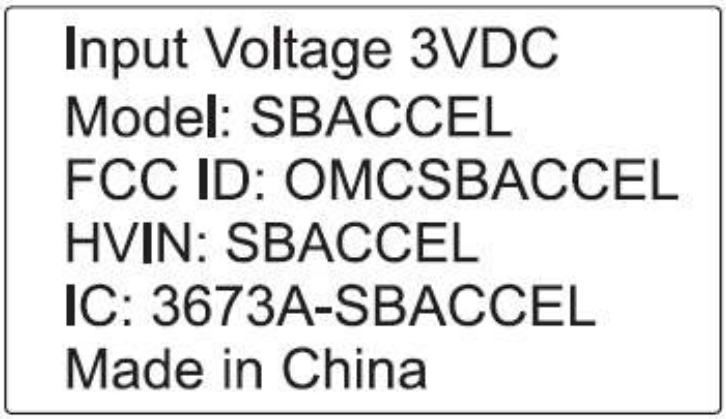
Measurement Type	Uncertainty
AC Conducted Emissions	± 1.67 dB
OATS - Radiated Emissions - Vertical Biconical (30-300MHz)	± 4.17 dB
OATS - Radiated Emissions - Horizontal Biconical (30-300MHz)	± 4.22 dB
OATS - Radiated Emissions - Vertical Log Periodic (300-100MHz)	± 4.92 dB
OATS - Radiated Emissions - Horizontal Log Periodic (300-1000MHz)	± 4.79 dB
OATS - Radiated Emissions - Vertical DRG Horn (> 1GHz)	± 5.74 dB
OATS - Radiated Emissions - Horizontal DRG Horn (>1GHz)	± 5.80 dB
Antenna Conducted Measurements	± 1.96 dB

2.1033 (b) (1) Application for Certification

Name of Applicant:	Icon Health & Fitness 1500 South 1000 West West Logan, UT 84321
FRN Number:	0009109950
Description:	DTS Transmitter
Model Number(s):	SBACCEL
Anticipated Production Quantity:	Multiple Units
Frequency Band:	2402 - 2480 MHz
Rated Power:	0.07 dBm (1mW)
Type of Signal:	Digital Transmission System (DTS)
Max Data Rate:	1Mpbs
Antenna Type:	Integral - Chip - Monopole
Antenna Gain:	1.3 dBi

2.1033 (b,2) FCC Identifier

Model Number: SBACCEL
FCC ID: OMCSBACCEL
IC: 3673A-SBACCEL
HVIN: SBACCEL



2.1033 (b,3)	Installation and Operating Instructions -	Supplied separately.
2.1033 (b,4)	Brief Description of Circuit Function -	Supplied separately.
2.1033 (b,5)	Block Diagram -	Supplied separately.
2.1033 (b,7)	Equipment Photographs -	Supplied separately.

2.1033 (b,6) Report of Measurements

15.203 Antenna Requirement

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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Pass - Antenna gain is equal to or less than 1.3dBi

Pass - Antenna is an integral monopole chip antenna

15.207 Conducted Emissions - Not Applicable - Battery Operated

15.209 Radiated Emissions (General Provisions)

Test Procedure: ANSI C63.10-2013

The EUT was measured on an open area test site (OATS).

A measuring distance of at least 3 m shall be used for measurements at frequencies up to 1 GHz. For frequencies above 1 GHz, any suitable measuring distance may be used. The equipment size (excluding the antenna) shall be less than 20 % of the measuring distance.

Sufficient precautions shall be taken to ensure that reflections from extraneous objects adjacent to the site do not degrade the measurement results, in particular:

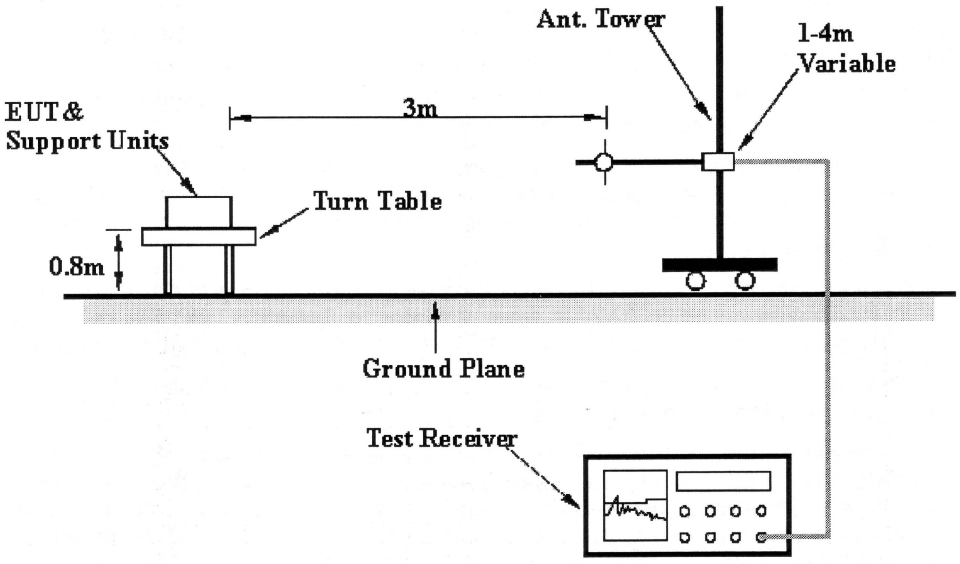
- no extraneous conducting objects having any dimension in excess of a quarter wavelength of the highest frequency tested shall be in the immediate vicinity of the site;

- all cables shall be as short as possible; as much of the cables as possible shall be on the ground plane or preferably below; and the low impedance cables shall be screened.

- EUT was positioned in three orthogonal axis - only the worst case data (X-Axis) has been recorded

The EUT shall be placed upon a non-conductive table (wooden for below 1GHz and styrene above 1GHz) 0.80 meters above the ground plane for frequencies from 30 to 1000MHz and 1.5 meters above the ground plane above 1 Ghz and shall be placed in the “worst case” transmitting mode. The EUT shall be rotated 360 degrees to find the azimuth maxima. The receive antenna shall then be raised and lowered between 1 to 4 meters to find the maximum signal emanating from the EUT. This signal strength is then recorded on the data sheets.

Frequency (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measurement Distance (meters)
.0009 - 0.490	2400/F(kHz)	$20*(Log_{10}(2400/F(kHz))$	300
0.490 - 1.705	24000/F(kHz)	$20*(Log_{10}(24000/F(kHz))$	30
1.705 - 30.0	30	29.5	30
30 - 88	100	40.0	3
88 - 216	150	43.5	3
216 - 960	200	46.0	3
Above 960	500	54.0	3


Ant. Tower
1-4m
Variable
EUT &
Support Units
3m
Turn Table
0.8m
Ground Plane
Test Receiver

1100 E Chalk Creek Road
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Radiated Emissions (General)

DNB Job Number:	16043	Date: 28 Sep 2020	Specification
Customer:	Icon Health & Fitness		[X] 15.209
Model Number:	SBACCEL		[X] ANSI C63.10-2013
Description:	DTS Transmitter		

EUT is in conformance with FCC 15.209	X	YES		NO	Signed	*Y Staples*

Radiated Emissions

FREQ (Mhz)	S/A Reading	Correction Factors (dB)			dBuV/m			Positions			
		Ant	Cbl	Amp	Corr	Lim	Delta	Typ	Tbl	Pl	Hgt
746.382	32.2	27.4	5.7	27.5	37.72	47	-9.28	QP	100	Horz	4.00
858.347	36.0	27.8	6.5	27.3	42.98	47	-4.02	QP	10	Horz	2.29
32.620	37.5	18.8	0.6	26.6	30.29	40	-9.71	QP	0	Vert	1.00
220.801	34.6	15.3	2.6	26.0	26.47	40	-13.53	QP	0	Vert	1.00
858.347	38.2	27.8	6.5	27.3	45.19	47	-1.81	QP	34	Vert	3.42
892.411	32.7	28.1	6.7	27.2	40.30	47	-6.70	QP	0	Vert	1.00
938.629	36.1	28.5	6.8	27.1	44.31	47	-2.69	QP	326	Vert	2.49

EUT was placed in the normal operating position.

11.9.1 Maximum peak conducted output power

11.9.1.1 RBW ≥ DTS bandwidth

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

a) Set the RBW ≥ DTS bandwidth.
b) Set VBW ≥ [3 × RBW].
c) Set span ≥ [3 × RBW].
d) Sweep time = auto couple.
e) Detector = peak.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use peak marker function to determine the peak amplitude level.

Requirement: FCC Part 15.247 Clause (b,3)

15.247 Operation within the bands 902-928 MHz.

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

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

Limit : 1 watt or 30dBm

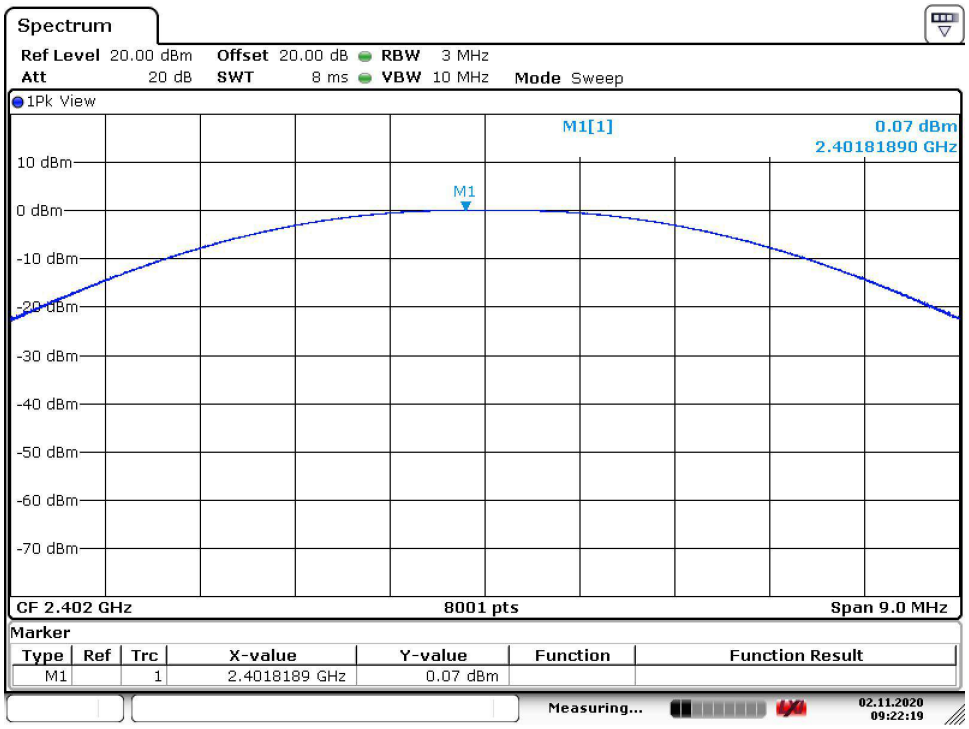
Client: Icon Health & Fitness | Date: 2 Nov 2020 | DNB Job: 16043

EUT: DTS Transmitter | Model No: SBACCEL

Requirement ≤ 1 Watt or 30dBm | Tech: CL Payne

Data Rate 1Mb/s

Low Channel: 2402 MHz | Power: 0.07 dBm | Result: Pass



Date: 2.NOV.2020 09:22:19

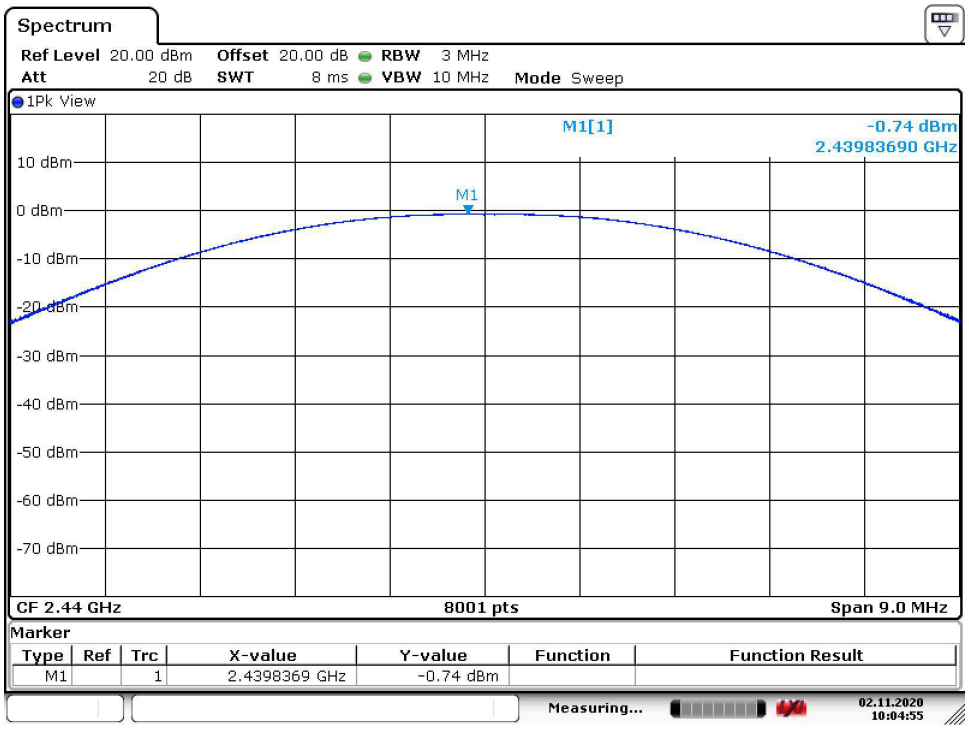
Client: Icon Health & Fitness | Date: 2 Nov 2020 | DNB Job: 16043

EUT: DTS Transmitter | Model No: SBACCEL

Requirement ≤ 1 Watt or 30dBm | Tech: CL Payne

Data Rate 1Mb/s

Mid Channel: 2440 MHz | Power: -0.74 dBm | Result: Pass



Date: 2.NOV.2020 10:04:56

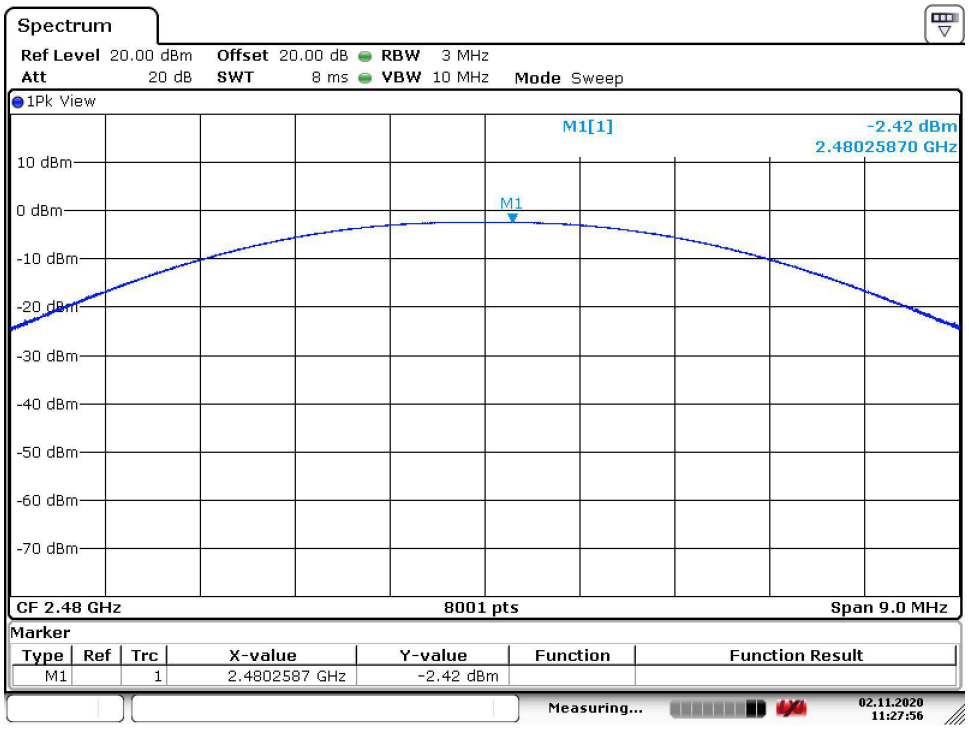
Client: Icon Health & Fitness | Date: 2 Nov 2020 | DNB Job: 16043

EUT: DTS Transmitter | Model No: SBACCEL

Requirement ≤ 1 Watt or 30dBm | Tech: CL Payne

Data Rate 1Mb/s

High Channel: 2480 MHz | Power: -2.42 dBm | Result: Pass



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15.247 (e) Power Spectral Density (PSD) ANSI C63.10-2013 Clause 11.10.2

Clause 11.10.2 Method PKPSD (peak PSD)

The following procedure shall be used if the maximum peak conducted output power was used to determine compliance, and it is optional if the maximum conducted (average) output power was used to determine compliance:

a) Set analyzer center frequency to DTS channel center frequency
b) Set the span to 1.5 times the DTS bandwidth
c) Set the RBW to 3 kHz ≤ RBW ≤ 100 kHz
d) Set the VBW ≥ [3 x RBW]
e) Detector = peak
f) Sweep time = auto couple
g) Trace mode = max hold
h) Allow trace to fully stabilize
i) Use the peak marker function to determine the maximum amplitude level within the RBW
j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat
k) Submit plots

Requirement: FCC Part 15.247 Clause (e)

15.247 Power Spectral Density.

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

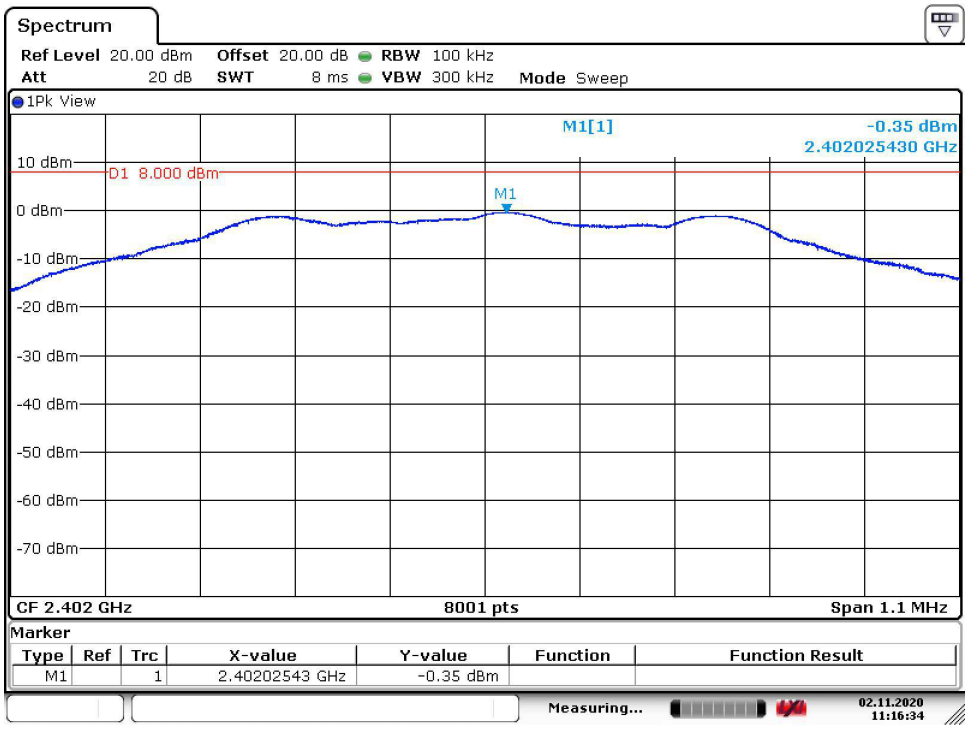
Client: Icon Health & Fitness | Date: 2 Nov 2020 | DNB Job: 16043

EUT: DTS Transmitter | Model No: SBACCEL

Requirement ≤ 8dBm | Tech: CL Payne

Data Rate 1Mb/s

Low Channel: 2402 MHz | Power: -0.35 dBm | Result: Pass



Date: 2.NOV.2020 11:16:34

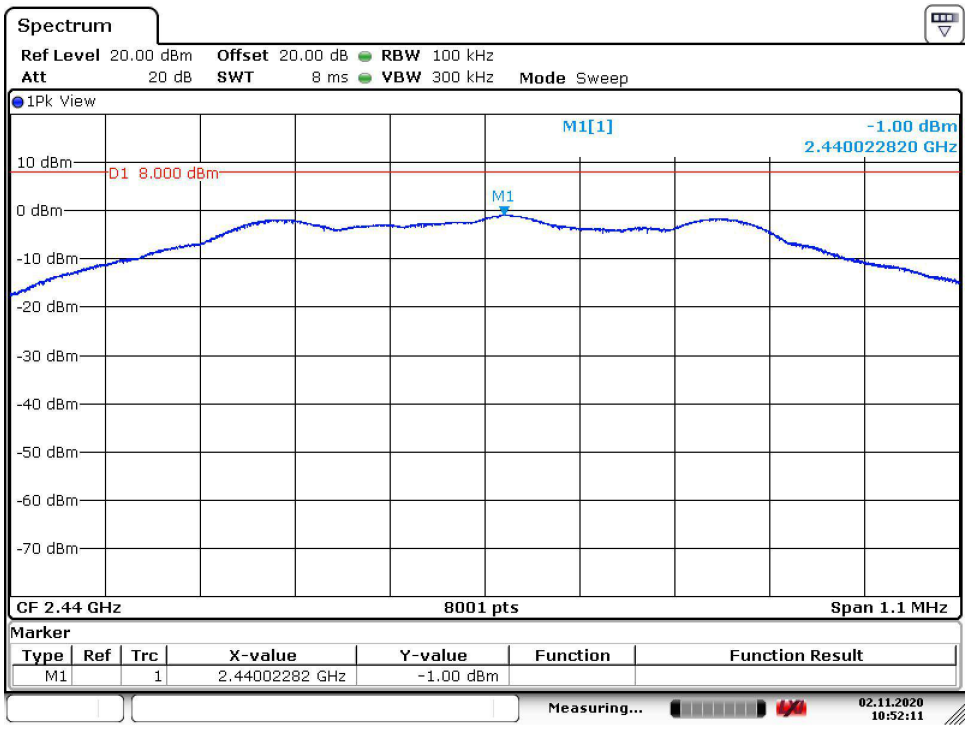
Client: Icon Health & Fitness | Date: 2 Nov 2020 | DNB Job: 16043

EUT: DTS Transmitter | Model No: SBACCEL

Requirement ≤ 8dBm | Tech: CL Payne

Data Rate 1Mb/s

Mid Channel: 2440 MHz | Power: -1.00 dBm | Result: Pass



Date: 2.NOV.2020 10:52:11

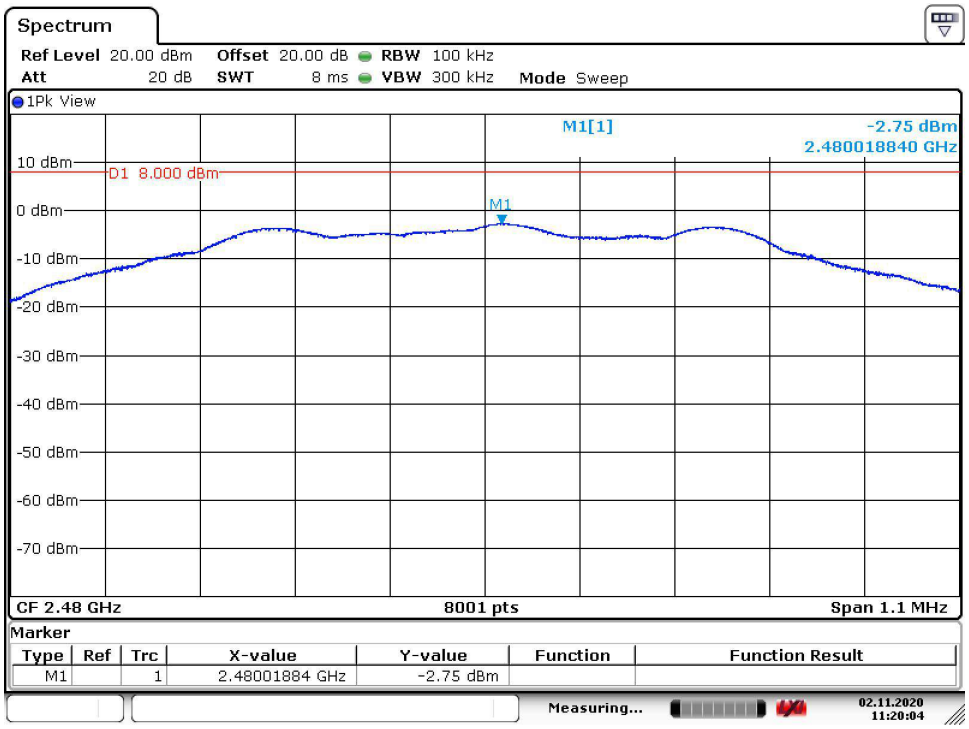
Client: Icon Health & Fitness | Date: 2 Nov 2020 | DNB Job: 16043

EUT: DTS Transmitter | Model No: SBACCEL

Requirement ≤ 8dBm | Tech: CL Payne

Data Rate 1Mb/s

High Channel: 2480 MHz | Power: -2.75 dBm | Result: Pass



Date: 2.NOV.2020 11:20:04

15.247 (d) Band-edge RF Conducted ANSI C63.10-2013 Clause 11.13.2

For band-edge measurements, use the band-edge procedure in 6.10. Band-edge measurements shall be tested both on single channels, and with the EUT hopping.

6.10 Band-edge testing

The following procedure shall be used when band-edge measurements are required.

6.10.1 Band-edge data reporting requirements

These reporting requirements are applicable to all devices for which band-edge measurements are required. On each operating frequency measured, band-edge emissions shall be reported by providing plots of the measuring instrument display. The axes, the scale units per division, and the limit shall be clearly labeled in the test report. Tabular data are not suitable for reporting band-edge emissions.

6.10.4 Authorized-band band-edge measurements (relative method)

These procedures are applicable for determining compliance at authorized-band band-edges where the requirements are expressed as a value relative to the in-band signal level.

For devices that support frequency hopping, this test sequence shall be performed twice: once with the hopping function turned OFF and then repeated with the hopping function turned ON.

a) Connect the EMI receiver or spectrum analyzer to the EUT using an appropriate RF cable connected to the EUT output. Configure the spectrum analyzer settings as described in step e) (be sure to enter all losses between the unlicensed wireless device output and the spectrum analyzer).

b) Set the EUT to the lowest frequency channel (for the hopping on test, the hopping sequence shall include the lowest frequency channel).

c) Set the EUT to operate at maximum output power and 100% duty cycle, or equivalent “normal mode of operation”.

d) Blank

e) Perform the test as follows:

    1) Span: Wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products that fall outside of the authorized band of operation.

15.247 (d) Band-edge RF Conducted *(continued)*

2) Reference level: As required to keep the signal from exceeding the maximum instrument input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

3) Attenuation: Auto (at least 10 dB preferred).

4) Sweep time: Coupled.

5) Resolution bandwidth: 100 kHz

6) Video bandwidth: 300 kHz

7) Detector: Peak.

8) Trace: Max hold.

f) Allow the trace to stabilize. For the test with the hopping function turned ON, this can take several minutes to achieve a reasonable probability of intercepting any emissions due to oscillator overshoot.

g) Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this level is greater than that at the band edge. Enable the marker-delta function, and then use the marker-to-peak function to move the marker to the peak of the in-band emission.

h) Repeat step c) through step e) for every applicable modulation.

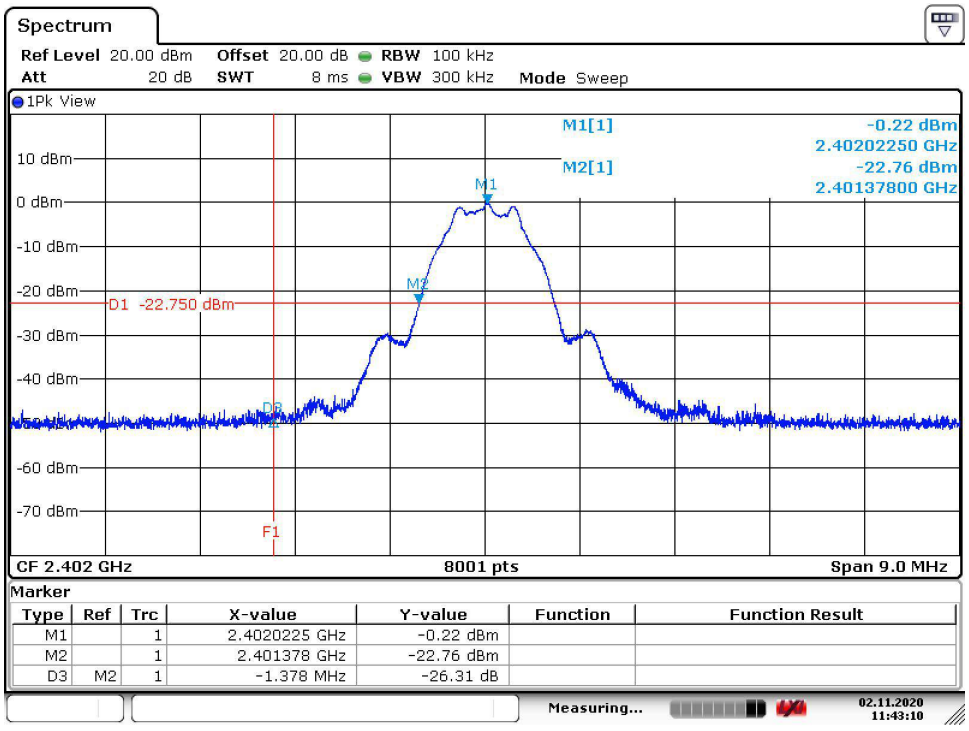
i) Set the EUT to the highest frequency channel (for the hopping on test, the hopping sequence shall include the highest frequency channel) and repeat step c) through step d).

j) The band-edge measurement shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

Requirement: FCC Part 15.247 Clause (d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Client: Icon Health & Fitness	Date: 2 Nov 2020	DNB Job: 16043
EUT: DTS Transmitter		Model No: SBACCEL
Requirement: Band-Edge Compliance (DTS)		Tech: CL Payne
Low Channel: 2402 MHz	Data Rate: 1Mb/s	Result: Pass



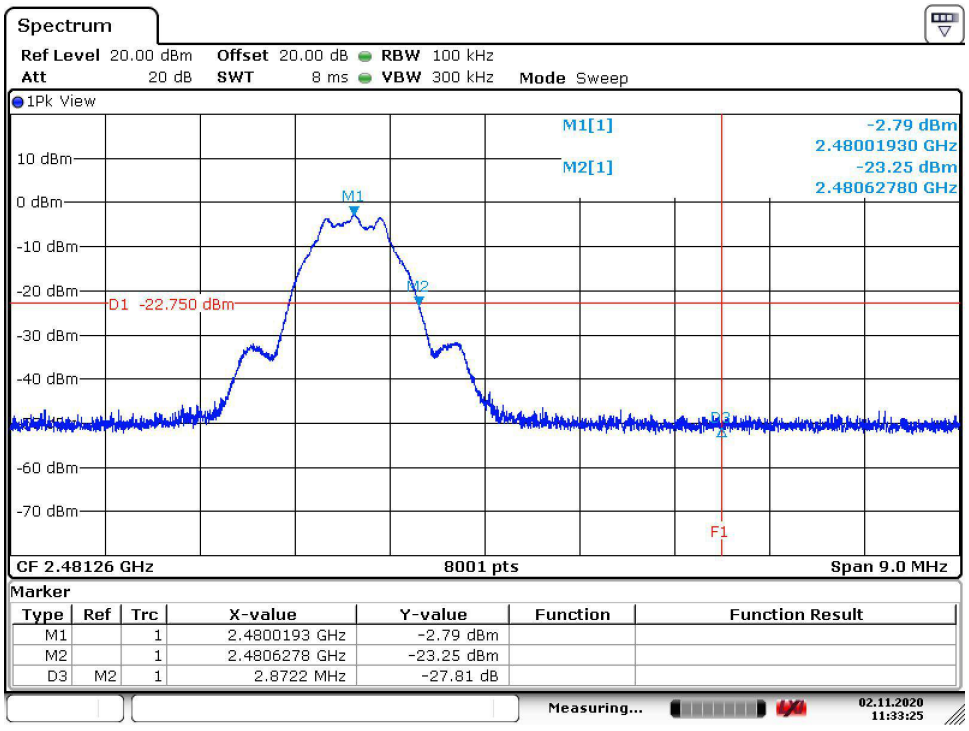
Date: 2.NOV.2020 11:43:10

Client: Icon Health & Fitness | Date: 2 Nov 2020 | DNB Job: 16043

EUT: DTS Transmitter | Model No: SBACCEL

Requirement: Band-Edge Compliance (DTS) | Tech: CL Payne

High Channel: 2480 MHz | Data Rate: 1Mb/s | Result: Pass



Date: 2.NOV.2020 11:33:25

15.247 (a,2) DTS Bandwidth ANSI C63.10-2013 Clause 11.8

DTS bandwidth measurement procedure

a) Set RBW = 100 kHz
b) Set the VBW ≥ [3 x RBW]
* per ANSI C63.10-2013 clause 6.9.2 Set the span to 2 to 5 times the OBW
c) Detector = peak
d) Trace mode = max hold
e) Sweep = auto couple
f) Allow trace to stabilize
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.
h) Submit this plot(s).

Requirement: FCC Part 15.247 Clause (a,2)

The 6 dB DTS bandwidth shall be greater than 500 kHz.

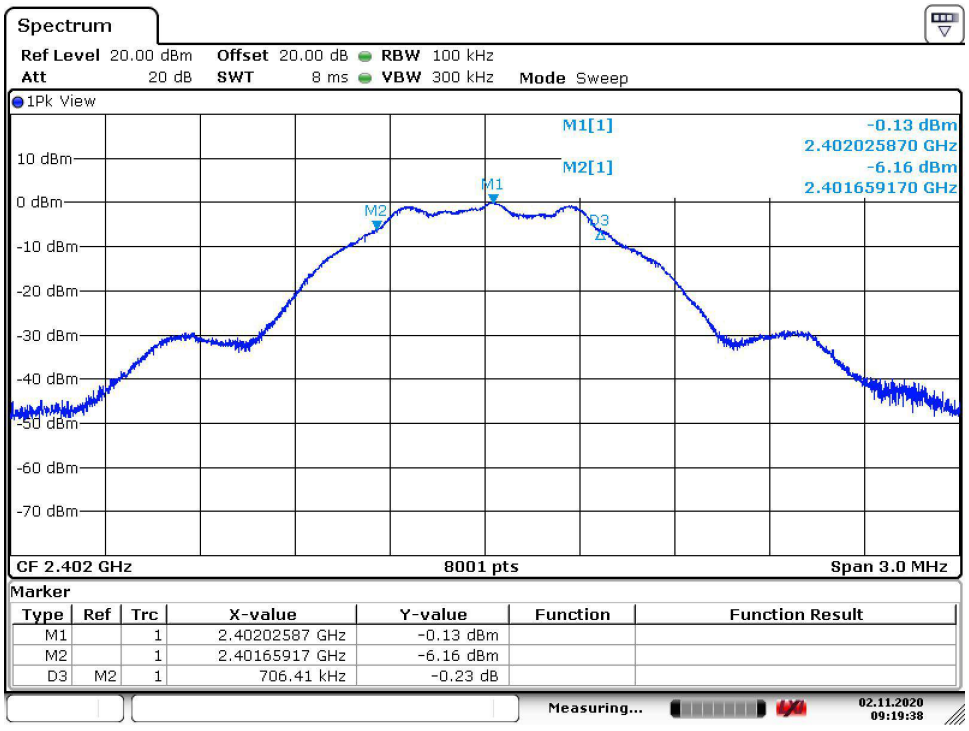
Client: Icon Health & Fitness Date: 2 Nov 2020 DNB Job: 16043

EUT: DTS Transmitter Model No: SBACCEL

Requirement: 6dB Bandwidth greater than 500kHz Tech: CL Payne

Data Rate: 1 Mb/s

Low Channel: 2402 MHz 6dB Bandwidth = 706.41 kHz Result: Pass



Date: 2.NOV.2020 09:19:39

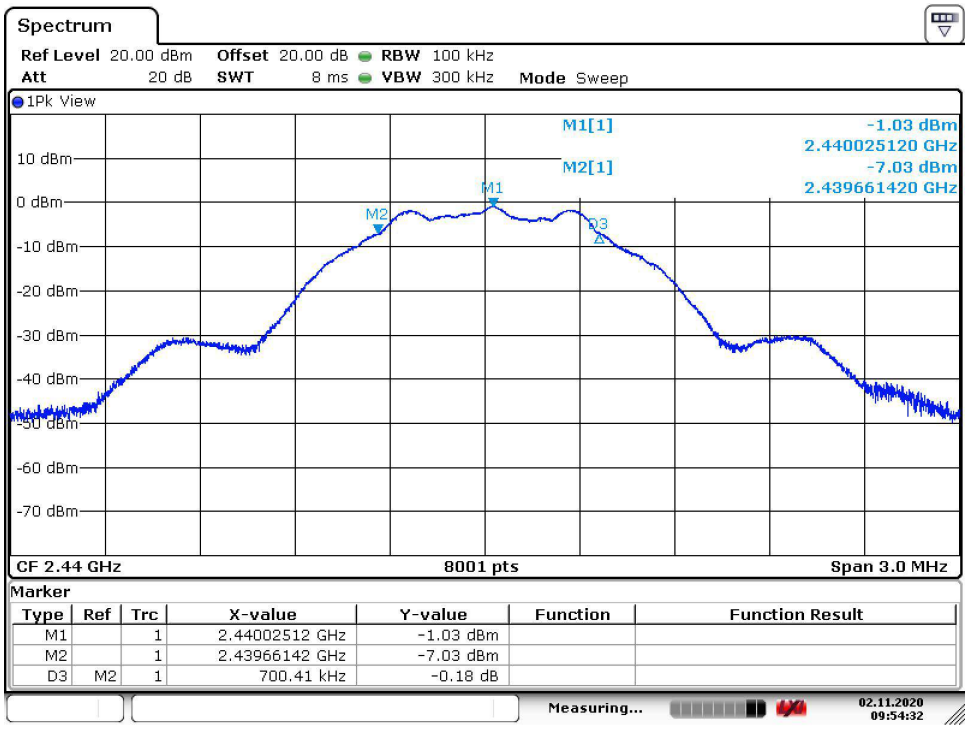
Client: Icon Health & Fitness | Date: 2 Nov 2020 | DNB Job: 16043

EUT: DTS Transmitter | Model No: SBACCEL

Requirement: 6dB Bandwidth greater than 500kHz | Tech: CL Payne

Data Rate: 1 Mb/s

Mid Channel: 2440 MHz | 6dB Bandwidth = 700.41 kHz | Result: Pass



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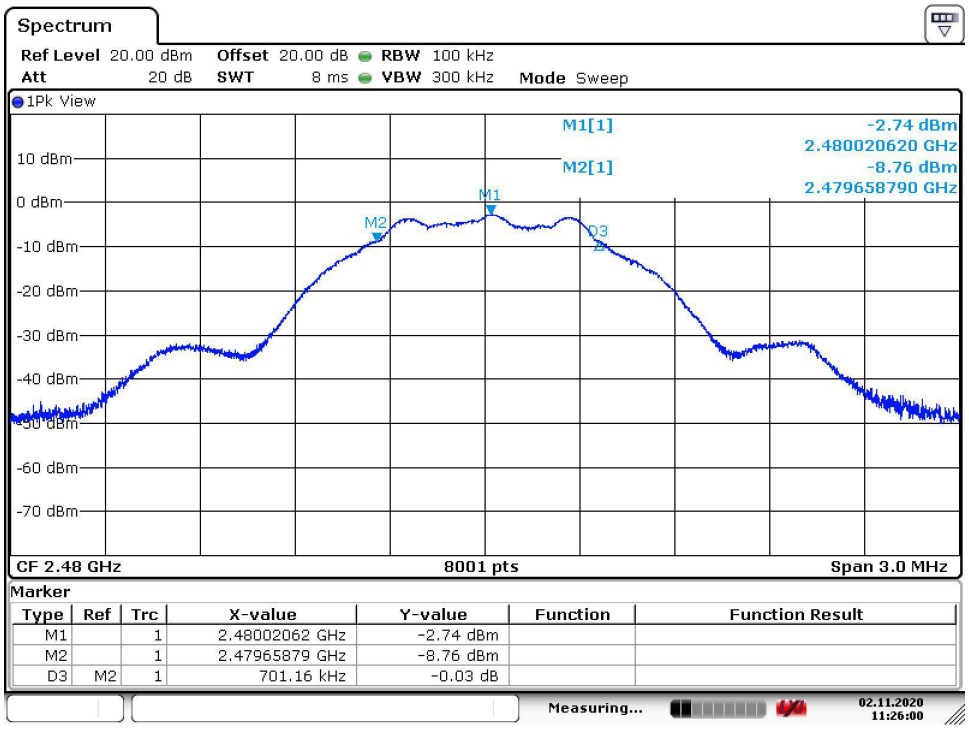
Client: Icon Health & Fitness | Date: 2 Nov 2020 | DNB Job: 16043

EUT: DTS Transmitter | Model No: SBACCEL

Requirement: 6dB Bandwidth greater than 500kHz | Tech: CL Payne

Data Rate: 1 Mb/s

High Channel: 2480 MHz | 6dB Bandwidth = 701.16 kHz | Result: Pass



Date: 2.NOV.2020 11:26:00

Occupied bandwidth—power bandwidth (99%) measurement procedure

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.

c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

d) Step a) through step c) might require iteration to adjust within the specified range.

e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

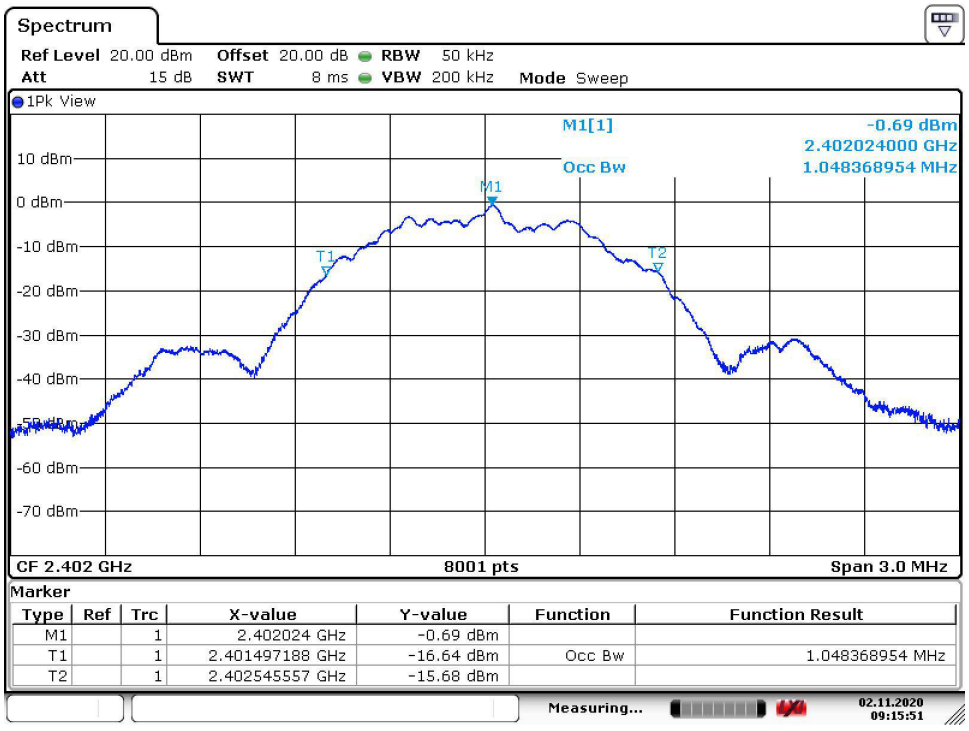
Client: Icon Health & Fitness | Date: 2 Nov 2020 | DNB Job: 16043

EUT: DTS Transmitter | Model No: SBACCEL

Requirement: 99% Occupied Bandwidth | Tech: CL Payne

Data Rate: 1 Mb/s

Low Channel: 2402 MHz | 99% Occupied Bandwidth = 1.048368954 MHz



Date: 2.NOV.2020 09:15:51

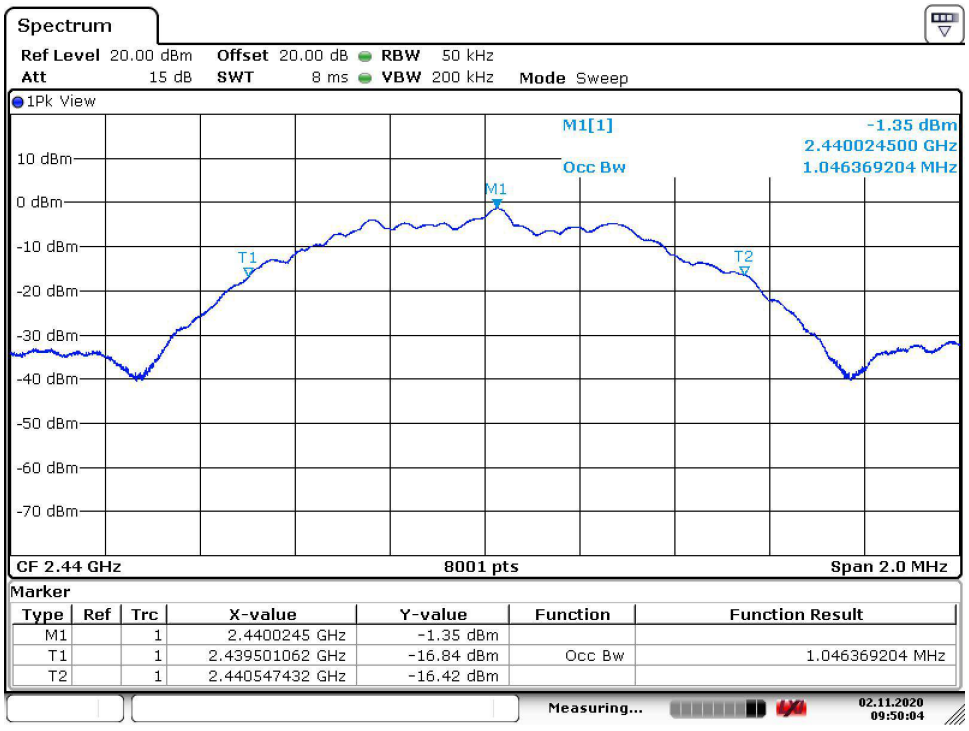
Client: Icon Health & Fitness | Date: 2 Nov 2020 | DNB Job: 16043

EUT: DTS Transmitter | Model No: SBACCEL

Requirement: 99% Occupied Bandwidth | Tech: CL Payne

Data Rate: 1 Mb/s

Mid Channel: 2440 MHz | 99% Occupied Bandwidth = 1.046369204 MHz



Date: 2.NOV.2020 09:50:04

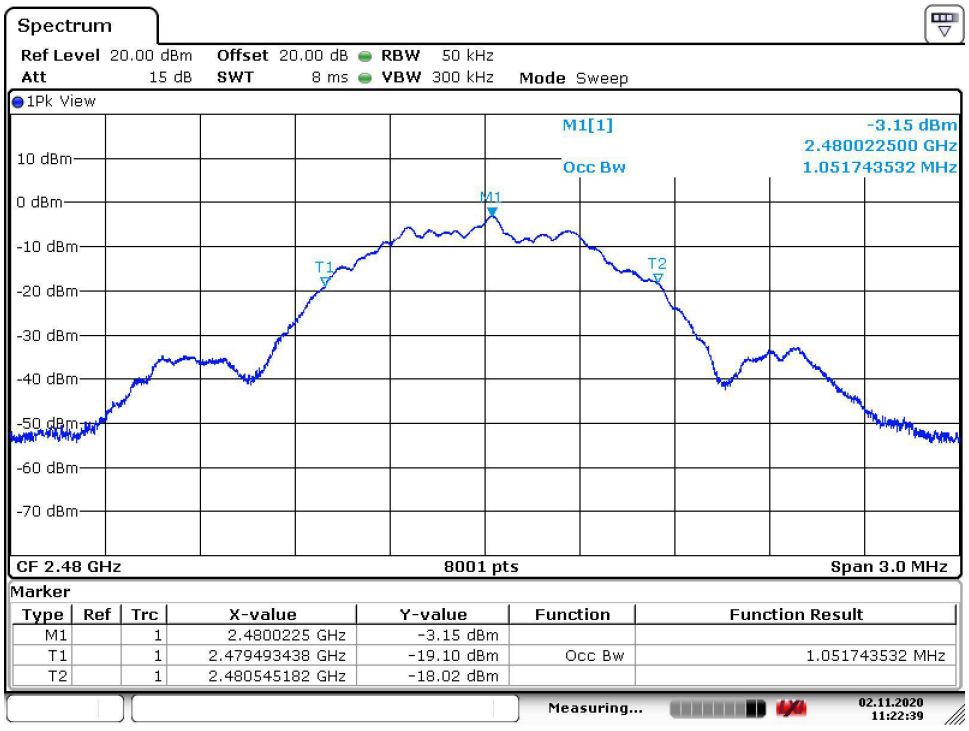
Client: Icon Health & Fitness | Date: 2 Nov 2020 | DNB Job: 16043

EUT: DTS Transmitter | Model No: SBACCEL

Requirement: 99% Occupied Bandwidth | Tech: CL Payne

Data Rate: 1 Mb/s

High Channel: 2480 MHz | 99% Occupied Bandwidth = 1.051743532 MHz



Date: 2.NOV.2020 11:22:39

15.247 (d) Conducted Spurious ANSI C63.10-2013 Clause 11.11.3

Conducted spurious emissions shall be measured for the transmit frequency, per 5.5 and 5.6, and at the maximum transmit powers.

Connect the primary antenna port through an attenuator to the spectrum analyzer input; in the results, account for all losses between the unlicensed wireless device output and the spectrum analyzer. The instrument shall span 30 MHz to 10 times the operating frequency in GHz, with a resolution bandwidth of 100 kHz, video bandwidth of 300 kHz, and a coupled sweep time with a peak detector. The band 30 MHz to the highest frequency may be split into smaller spans, as long as the entire spectrum is covered.

Requirement: FCC Part 15.247 Clause (d)

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Client: Icon Health & Fitness Date: 2 Nov 2020 DNB Job: 16043

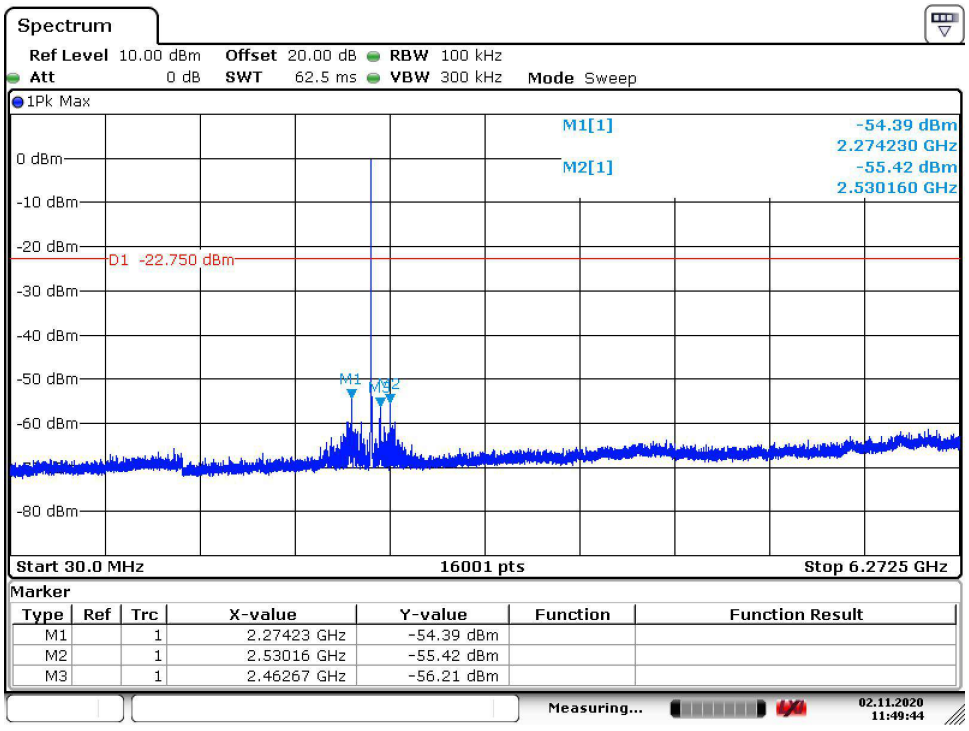
EUT: DTS Transmitter Model No: SBACCEL

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Data Rate: 1Mb/s Minimum PSD Reading = -2.75 dBm (Worst case)

Low Channel: 2402 MHz Requirement = -22.75 dBm Result: Pass

Frequency range: 30MHz to 6.2725GHz



Date: 2.NOV.2020 11:49:44

Client: Icon Health & Fitness Date: 2 Nov 2020 DNB Job: 16043

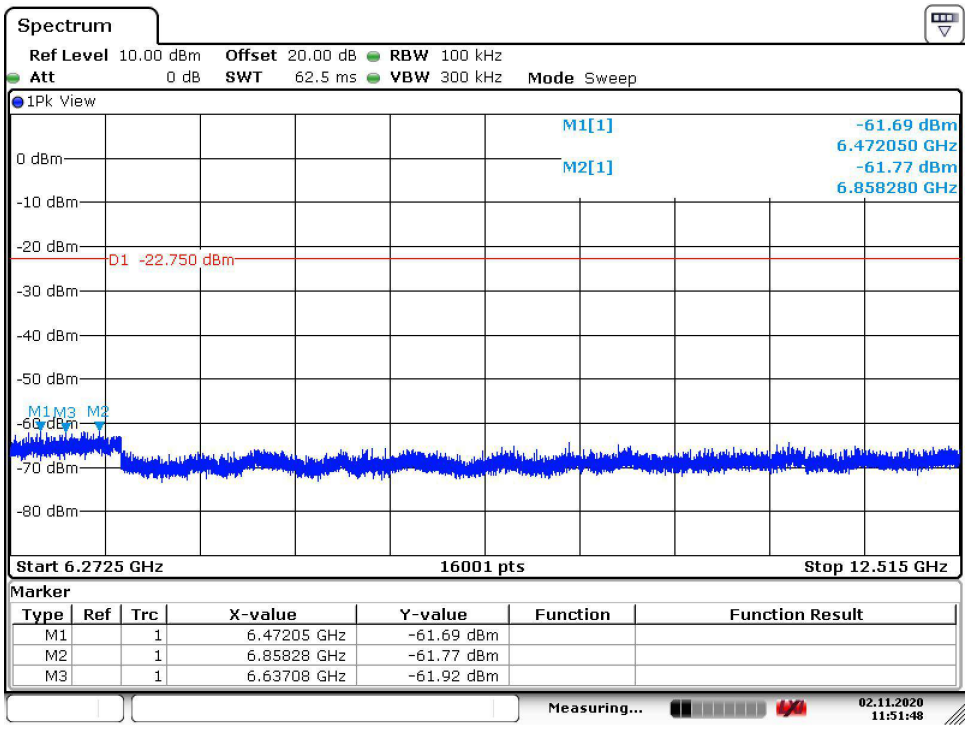
EUT: DTS Transmitter Model No: SBACCEL

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Data Rate: 1Mb/s Minimum PSD Reading = -2.75 dBm (Worst case)

Low Channel: 2402 MHz Requirement = -22.75 dBm Result: Pass

Frequency range: 6.2725GHz to 12.515GHz



Date: 2.NOV.2020 11:51:48

Client: Icon Health & Fitness Date: 2 Nov 2020 DNB Job: 16043

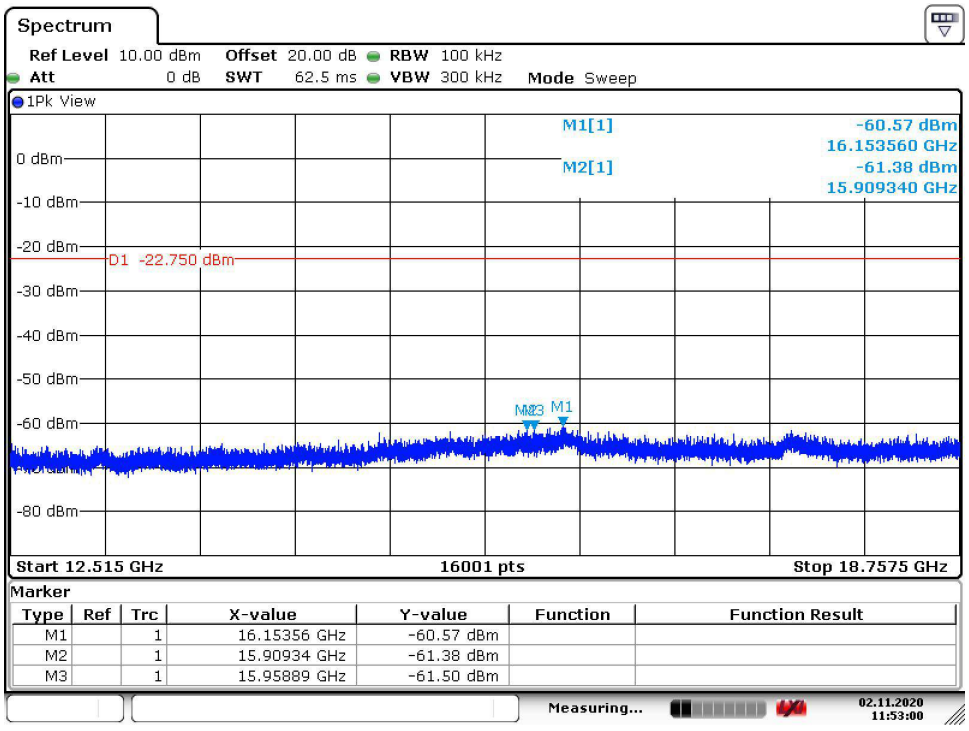
EUT: DTS Transmitter Model No: SBACCEL

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Data Rate: 1Mb/s Minimum PSD Reading = -2.75 dBm (Worst case)

Low Channel: 2402 MHz Requirement = -22.75 dBm Result: Pass

Frequency range: 12.515GHz to 18.7575GHz



Date: 2.NOV.2020 11:53:00

Client: Icon Health & Fitness Date: 2 Nov 2020 DNB Job: 16043

Client: Icon Health & Fitness Date: 2 Nov 2020 DNB Job: 16043

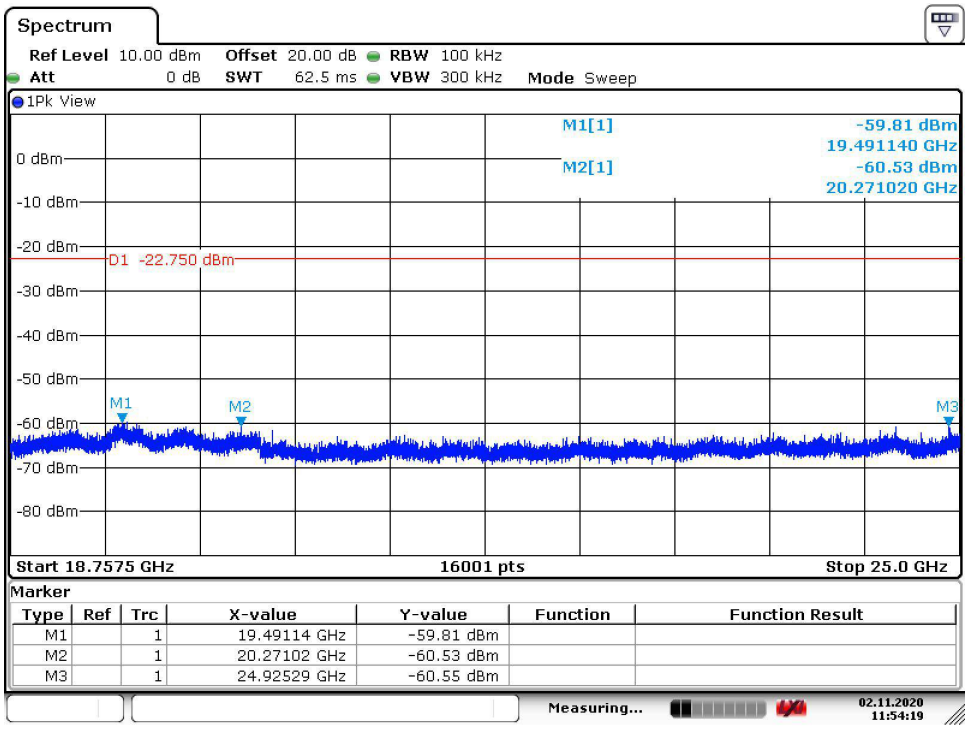
EUT: DTS Transmitter Model No: SBACCEL

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Data Rate: 1Mb/s Minimum PSD Reading = -2.75 dBm (Worst case)

Low Channel: 2402 MHz Requirement = -22.75 dBm Result: Pass

Frequency range: 18.7575GHz to 25GHz



Date: 2.NOV.2020 11:54:19

Client: Icon Health & Fitness Date: 2 Nov 2020 DNB Job: 16043

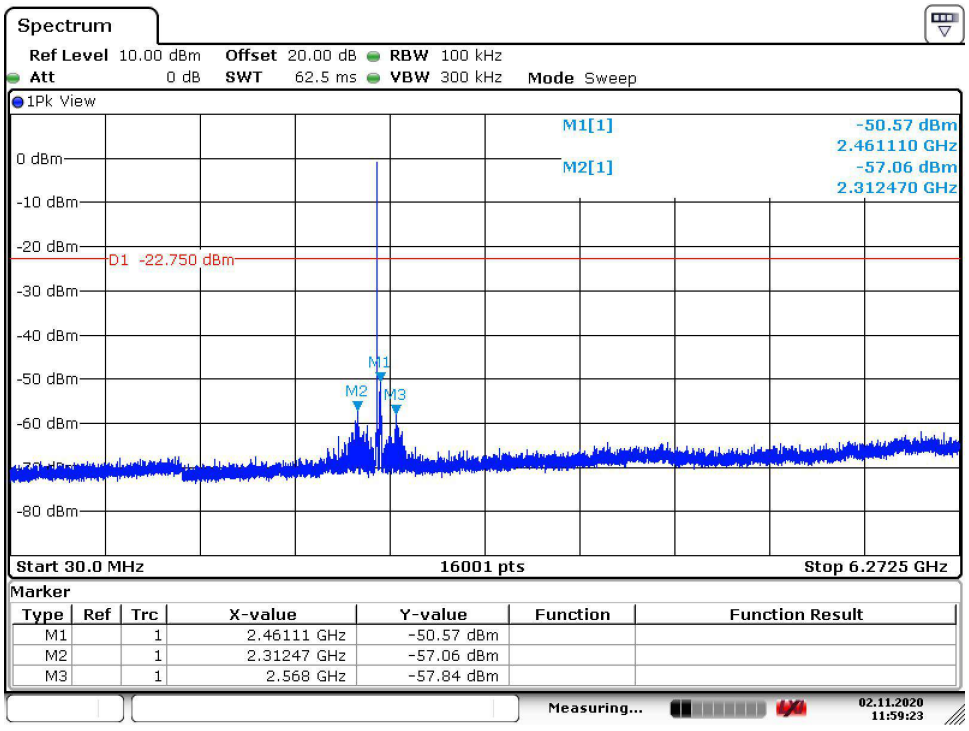
EUT: DTS Transmitter Model No: SBACCEL

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Data Rate: 1Mb/s Minimum PSD Reading = -2.75 dBm (Worst case)

Mid Channel: 2440 MHz Requirement = -22.75 dBm Result: Pass

Frequency range: 30MHz to 6.2725GHz



Date: 2.NOV.2020 11:59:24

Client: Icon Health & Fitness Date: 2 Nov 2020 DNB Job: 16043

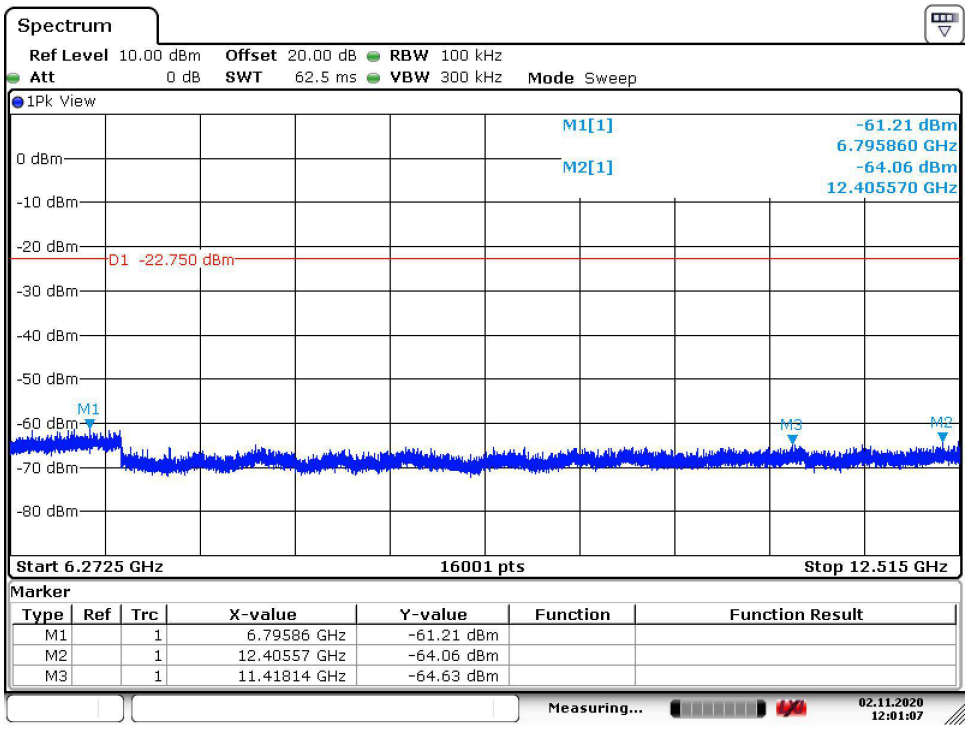
EUT: DTS Transmitter Model No: SBACCEL

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Data Rate: 1Mb/s Minimum PSD Reading = -2.75 dBm (Worst case)

Mid Channel: 2440 MHz Requirement = -22.75 dBm Result: Pass

Frequency range: 6.2725GHz to 12.515GHz



Date: 2.NOV.2020 12:01:07

Client: Icon Health & Fitness Date: 2 Nov 2020 DNB Job: 16043

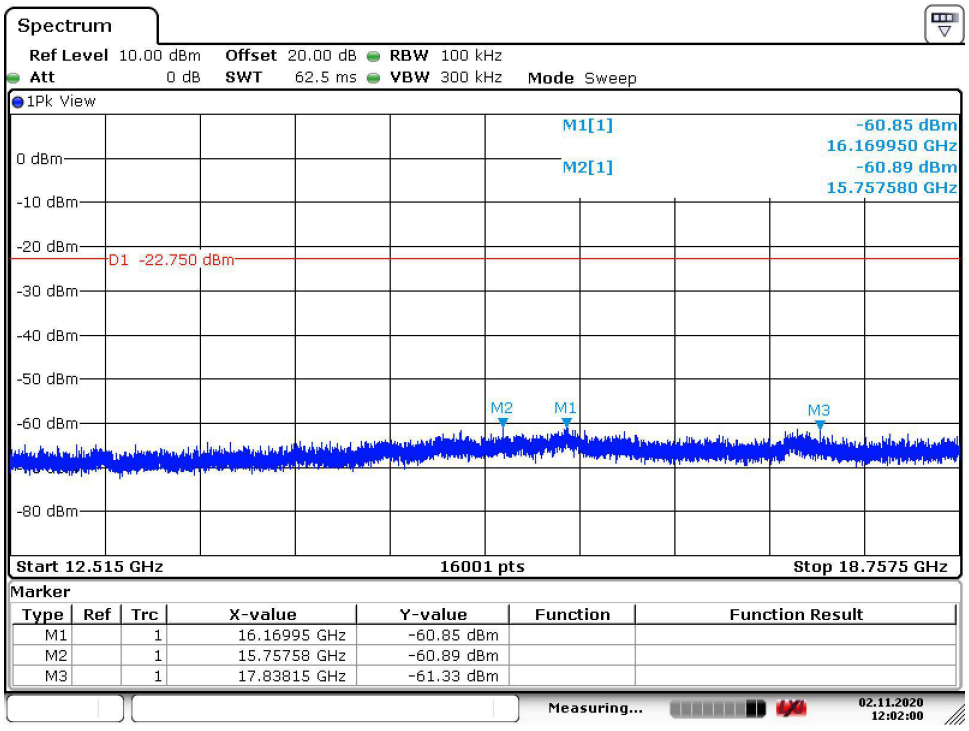
EUT: DTS Transmitter Model No: SBACCEL

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Data Rate: 1Mb/s Minimum PSD Reading = -2.75 dBm (Worst case)

Mid Channel: 2440 MHz Requirement = -22.75 dBm Result: Pass

Frequency range: 12.515GHz to 18.7575GHz



Date: 2.NOV.2020 12:02:00

Client: Icon Health & Fitness Date: 2 Nov 2020 DNB Job: 16043

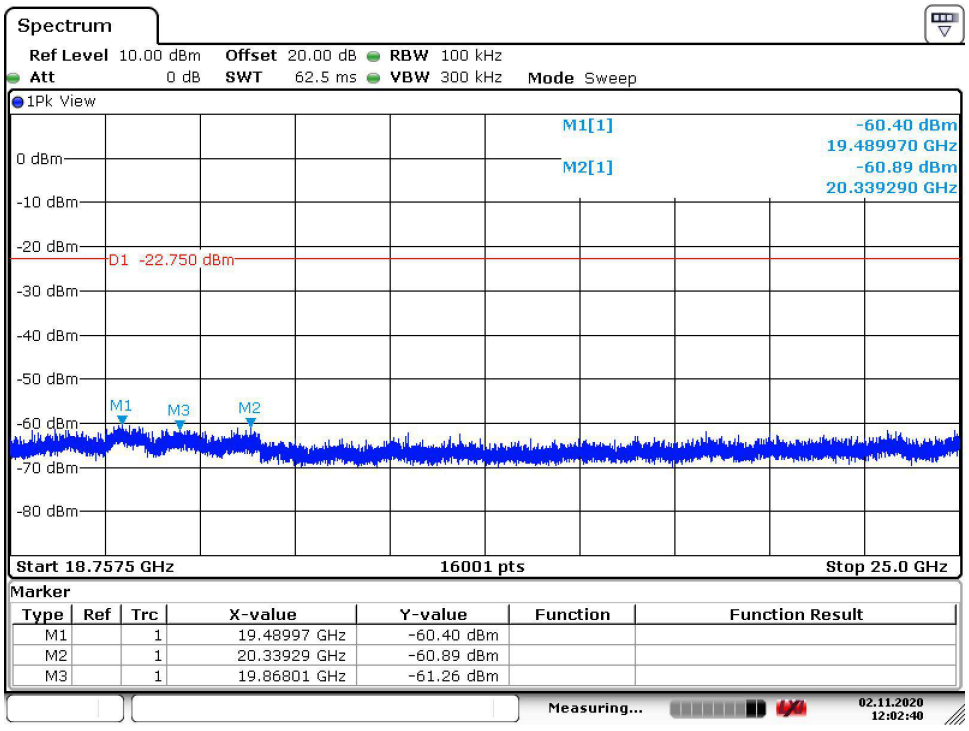
EUT: DTS Transmitter Model No: SBACCEL

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Data Rate: 1Mb/s Minimum PSD Reading = -2.75 dBm (Worst case)

Mid Channel: 2440 MHz Requirement = -22.75 dBm Result: Pass

Frequency range: 18.7575GHz to 25GHz



Date: 2.NOV.2020 12:02:40

Client: Icon Health & Fitness Date: 2 Nov 2020 DNB Job: 16043

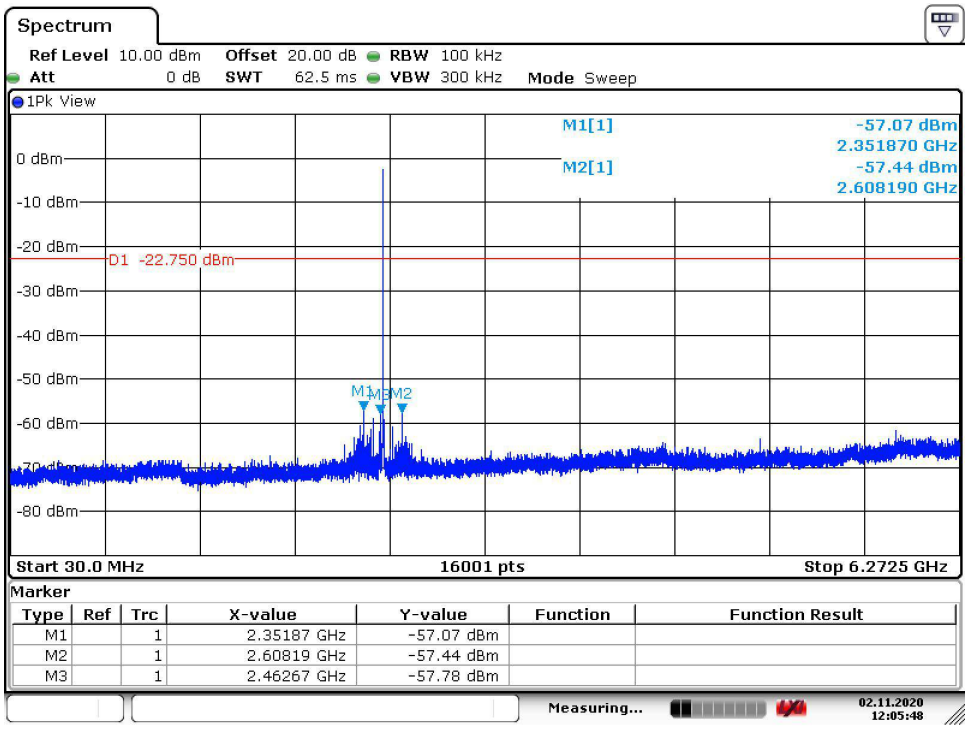
EUT: DTS Transmitter Model No: SBACCEL

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Data Rate: 1Mb/s Minimum PSD Reading = -2.75 dBm (Worst case)

High Channel: 2480 MHz Requirement = -22.75 dBm Result: Pass

Frequency range: 30MHz to 6.2725GHz



Date: 2.NOV.2020 12:05:49

Client: Icon Health & Fitness Date: 2 Nov 2020 DNB Job: 16043

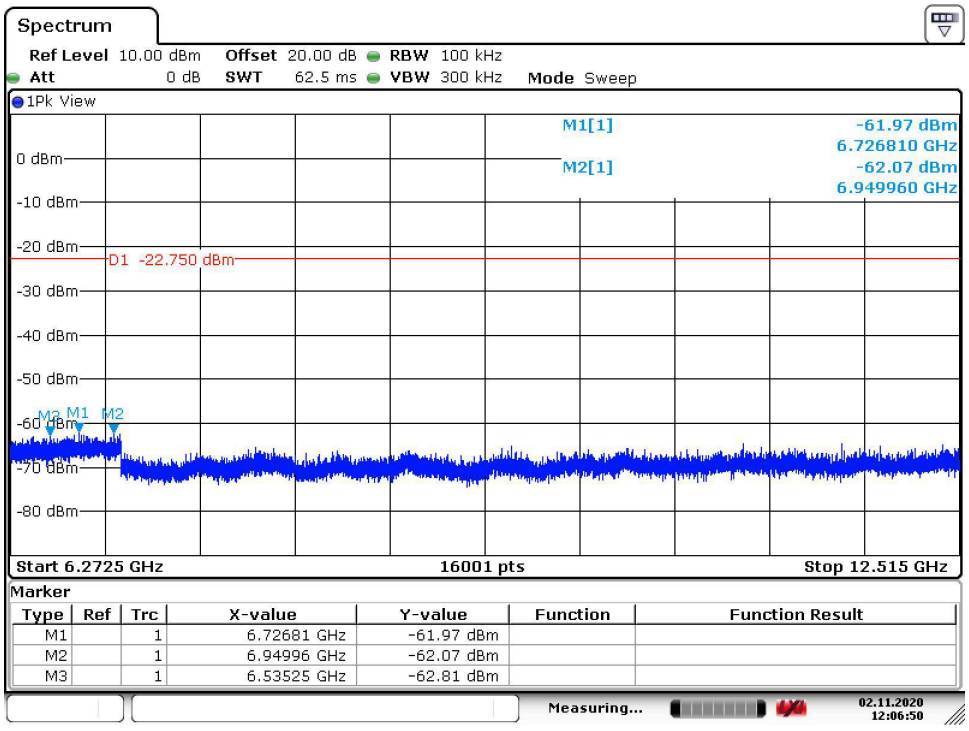
EUT: DTS Transmitter Model No: SBACCEL

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Data Rate: 1Mb/s Minimum PSD Reading = -2.75 dBm (Worst case)

High Channel: 2480 MHz Requirement = -22.75 dBm Result: Pass

Frequency range: 6.2725GHz to 12.515GHz



Date: 2.NOV.2020 12:06:50

Client: Icon Health & Fitness Date: 2 Nov 2020 DNB Job: 16043

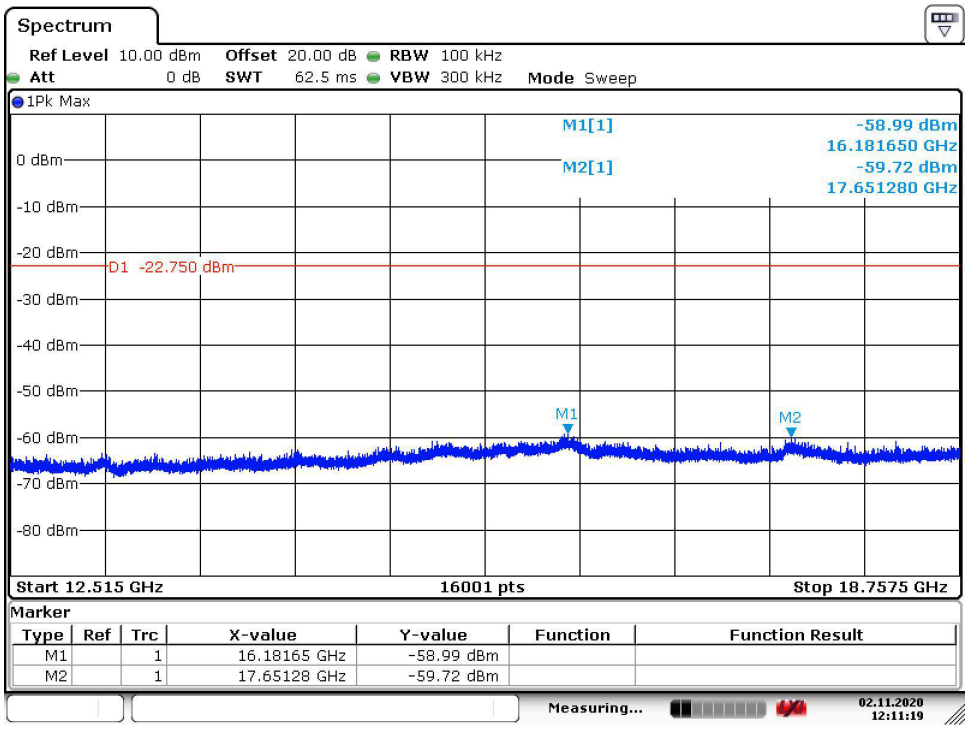
EUT: DTS Transmitter Model No: SBACCEL

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Data Rate: 1Mb/s Minimum PSD Reading = -2.75 dBm (Worst case)

High Channel: 2480 MHz Requirement = -22.75 dBm Result: Pass

Frequency range: 12.515GHz to 18.7575GHz



Date: 2.NOV.2020 12:11:19

Client: Icon Health & Fitness Date: 2 Nov 2020 DNB Job: 16043

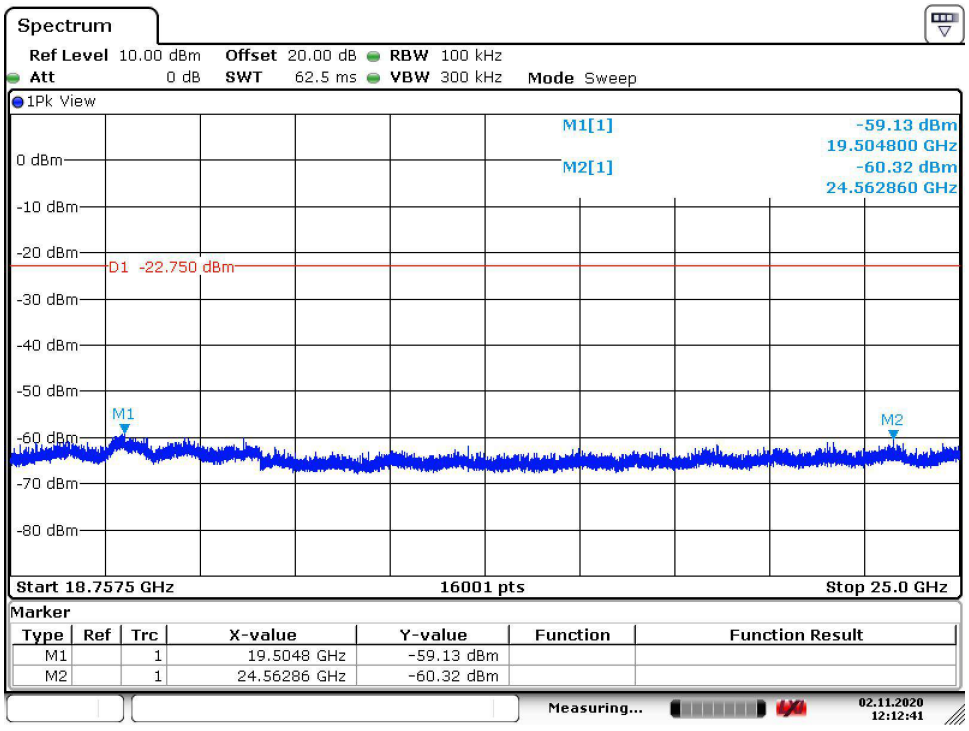
EUT: DTS Transmitter Model No: SBACCEL

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Data Rate: 1Mb/s Minimum PSD Reading = -2.75 dBm (Worst case)

High Channel: 2480 MHz Requirement = -22.75 dBm Result: Pass

Frequency range: 18.7575GHz to 25GHz



Date: 2.NOV.2020 12:12:41

An additional consideration when performing conducted measurements of restricted-band emissions is that unwanted emissions radiating from the EUT cabinet, control circuits, power leads, or intermediate circuit elements will likely go undetected in a conducted measurement configuration. To address this concern, a radiated test shall be performed to ensure that emissions emanating from the EUT cabinet (rather than from the antenna port) also comply with the applicable limits.

For these cabinet radiated spurious emission measurements, the EUT transmit antenna may be replaced with a termination matching the nominal impedance of the antenna. Procedures for performing radiated measurements are specified in 6.3, 6.5, and 6.6. All detected emissions shall comply with the applicable requirements.

This test is required for any spurious emission or modulation product that falls in an Unrestricted Band, as defined in Section 15.209. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

Span	=	wide enough to fully capture the emission being measured
RBW	=	1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW	=	≥ RBW
Sweep	=	auto
Detector function	=	peak
Trace	=	max hold

Follow the guidelines in ANSI C63.10-2013with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data.

Now repeat the measurement using the average detector of the spectrum analyzer. Submit this data.

Note 1: Limit listed is the general limit as specified in 15.209 in order to show compliance with the restricted bands of operation as well as the out of band limit in 15.247. No other identifiable signals were observed in the restricted bands as specified in 15.205.

Note 2: Highest frequency investigated was the tenth harmonic of the fundamental, no radiated emissions were detected above the 1st harmonic.

Requirement: FCC Part 15.247 Clause (d)

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

Client: Icon Health & Fitness Date: 22 Oct 2020 DNB Job: 16043

EUT: DTS Transmitter Model No: SBACCEL

Requirement: General limit of 15.209 Tech: CL Payne

Low Channel: 2402 MHz Result: Pass

Radiated Spurious												
Freq in MHz	Meter Reading (dBuV/m)	Pre-Amp (dB)	Cable (dB)	Antenna (dB)	Corr'd Reading (dBuV/m)	Limit (dBuV/m)	Delta	Azimuth (degrees)	Height (m)	Polarity	Meas Type	Axis
4804.000	41.4	25.9	5.8	32.8	54.10	74.0	-19.90	0	1.56	Horz	Peak	X
4804.000	28.8	25.9	5.8	32.8	41.50	54.0	-12.50	0	1.56	Horz	Ave	X
7206.000	37.9	25.3	7.6	35.6	55.77	74.0	-18.23	188	1.6	Horz	Peak	X
7206.000	27.5	25.3	7.6	35.6	45.41	54.0	-8.59	188	1.6	Horz	Ave	X
9608.000	38.9	24.6	9.1	37.9	61.34	74.0	-12.66	188	1.6	Horz	Peak	X
9608.000	28.3	24.6	9.1	37.9	50.73	54.0	-3.27	188	1.6	Horz	Ave	X
4804.000	34.0	25.9	5.8	32.8	46.70	74.0	-27.30	202	1.64	Vert	Peak	X
4804.000	21.0	25.9	5.8	32.8	33.71	54.0	-20.29	202	1.64	Vert	Ave	X
7206.000	32.7	25.3	7.6	35.6	50.58	74.0	-23.42	201	1.56	Vert	Peak	X
7206.000	20.3	25.3	7.6	35.6	38.15	54.0	-15.85	201	1.56	Vert	Ave	X
9608.000	30.9	24.6	9.1	37.9	53.36	74.0	-20.64	201	1.56	Vert	Peak	X
9608.000	19.9	24.6	9.1	37.9	42.41	54.0	-11.59	201	1.56	Vert	Ave	X
4804.000	33.9	25.9	5.8	32.8	46.62	74.0	-27.38	198	1.89	Horz	Peak	Y
4804.000	23.0	25.9	5.8	32.8	35.66	54.0	-18.34	198	1.89	Horz	Ave	Y
7206.000	33.1	25.3	7.6	35.6	51.00	74.0	-23.00	200	1.9	Horz	Peak	Y
7206.000	20.3	25.3	7.6	35.6	38.24	54.0	-15.76	200	1.9	Horz	Ave	Y
9608.000	31.1	24.6	9.1	37.9	53.55	74.0	-20.45	196	1.9	Horz	Peak	Y
9608.000	20.0	24.6	9.1	37.9	42.44	54.0	-11.56	196	1.9	Horz	Ave	Y
4804.000	31.9	25.9	5.8	32.8	44.56	74.0	-29.44	252	1.2	Vert	Peak	Y
4804.000	21.0	25.9	5.8	32.8	33.71	54.0	-20.29	252	1.2	Vert	Ave	Y
7206.000	31.0	25.3	7.6	35.6	48.93	74.0	-25.07	253	1.2	Vert	Peak	Y
7206.000	19.4	25.3	7.6	35.6	37.31	54.0	-16.69	253	1.2	Vert	Ave	Y
9608.000	30.9	24.6	9.1	37.9	53.40	74.0	-20.60	253	1.21	Vert	Peak	Y
9608.000	20.0	24.6	9.1	37.9	42.42	54.0	-11.58	253	1.21	Vert	Ave	Y
4804.000	33.8	25.9	5.8	32.8	46.52	74.0	-27.48	321	1.33	Horz	Peak	Z
4804.000	21.1	25.9	5.8	32.8	33.76	54.0	-20.24	321	1.33	Horz	Ave	Z
7206.000	31.2	25.3	7.6	35.6	49.12	74.0	-24.88	320	1.1	Horz	Peak	Z
7206.000	19.6	25.3	7.6	35.6	37.54	54.0	-16.46	320	1.1	Horz	Ave	Z
9608.000	30.8	24.6	9.1	37.9	53.31	74.0	-20.69	320	1.35	Horz	Peak	Z
9608.000	20.0	24.6	9.1	37.9	42.43	54.0	-11.57	320	1.35	Horz	Ave	Z
4804.000	34.6	25.9	5.8	32.8	47.29	74.0	-26.71	221	1.6	Vert	Peak	Z
4804.000	24.1	25.9	5.8	32.8	36.81	54.0	-17.19	221	1.6	Vert	Ave	Z
7206.000	30.6	25.3	7.6	35.6	48.48	74.0	-25.52	213	1.6	Vert	Peak	Z
7206.000	19.9	25.3	7.6	35.6	37.78	54.0	-16.22	213	1.6	Vert	Ave	Z
9608.000	32.5	24.6	9.1	37.9	54.96	74.0	-19.04	213	1.6	Vert	Peak	Z
9608.000	20.0	24.6	9.1	37.9	42.47	54.0	-11.53	213	1.6	Vert	Ave	Z