

Testing Laboratory



# EMC TEST REPORT

Report No.: 151100279TWN-001 Model No.: SCD620, SCD630

Issued Date: Feb. 2, 2016

**Applicant:** Philips Consumer Lifestyle BV

High Tech Campus 37, 5656AE, Eindhoven, The Netherlands

Test Method/ Standard: 47 CFR FCC Part 15.247 & ANSI C63.10 2013

**DA 00-705** 

**Registration No.:** 93910

Test By: Intertek Testing Services Taiwan Ltd.

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## **Revision History**

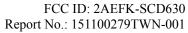
Report No.	Issue Date	Revision Summary
151100279TWN-001	Feb. 2, 2016	Original report.





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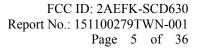
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## **Summary of Tests**

Test Item	Reference	Results
20dB Bandwidth Test	15.247(a)(1)	Pass
Carrier Frequency Separation Test	15.247(a)(1)	Pass
Number of Hopping Frequencies Test	15.247(a)(1)	Pass
Time of Occupancy (Dwell Time) Test	15.247(a)(1)(iii)	Pass
Maximum Output Power Test	15.247(b)	Pass
RF Antenna Conducted Spurious Test	15.247(d)	Pass
Radiated Spurious Emission Test	15.205, 15.209	Pass
Emission on the Band Edge Test	15.247(d)	Pass
AC Power Line Conducted Emission Test	15.207	Pass
Antenna Requirement	15.203	Pass



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#### 1. General Information

#### 1.1 Identification of the EUT

Product: Digital Video Baby Monitor

Model No.: SCD630

Brand Name: Philips Avent

FCC ID: 2AEFK-SCD630

Frequency Range: 2408.86MHz~2465.86MHz

Total Hopping Channel No: 20 channels

Frequency of Each Channel: 2405.85+3k MHz,  $k=1\sim20$ 

Type of Modulation: GFSK

Rated Power: DC 5 V from adapter

Power Cord: N/A
Data Cable: N/A

Sample Received: Nov. 13, 2015

Test Date(s): Nov. 19, 2015 ~ Feb. 2, 2016

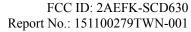
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been under an Intertek certification program.

Note 2: When determining the test conclusion, the Measurement

Uncertainty of test has been considered.



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## 1.2 Adapter information

The EUT will be supplied with a power supply from below list:

No.	Brand	Model no.	Specification
Adapter	PHIHONG	PSAC05A-050L6	I/P:100-240 V~, 0.2A, 50-60Hz O/P: 5 Vdc, 1A

The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

#### 1.3 Description of EUT

The customer confirmed the models listed as below were series model to model SCD630 (EUT), the difference between main model and series model are listed as below.

(201), the difference occurred main model and believe are never as octow.			
Trade Name	Model Number	Different	
Philips Avent	SCD630	Mechanically 2 button for Lullaby and Night light Electrical a different PCB (same PCB as SCD620) including components for extra button and LED for nightlight.	
	SCD620	Mechanically 1 button for Lullaby, Electrical a different PCB assembly to support the 1 button.	

Modulation mode	Transmit path	
Wiodulation mode	Chain 0 / Main	
GFSK	V	

Product SW version: V1.10

Product HW version: 110-410192-01

Radio SW version: V1.10

Radio HW version: 110-410172-00

Test SW Version: RF test

#### 1.4 Antenna description

The EUT uses a permanently connected antenna.

Antenna Gain : 1.3 dBi

Antenna Type : Dipole Antenna

Connector Type : Fixed

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#### 2. Test Specifications

#### 2.1 Test Standard

The EUT was performed according to the procedures in FCC Part 15 Subpart C Section §15.205, §15.207, §15.209, §15.247, DA 00-705 and ANSI C63.10:2013.

The test of radiated measurements according to FCC Part15 Section 15.33(a) had been conducted and the field strength of this frequency band was all meet limit requirement, thus we evaluate the EUT pass the specified test.

#### 2.2 Operation Mode

The EUT was supplied with DC 5V from adapter.

TX-MODE: push button to select different frequency and modulation.

## 2.3 Applied test modes and channels

Test items	Mode	Channel	Antenna
20dB Bandwidth		Low, Middle, High	Chain0
Maximum peak conducted output power		Low , Middle , High	Chain0
Carrier Frequency Separation		Low	Chain0
Number of Hopping Frequencies		Normal Operation	Chain0
Dwell Time		Low	Chain0
Conducted Spurious	GFSK	Low, Middle, High	Chain0
Radiated spurious Emission 30MHz~1GHz		Low, Middle, High	Chain0
Radiated Spurious Emission 10GHz~10th Harmonic		Low, Middle, High	Chain0
Emission on the Band Edge		Low , High	Chain0
AC Power Line Conducted Emission		Low , Middle , High	Chain0

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#### 3. 20dB Bandwidth Test

#### **3.1 Operating Environment**

Temperature:	25	$^{\circ}\mathbb{C}$
Relative Humidity:	55	%
Atmospheric Pressure:	1008	hPa
Test Date:	Nov. 20	, 2015

## 3.2 Test Setup & Procedure

#### The test procedure was according to FCC measurement guidelines DA 00-705.

The 20dB Bandwidth Test per FCC  $\S15.247(a)(1)$  was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set  $\ge 1\%$  of 20dB Bandwidth, the video bandwidth  $\ge$  RBW, and the SPAN may equal to approximately 2 to 3 times the 20dB bandwidth. The test was performed at 3 channels (lowest, middle and highest channel). The maximum 20dB modulation bandwidth is in the following Table.

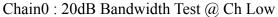
#### 3.3 Measured Data of Modulated Bandwidth Test Results

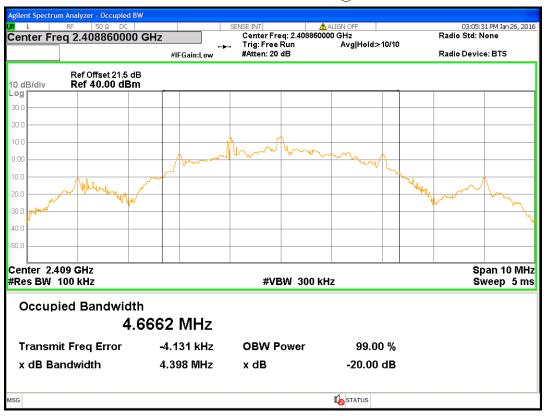
Mode	Channel	Frequency (MHz)	20dB Bandwidth Test (MHz)
GFSK	Low	2408.86	4.398
	Middle	2438.86	4.460
	High	2465.86	4.391

Please see the plot below.

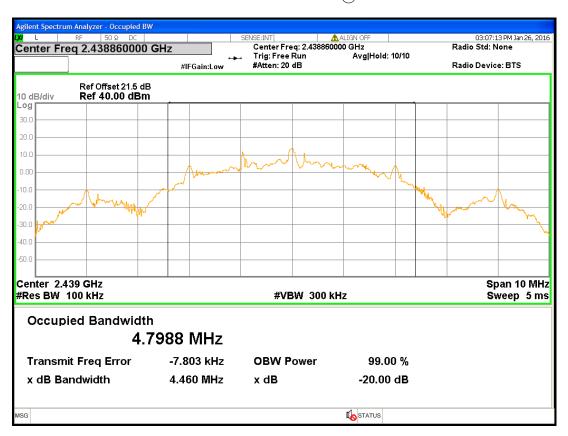


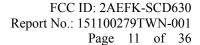






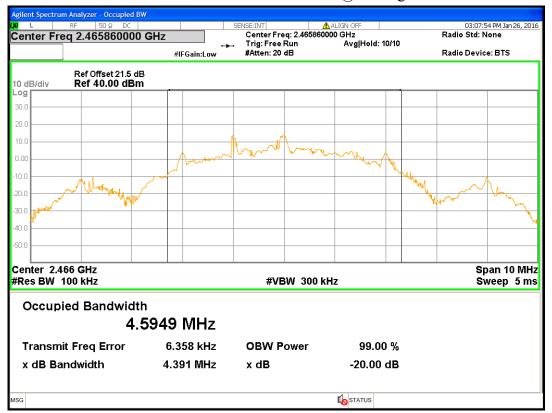
Chain0: 20dB Bandwidth Test @ Ch Middle







Chain0: 20dB Bandwidth Test @ Ch High





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#### 4. Carrier Frequency Separation Test

#### **4.1 Operating Environment**

Temperature:	25	$^{\circ}\!\mathbb{C}$
Relative Humidity:	55	%
Atmospheric Pressure:	1008	hPa
Test Date:	Jan. 30,	2016

#### **4.2 Test Setup & Procedure**

## The test procedure was according to FCC measurement guidelines DA 00-705.

The carrier frequency separation per FCC  $\S15.247(a)(1)$  was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at  $\ge 1\%$  of the span, the video bandwidth  $\ge$  RBW, and the SPAN was wide enough to capture the peaks of two adjacent channels. The carrier frequency separation result is in the following Table.

#### 4.3 Measured Data of Carrier Frequency Separation Test Results

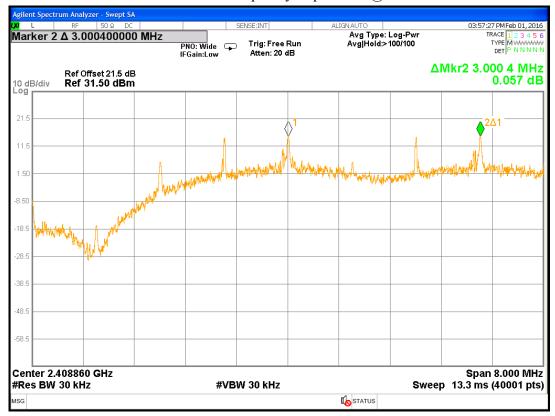
Mode	Channel	Frequency (MHz)	Adjacent channel separation (MHz)	Limit (MHz)
GFSK	Low	2408.86	3.000	2.9320
GFSK	Middle	2438.86	3.006	2.9733
GFSK	High	2465.86	3.001	2.9273

Please see the spectrum plots of worst value below.

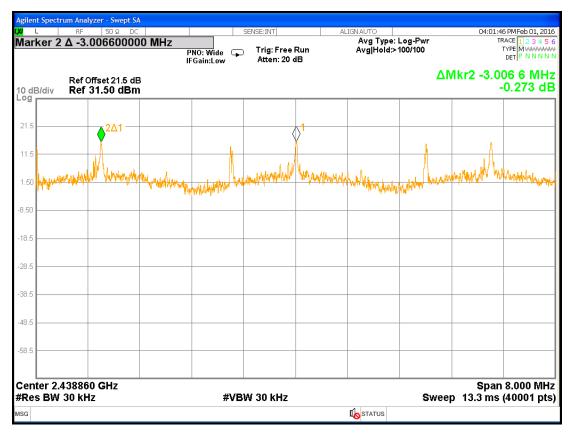




Chain0: Carrier Frequency Separation @ Ch Low



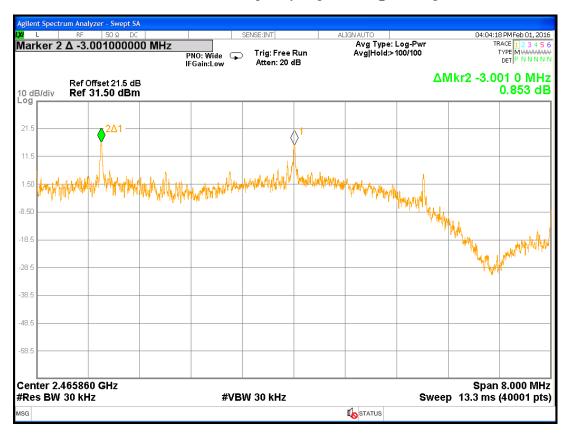
Chain0: Carrier Frequency Separation @ Ch Middle







Chain0: Carrier Frequency Separation @ Ch High







#### 5. Number of Hopping Frequencies Test

#### **5.1 Operating Environment**

Temperature:	24	$^{\circ}$ C
Relative Humidity:	55	%
Atmospheric Pressure:	1008	hPa
Test Date:	Nov. 20	), 2015

#### **5.2 Test Setup & Procedure**

#### The test procedure was according to FCC measurement guidelines DA 00-705.

The number of hopping frequencies per FCC  $\S15.247(a)(1)$  was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at  $\ge 1\%$  of the span, the video bandwidth  $\ge$  RBW, and the SPAN was the frequency band of operation. The carrier frequency separation result is in the following Table.

#### 5.3 Measured Data of Number of Hopping Frequencies Test Results

Frequency Range (MHz)	Hopping Channels
2408.86~2465.86	20

**Number of Hopping Frequencies @ GFSK mode** 



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#### **6. Time of Occupancy (Dwell Time)**

#### **6.1 Operating Environment**

Temperature:	25	$^{\circ}$ C
Relative Humidity:	55	%
Atmospheric Pressure:	1008	hPa
Test Date:	Nov. 25	5, 2015

#### **6.2 Test Setup & Procedure**

#### The test procedure was according to FCC measurement guidelines DA 00-705.

The time of occupancy (dwell time) per FCC  $\S15.247(a)(1)$  was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at 1MHz, the video bandwidth  $\ge$  RBW, and the zero span function of spectrum analyzer was enable. The EUT has its hopping function enable.

#### 6.3 Measured Data of Maximum Output Power Test Results

The total sweep time is  $0.4 \times 20$  Channels =8 seconds

The number of hops is in the 8 sec. sweep time, we determined to reduce the sweep time to 0.1 sec., count the number of hops and multiply by 80. The total number of hops will be multiplied by the measured time of one pulse.

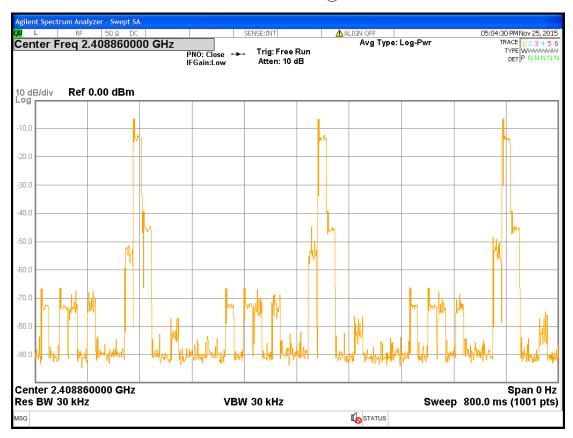
Mode	Pulse duration (ms)	Number of pulse	measure time (s)	Dwell time (s)	Limit (s)	Pass/Fail
GFSK	12.3	3	0.8	0.3690	0.4	Pass

Please see the plots below.





Chain0: Dwell Time @ Ch low





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## 7. Maximum Output Power Test

## **7.1 Operating Environment**

Temperature:	25	$^{\circ}\!\mathbb{C}$
Relative Humidity:	55	%
Atmospheric Pressure:	1008	hPa
Test Date:	Nov. 19,	, 2015

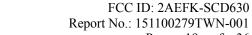
## 7.2 Test Setup & Procedure

## The test procedure was according to FCC measurement guidelines DA 00-705.

The power output per FCC §15.247(b) was measured on the EUT using a 50 ohm SMA cable connected to peak power meter via power sensor. Power was read directly and cable loss correction (2 dB) was added to the reading to obtain power at the EUT antenna terminals. The test was performed at 3 channels (lowest, middle and highest channel).

#### 7.3 Measured Data of Maximum Output Power Test Results

Mode	Channel	Frequency (MHz)	Maximum power (PK) (dBm)	Maximum power (PK) (mW)	Limit (dBm)	Margin (dB)
	Low	2408.86	15.75	37.5837404	21	-5.25
GFSK	Middle	2438.86	15.81	38.1065823	21	-5.19
	High	2465.86	15.67	36.8977599	21	-5.33



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#### 8. RF Antenna Conducted Spurious Test

#### **8.1 Operating Environment**

Temperature:	25	$^{\circ}\!\mathbb{C}$
Relative Humidity:	55	%
Atmospheric Pressure:	1008	hPa
Test Date:	Nov. 20,	2015

## 8.2 Test Setup & Procedure

## The test procedure was according to FCC measurement guidelines DA 00-705.

The measurements were performed from 30 MHz to 25 GHz RF antenna conducted per FCC 15.247 (c) was measured from the EUT antenna port using a 50 ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 100 kHz.

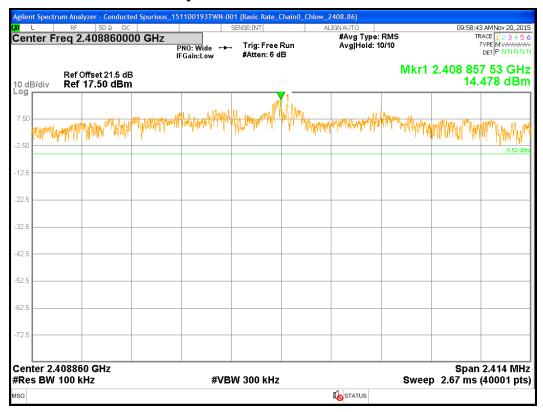
Harmonics and spurious noise must be at least 20dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

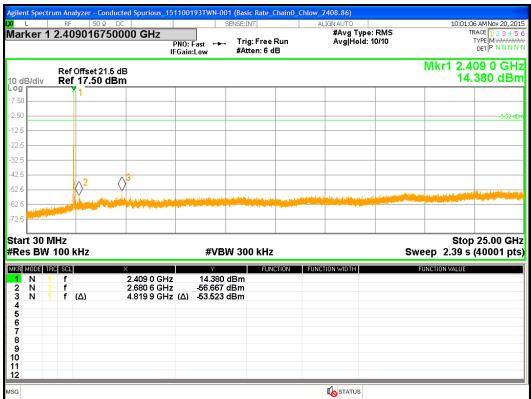




8.3 Measured Data of the Highest RF Antenna Conducted Spurious Test Results

#### **Conducted Spurious @ GFSK mode Low Channel**

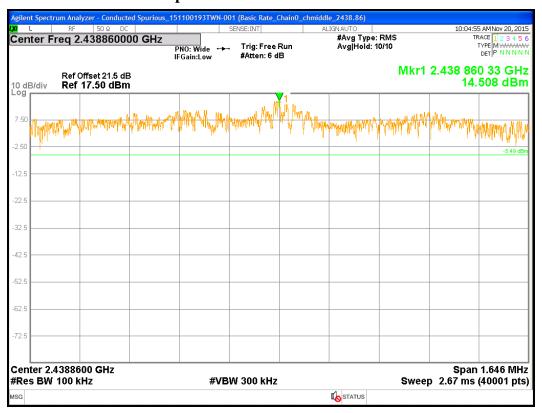


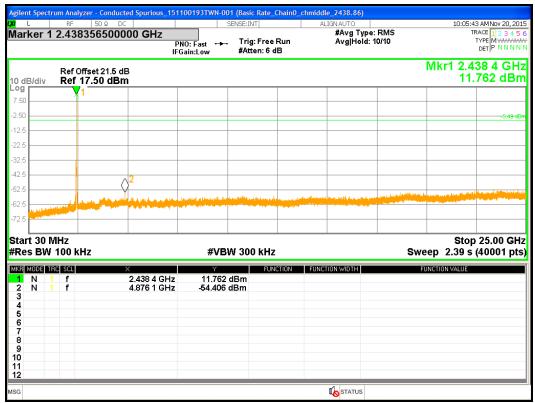






Conducted Spurious @ GFSK mode Middle Channel

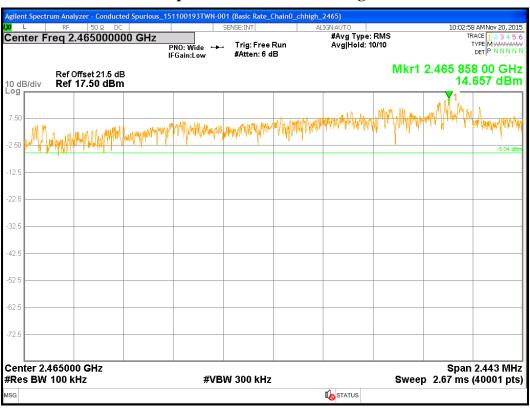


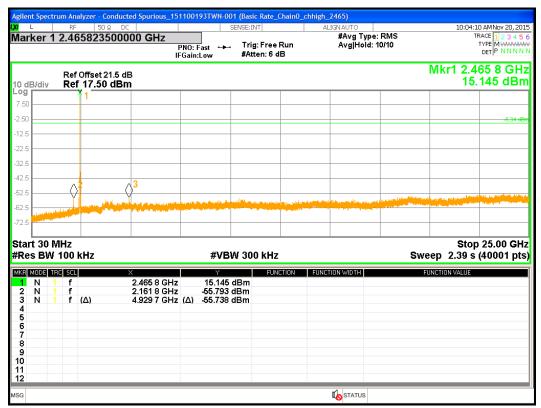




Intertek

**Conducted Spurious @ GFSK mode High Channel** 





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#### 9. Radiated Emission Test

#### **9.1 Operating Environment**

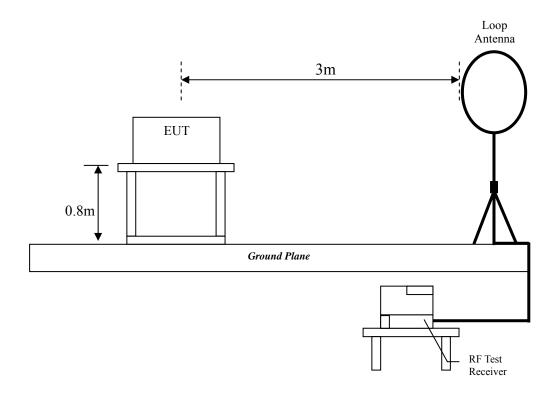
Temperature:	25	$^{\circ}\!\mathbb{C}$
Relative Humidity:	50	%
Atmospheric Pressure:	1008	hPa
Test Date:	Nov. 24, 2	2015

## 9.2 Test Setup & Procedure

The test procedure was according to FCC measurement guidelines DA 00-705 and ANSI C63.10:2013.

The Diagram below shows the test setup, which is utilized to make these measurements.

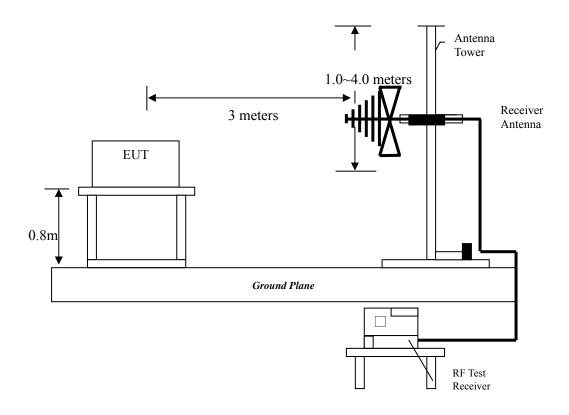
## Radiated emission from 9kHz to 30MHz uses Loop Antenna:



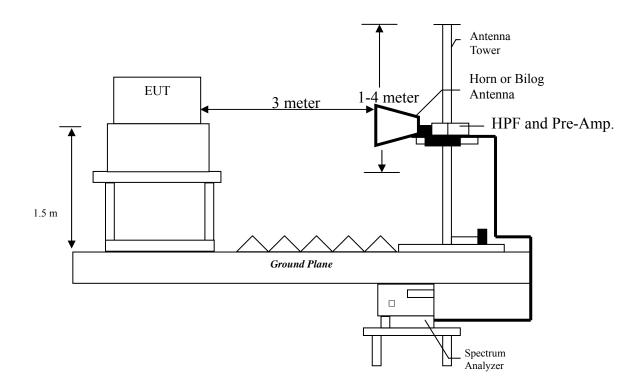
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## Radiated emission from 30MHz to 1GHz uses Bi-log Antenna:



## Radiated emission above 1 GHz uses Horn Antenna:







According to §15.33(a), the spectrum shall be investigated from the lowest radio frequency signal generated in the device, to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. Spectrum Analyzer Resolution Bandwidth is 100kHz or greater for frequencies 30MHz to 1GHz, 1MHz – for frequencies above 1GHz.

Configure the EUT according to ANSI C63.10: 2013 The EUT was placed on the top of the turntable 1.5 meter above ground for above 1GHz and placed on the top of the turntable 0.8 meter above ground for below 1GHz. The center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter.

The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent 3 meter reading using inverse scaling with distance.

#### 9.3 Emission Limits

The spurious Emission shall test through the 10th harmonic. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

Frequency (MHz)	Field Strength (microvolts/meter)
0.009~0.490	2400/F(kHz)
0.490~1.705	2400/F(kHz)
1.705~30	30
30-88	100
88-216	150
216-960	200
Above 960	500

#### Remark:

- 1. In the above table, the tighter limit applies at the band edges.
- 2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

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## 9.4 Radiated Spurious Emission Test Data

## 9.4.1Measurement results: frequency range from 9kHz to 30MHz

Frequency	Detection	Factor	Reading	Value	Limit	Tolerance
	Detection value				@ 3m	
(MHz)	varue	(dB/m)	$(dB\mu V)$	(dBµV/m)	$(dB\mu V/m)$	(dB)
2.12	QP	21.39	31.30	52.69	69.54	-16.85
15.78	QP	22.24	17.62	39.86	69.54	-29.68
19.96	QP	22.19	13.53	35.72	69.54	-33.82

#### 9.4.2 Measurement Results: Frequencies Equal to or Less than 1 GHz

The test was performed on EUT under GFSK mode. The worst case occurred at GFSK mode at Low channel

EUT : SCD630

Worst Case : GFSK mode at Low channel

Antenna	Freq.	Receiver	Corr.	Reading	Corrected	Limit	Margin
Polarized			Factor		Level	@ 3 m	
(V/H)	(MHz)	Detector	(dB/m)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
Vertical	47.46	QP	16.97	21.95	38.92	40.00	-1.08
Vertical	383.08	QP	19.51	13.53	33.04	46.00	-12.96
Vertical	577.08	QP	23.69	9.81	33.50	46.00	-12.50
Vertical	672.14	QP	25.15	12.28	37.43	46.00	-8.57
Vertical	769.14	QP	26.83	8.58	35.41	46.00	-10.59
Vertical	961.20	QP	29.16	7.32	36.48	54.00	-17.52
Horizontal	47.46	QP	13.48	10.85	24.33	40.00	-15.67
Horizontal	142.52	QP	15.15	11.40	26.55	43.50	-16.95
Horizontal	288.02	QP	17.70	15.14	32.84	46.00	-13.16
Horizontal	359.80	QP	18.96	17.08	36.04	46.00	-9.96
Horizontal	672.14	QP	24.44	9.70	34.14	46.00	-11.86
Horizontal	769.14	QP	26.14	12.44	38.58	46.00	-7.42

Remark: 1. Corr. Factor = Antenna Factor + Cable Loss

2. Corrected Level = Reading + Corr. Factor





## 9.4.3 Measurement Results: Frequency above 1GHz

EUT : SCD630

	Frequency	Spectrum	Ant.	Preamp.	Correction	Reading	Corrected	Limit	Margin
Mode		Analyzer	Pol.	Gain	Factor		Reading	@ 3 m	
	(MHz)	Detector	(H/V)	(dB)	(dB/m)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	(dB)
OFGIA	4818	PK	V	40.11	-0.06	54.98	54.92	74.00	-19.08
GFSK Ch Low	4818	AV	V	40.11	-0.06	44.85	44.79	54.00	-9.21
CH LOW	4818	PK	Н	40.11	-0.06	45.85	45.79	74.00	-28.21
OFGIA	4878	PK	V	40.00	0.14	54.25	54.39	74.00	-19.61
GFSK Ch Middle	4878	AV	V	40.00	0.14	44.12	44.26	54.00	-9.74
Cii iviidaic	4878	PK	Н	40.00	0.14	47.65	47.79	74.00	-26.21
GFSK	4932	PK	V	39.90	0.32	50.73	51.05	74.00	-22.95
Ch High	4932	PK	Н	39.90	0.32	48.11	48.43	74.00	-25.57

#### Remark:

- 1. Correction Factor = Antenna Factor + Cable Loss– Preamp. Gain
- 2. The frequency measured ranges from 1GHz to 25GHz. The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

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## 10. Emission on the Band Edge §FCC 15.247(d)

Radiated emissions were invested cover the frequency range from 30 MHz to 1000 MHz using a receiver RBW of 120 kHz record QP reading, and the frequency over 1 GHz using a spectrum analyzer RBW of 1 MHz and 10 Hz VBW record Average reading. (15.209 paragraph), the Peak reading (1MHz / 3MHz; RBW / VBW) recorded also on the report.

## **10.1 Operating Environment**

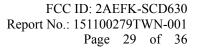
Temperature:	25	$^{\circ}\!\mathbb{C}$
Relative Humidity:	50	%
Atmospheric Pressure:	1008	hPa
Test Date:	Nov. 24,	, 2015

## 10.2 Test Setup & Procedure

Please refer to the section 9.2 of this report.

#### **10.3 Test Results**

	Frequency	Spectrum	Ant.	Correction	Reading	Corrected	Limit	Margin	Restricted
Mode		Analyzer	Pol.	Factor		Reading	@ 3 m		band
	(MHz)	Detector	(H/V)	(dB/m)	$(dB\mu V)$	$(dB\mu V/m)$	$(dB\mu V/m)$	(dB)	(MHz)
	2389.20	PK	V	33.85	35.67	69.52	74	-4.48	2310~2390
GFSK	2388.96	AV	V	33.85	14.73	48.58	54	-5.42	2310~2390
(Fixed channel)	2484.30	PK	V	34.30	34.99	69.29	74	-4.71	2483.5~2500
	2483.80	AV	V	34.30	15.18	49.48	54	-4.52	2403.3~2300



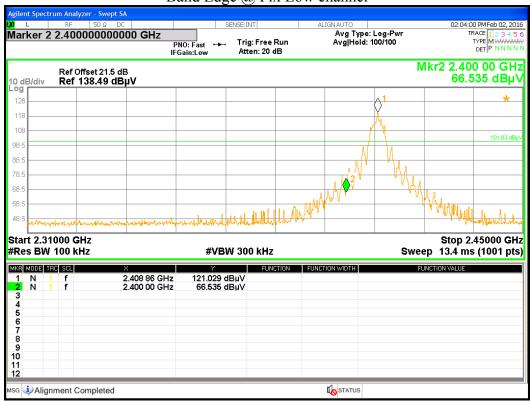


	Frequency	Spectrum	Ant.	Correction	Reading	Corrected	Limit	Margin	Restricted
Mode		Analyzer	Pol.	Factor		Reading	@ 3 m		band
	(MHz)	Detector	(H/V)	(dB/m)	$(dB\mu V)$	$(dB\mu V/m)$	$(dB\mu V/m)$	(dB)	(MHz)
	2389.60	PK	V	33.85	35.43	69.28	74	-4.72	2310~2390
GFSK	2389.14	AV	V	33.85	15.60	49.45	54	-4.55	2310~2390
(Hopping mode)	2483.80	PK	V	34.30	31.01	65.31	74	-8.69	2492 5 2500
	2483.50	AV	V	34.30	16.82	51.12	54	-2.88	2483.5~2500

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Reading	Limit (dBµV)
GFSK	2400.00	PK	66.54	101.03
(Fixed channel)	2483.50	PK	58.87	102.05
GFSK	2400.00	PK	71.01	103.58
(Hopping mode)	2483.50	PK	57.28	103.84



Band Edge @ Fix Low channel

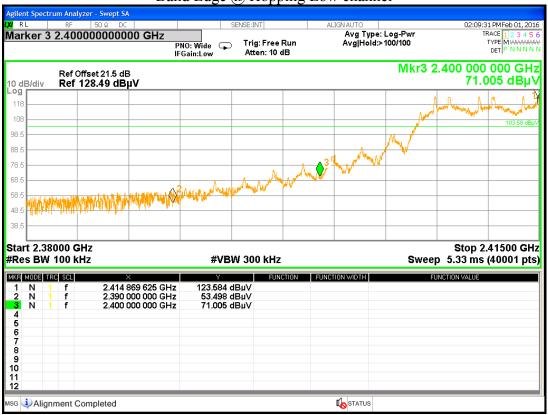


Band Edge @ Fix High channel





Band Edge @ Hopping Low channel



Band Edge @ Hopping High channel



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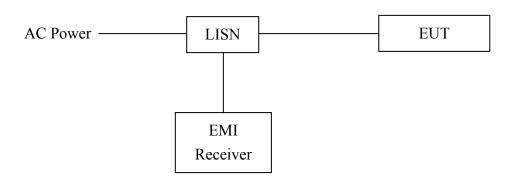


#### 11. Power Line Conducted Emission Test §FCC 15.207

#### 11.1 Operating Environment

Temperature:	22	$^{\circ}\!\mathbb{C}$
Relative Humidity:	52	%
Atmospheric Pressure	1008	hPa
Test Date:	Dec. 01,	2015

#### 11.2 Test Setup & Procedure



#### The test procedure was according to ANSI C63.10:2013.

The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50 ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm/50uH coupling impedance with 50 ohm termination.

Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.

The bandwidth of the field strength meter (R & S Test Receiver ESCI) is set at 9 kHz.

The EUT configuration refers to the "Conducted set-up photo.pdf".

#### 11.3 Emission Limit

Freq.	Conducted Limit (dBuV)				
(MHz)	Q.P.	Ave.			
0.15~0.50	66 – 56*	56 – 46*			
0.50~5.00	56	46			
5.00~30.0	60	50			

<sup>\*</sup>Decreases with the logarithm of the frequency.





## 11.4 Power Line Conducted Emission Test Data

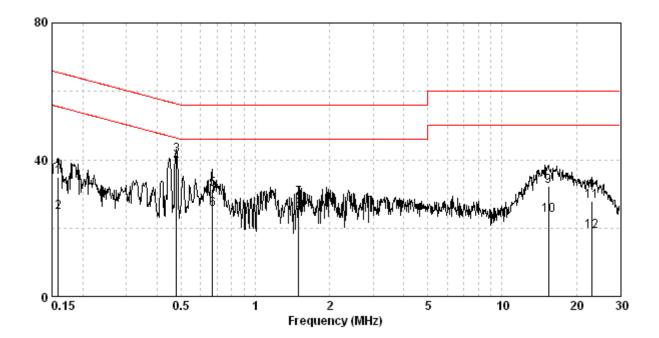
Phase: Live Line
Model No.: SCD630
Test Condition: TX mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level Av (dBuV)	Limit Av (dBuV)	Over I (dl Qp	
0.159 0.479 0.672 1.495 15.388 23.018	9.95 9.94 9.95 9.96 10.54 10.88	34.73 41.20 31.32 28.85 32.18 27.79	65.52 56.36 56.00 56.00 60.00	24.50 39.06 25.47 25.09 23.69	55.52 46.36 46.00 46.00 50.00 50.00	-30.79 -15.16 -24.68 -27.15 -27.82 -32.21	-31.02 -7.30 -20.53 -20.91 -26.31 -30.83

#### Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

2. Margin (dB) = Level (dBuV) – Limit (dBuV)







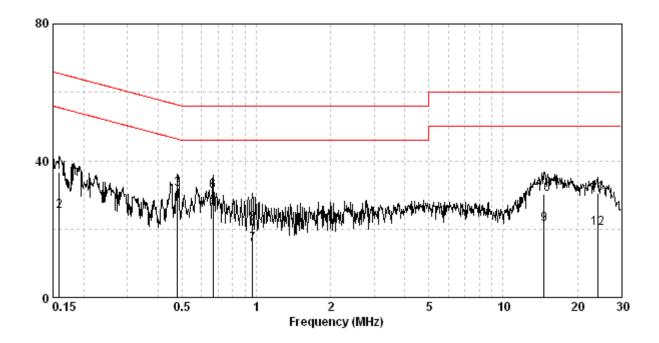
**Phase:** Neutral Line

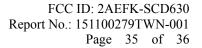
Model No.: SCD630 Test Condition: TX mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level Av (dBuV)	Limit Av (dBuV)	Over I (dl Qp	
0.159 0.479 0.668 0.963 14.672 24.142	9.94 9.93 9.93 9.93 10.51 10.92	36.53 31.71 31.04 21.69 30.27 30.41	65.52 56.36 56.00 56.00 60.00	25.34 28.07 26.27 15.40 21.52 20.28	55.52 46.36 46.00 46.00 50.00 50.00	-28.99 -24.65 -24.96 -34.31 -29.73 -29.59	-30.18 -18.29 -19.73 -30.60 -28.48 -29.72

## Remark:

- 1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
- 2. Over Limit (dB) = Level (dBuV) Limit (dBuV)

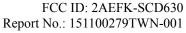






Appendix A: Test equipment list

Equipment	Brand	Model No.	Serial No.	Calibration Date	Next Calibration Date		
ESCI EMI Test Receiver	Rohde & Schwarz	ESCI	100018	2015/12/02	2016/11/30		
Spectrum Analyzer	Rohde & Schwarz	FSP30	100137	2015/08/18	2016/08/16		
Horn Antenna (1-18G)	Schwarzbeck	BBHA 9120 D	9120D-456	2014/08/29	2017/08/27		
Horn Antenna (14-42G)	SHWARZBECK	BBHA 9170	BBHA9170159	2014/09/16	2017/09/14		
Broadband Antenna	Schwarzbeck	VULB 9168	9168-172	2013/08/08	2016/08/06		
Power Meter	Anritsu	ML2495A	0844001	2015/11/11	2016/11/09		
Power Senor	Anritsu	MA2411B	0738452	2015/11/11	2016/11/09		
Two-Line V-Network	Rohde & Schwarz	ESH3-Z5	838979/014	2015/10/07	2016/10/05		
Signal Analyzer	Agilent	N9030A	MY51380492	2015/09/21	2016/09/19		
Active Loop Antenna	SCHWARZBECK MESS-ELEKTRONIC	FMZB1519	1519-067	2015/04/30	2016/04/28		
EMI Test Receiver	Rohde & Schwarz	ESR-7	101232	2015/12/02	2016/11/30		
High Pass Filter (3~18G)	Wainwright	WHKX3.0/18G-12SS	N/A	2015/06/06	2016/06/04		
CON-1 Cable	SUHNER	BNC / RG-58	1521946	2015/05/09	2016/05/07		
Pre-Amplifier(1-26.5G)	EMC Co.	EMC12635SE	980205	2015/10/07	2016/10/05		
966-2(A) Cable	SUHNER	SMA / EX 100	N/A	2015/05/06	2016/05/04		
966-2(B) Cable	JUNFLON	SMA / J12J100880-00	AUG-26-08-002	2015/05/09	2016/05/07		
RF Cable	SUHNER	SUCOFLEX 102	CB0006	2015/05/06	2016/05/04		
966-2_3m Semi-Anechoic Chamber	966_2	CEM-966_2 N/A		2015/02/24	2016/02/23		
Bra	Brand		Test Software		Version		
АГ	)T	Radiated test	Radiated test system		7.5.14		
Aud	dix	e3		4.2004	l-1-12k		



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## **Appendix B: Measurement Uncertainty**

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

Item	Uncertainty
Vertically polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	5.15 dB
Horizontally polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	5.23 dB
Vertically polarized Radiated disturbances from 1GHz~18GHz in a semi-anechoic chamber at a distance of 3m	4.19 dB
Horizontally polarized Radiated disturbances from 1GHz~18GHz in a semi-anechoic chamber at a distance of 3m	4.3 dB
Vertically polarized Radiated disturbances from 18GHz~40GHz in a semi-anechoic chamber at a distance of 3m	4.19 dB
Horizontally polarized Radiated disturbances from 18GHz~40GHz in a semi-anechoic chamber at a distance of 3m	4.3 dB
Conducted Output power	0.86 dB
Radiated electromagnetic disturbances in the frequency range from 9kHz to 30MHz	2.92 dB
Conducted disturbance measurements at a mains port from 9 kHz to 30 MHz using a 50 $\Omega$ /50 $\mu$ H +5 $\Omega$ artificial mains network (AMN)	2.5 dB