Report on the RadioTesting of:

Hearing Aid Accessories

Model(s): WIDEX TV Play

In accordance with
47 CFR FCC Part 15C
(Frequency Hopping Spread Spectrum Device)

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Add value.
Inspire trust.

Prepared for:

Widex A/S
Nymøllevej 6, 3540, Lynge, Denmark

COMMERCIAL-IN-CONFIDENCE

Document Number: 7191193068-EEC18/07 | Issue: 01

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Project Management	Foo Kai Maun	17 Oct 2018	
Authorised Signatory	Quek Keng Huat	16 Oct 2018	

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD PSB document control rules.

EXECUTIVE SUMMARY
A sample of this product was tested and found to be compliant with the mentioned standard(s).

TÜV SÜD PSB

ilac-MRA

Accredited Laboratory SAC-SINGLAS

LA-2007-0380-A
LA-2007-0381-F
LA-2007-0382-B
LA-2007-0383-G
LA-2007-0384-G
LA-2007-0385-E
LA-2007-0386-C
LA-2010-0464-D

The results reported herein have been performed in accordance with the terms of accreditation under the Singapore Accreditation Council. Inspections/Calibrations/Tests marked "Not SAC-SINGLAS Accredited" in this Report are not included in the SAC-SINGLAS Accreditation Schedule for our inspection body/laboratory.

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Contents

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1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	17 Oct 2018

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1.2 Introduction

Applicant	:	Widex A/S Nymøllevej 6, 3540, Lynge, Denmark
Manufacturer	:	Same as applicant
Factory	:	SVI Public Company Limited 141-142 Moo5, Tiwanon Rd., Bangkadi, Muang, Pathumthanin 12000 Thailand
Model Number(s)	:	WIDEX TV PLAY
Serial Number(s)	:	001299
SAM4s Version	:	1.2.4
Number of Samples Tested	:	1
Test Sample(s) Condition	:	Good
Quotation Reference	:	5122067
Test Specification/Issue/Date	:	FCC 47 CFR Part 15C
Test Sample(s) Received Date	:	29 Aug 2018
Start of Test	:	12 Sep 2018
Finish of Test	:	16 Oct 2018

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1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with specifications as shown below.

Specification Clause	Test Description	Result	Comments/Base Standard
47 CFR FCC Part 15			
15.107(a), 15.207	Conducted Emissions	Pass	ANSI C63.4: 2014 ANSI C63.10: 2013
15.109(a), 15.205, 15.209	Radiated Emissions (Spurious Emissions Inclusive Restricted Bands Requirement)	Pass	ANSI C63.4: 2014 ANSI C63.10: 2013
15.247(a)(1)	Carrier Frequency Separation	Pass	ANSI C63.10: 2013
	Spectrum Bandwidth (20dB Bandwidth Measurement)		
15.247(a)(1)(iii)	Number of Hopping Frequencies	Pass	ANSI C63.10: 2013
	Average Frequency Dwell Time		
15.247(b)(1)	Maximum Peak Power	Pass	ANSI C63.10: 2013
15.247(d)	RF Conducted Spurious Emissions	Pass	ANSI C63.10: 2013
15.247(d)	Band Edge Compliance (Conducted)	Pass	ANSI C63.10: 2013
15.247(d)	Band Edge Compliance (Radiated)	Pass	ANSI C63.10: 2013
15.35(c)	Duty Cycle Factor Computation	Not Applicable *See Note 4	ANSI C63.10: 2013
2.1091	Maximum Permissible Exposure	Pass	

Notes

1. All the measurements in section 15.247 were done based on conducted measurements except Band Edge Compliance (Radiated) test.

2. The EUT is a Class B device when in non-transmitting state and meets the 47 CFR FCC Part15B Class B requirements.

3. The maximum measured RF power of the Equipment Under Test is 10.25dBm

4. The EUT was operated in continuous transmission, ie 100% duty cycle.

5. The Equipment Under Test (EUT) is a frequency hopping spread spectrum device. It operates a total of 20 channels including 3 advertising channels. The frequency spacing between adjacent channels is 4MHz.

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1.4 Product Information

1.4.1 Technical Description

Description	:	The Equipment Under Test(s) (EUT(s)) is a **Hearing Aid Accessories.**
Microprocessor	:	NXP NxH2003
Operating Frequency	:	2.402GHz – 2.480GHz
Clock / Oscillator Frequency	:	32MHz
Modulation	:	Gaussian Frequency Shift Keying, GFSK
Antenna Gain	:	Antenna 0: 3.4dBi Antenna 1: 2.0dBi
Port / Connectors	:	1. Power connector 2. Optical IN port 3. Analog IN port
Rated Power	:	5Vdc 550mA
Accessories	:	Nil

1.4.2 Test Configuration and Modes of Operation

Mode(s)	**Description**
a. Maximum RF power transmission with frequency hopping off b. Maximum RF power transmission with frequency hopping on	The EUT was exercised by operating in the mode “a”, i.e transmitting at lower, middle and upper channels as shown below one at a time. For Band Edge Compliance, only lower and upper channels were evaluated. Transmit Channel / Frequency (GHz) Channel 0 (Lower Channel) 2.402 Channel 19 (Middle Channel) 2.440 Channel 39 (upper Channel) 2.480 The EUT was exercised by operating in maximum continuous transmission with frequency hopping on (mode ‘b”).

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1.5 Deviations from the Standard

Nil.

1.6 EUT Modification Record

No modifications were made.

1.7 Test Location(s)

TÜV SÜD PSB Pte Ltd
Electrical & Electronics Centre (EEC), Product Services,
No. 1 Science Park Drive, Singapore 118221

TÜV SÜD PSB Pte Ltd
Electrical & Electronics Centre (EEC), Product Services,
13 International Business Park #01-01, Singapore 609932

1.8 Test Facilities Registrations

Requirements	Registration Numbers
FCC	994109 (Test Firm Registration Number) SG0002 (Designation Number)
ISED	Science Park 2932I-1 (3m and 10m Semi-Anechoic Chamber) International Business Park 2932N-1 (10m Semi-Anechoic Chamber)
VCCI	Science Park R-1335 (10m ANC), G-29 (10m ANC) C-2306 (C.E @ Lab 3) T-1471 (Telecom Ports @ Lab 3) International Business Park R-3324 (10m ANC), G-203 (10mANC) C-4933 (C.E @ CEIBP) T-2403 (Telecom Ports @ CEIBP)
BSMI	SL2-IS-E-6001R *[CNS-13803 (ISM Equipment)]* SL2-IN-E-6001R *[CNS-13438 (IT Equipment)]* SL2-R1/R2-E-6001R *[CNS-13439 (Broadcast Receivers)]* SL2-A1-E-6001R *[CNS-13783-1 (Household Appliances)]* SL2-L1-E-6001R *[CNS-14115 (Lighting Equipment)]*
SABS	SABS/A-LAB/0029/2018

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1.9 Supporting Equipment

Equipment Description (Including Brand Name)	Model, Serial & FCC ID Number	Cable Description (List Length, Type & Purpose)
Fujitsu LifeBook	M/N: S6410 S/N: R7Y00054 FCC ID: DoC	Nil
Fujitsu AC Adapter	M/N: CP293662-02 S/N: 06919569A FCC ID: DoC	1.80m unshielded power cable

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2 Test Details

2.1 Conducted Emissions

2.1.1 Test Limits

Frequency Range (MHz)	Limit Values (dBµV)	
	Quasi-peak (Q-P)	Average (AV)
0.15 - 0.5	66 – 56 *	56 – 46 *
0.5 - 5.0	56	46
5.0 - 30.0	60	50
* Decreasing linearly with the logarithm of the frequency		

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2.1.2 Test Setup

2.1.2.1 The EUT and supporting equipment were set up in accordance with the requirements of the standard as shown in the setup photos.

2.1.2.2 The power supply for the EUT was fed through a 50Ω/50μH EUT LISN, connected to filtered mains.

2.1.2.3 The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.

2.1.2.4 All other supporting equipment were powered separately from another LISN.

2.1.3 Test Method

2.1.3.1 The EUT was switched on and allowed to warm up to its normal operating condition.

2.1.3.2 A scan was made on the NEUTRAL line over the required frequency range using an EMI test receiver.

2.1.3.3 High peaks, relative to the limit line, were then selected.

2.1.3.4 The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 9kHz. Both Quasi-peak and Average measurements were made.

2.1.3.5 The measurements were then repeated for the LIVE line .

Sample Calculation Example

At 20 MHz	Q-P limit = 60.0 dBμV
Transducer factor of LISN, pulse limiter & cable loss at 20 MHz = 11.2 dB Q-P reading obtained directly from EMI Receiver = 40.0 dBμV (Calibrated for system losses)	
Therefore, Q-P margin = 60.0 - 40.0 = 20.0	i.e. 20.0 dB below Q-P limit

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2.1.4 Test Results

Test Input Power	120V 60Hz	Temperature	22ºC
Line Under Test	AC Mains	Relative Humidity	59%
Mode	Frequency Hopping Off	Atmospheric Pressure	1030mbar
		Tested By	Kelvin Cheng
		Test Date	12 Sep 2018

Frequency (MHz)	Q-P Value (dBµV)	Q-P Limit (dBµV)	Q-P Margin (dB)	AV Value (dBµV)	AV Limit (dBµV)	AV Margin (dB)	Line	Channel (Worst)
0.2623	39.8	61.4	21.6	30.7	51.4	20.7	N	39
1.8363	47.7	56.0	8.3	38.5	46.0	7.5	N	39
1.9128	46.7	56.0	9.3	36.2	46.0	9.8	L1	39
2.6528	40.2	56.0	15.8	33.5	46.0	12.5	L1	39
3.5186	35.8	56.0	20.2	27.9	46.0	18.1	L1	39
4.5050	33.9	56.0	22.1	25.9	46.0	20.1	L1	39

Notes

1.	All possible modes of operation were investigated from 150kHz to 30MHz. Only the worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2.	A "positive margin" indicates a PASS as it refers to the margin present below the limit line at the particular frequency. Conversely, a "negative margin" indicates a FAIL.
3.	EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings: 9kHz - 30MHz RBW: 9kHz VBW: 30kHz

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2.2 Radiated Emissions (Spurious Emissions Inclusive Restricted Bands Requirement)

2.2.1 Test Limits

Frequency Range (MHz)	Quasi-Peak Limit Values (dBµV/m)
0.009 - 0.490 *	20 log [2400 / F (kHz)] @ 300m
0.490 - 1.705	20 log [24000 / F (kHz)] @ 30m
1.705 - 30.0	30.0 @ 30m
30 – 88	40.0 @ 3m
88 – 216	43.5 @ 3m
216 – 960	46.0 @ 3m
960 – 1000 *	54.0 @ 3m
* For frequency bands 9kHz – 90kHz, 110kHz – 490kHz and above 1GHz, average detector was used. A peak limit of 20dB above the average limit does apply.	

Frequency Range (MHz)	Average Limit Values (dBµV/m)	Peak Limit Values (dBµV/m)
Above 1000	54.0 @ 3m	74.0 @ 3m

Restricted Bands

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

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2.2.2 Test Setup

2.2.2.1 The EUT and supporting equipment were set up in accordance with the requirements of the standard as shown in the setup photos.

2.2.2.2 The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.

2.2.2.3 The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.

2.2.3 Test Method

2.2.3.1 The EUT was switched on and allowed to warm up to its normal operating condition.

2.2.3.2 A prescan was carried out to pick the worst emission frequencies from the EUT. For EUT which is a portable device, the prescan was carried out by rotating the EUT through three orthogonal axes to determine which altitude and equipment arrangement produces such emissions.

2.2.3.3 The test was carried out at the selected frequency points obtained from the pre-scan. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:

a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.
b. The EUT was then rotated to the direction that gave the maximum emission.
c. Finally, the antenna height was adjusted to the height that gave the maximum emission

2.2.3.4 A Quasi-peak measurement was made for that frequency point if it was less than or equal to 1GHz.For frequency point in range of 9kHz – 90kHz, 110kHz – 49k0kHz and above 1GHz, both Peak and Average measurements were carried out.

2.2.3.5 The measurements were repeated for the next frequency point, until all selected frequency points were measured.

2.2.3.6 The frequency range covered was from the lowest radio frequency signal generated from the EUT, without going below 9kHz to 10th harmonics of the EUT fundamental frequency, using the loop antenna for frequency below 30MHz, Bi-log antenna for frequencies from 30MHz up to 1GHz, and the Horn antenna above 1GHz.

Sample Calculation Example

At 300 MHz	Q-P limit = 46.0 dBμV/m
Log-periodic antenna factor & cable loss at 300 MHz = 18.5 dB Q-P reading obtained directly from EMI Receiver = 40.0 dBμV/m (Calibrated level including antenna factors & cable losses)	
Therefore, Q-P margin = 46.0 - 40.0 = 6.0	i.e. 6.0 dB below Q-P limit

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2.2.5 Test Results

Test Input Power	5Vdc	Temperature	22°C
Test Distance	3m (<30MHz) 3m (<30MHz) 3m (≥30MHz – 25GHz)	Relative Humidity	57%
Mode	Frequency Hopping Off	Atmospheric Pressure	1029mbar
Worst Antenna	0	Tested By	Dylan Lin
Worst Data Rate	2Mbps	Test Date	17 Sep 2018

Spurious Emissions ranging from 9kHz – 30MHz (for 9kHz – 90kHz, 110kHz – 490kHz) *See Note 4 &5

Freq (GHz)	Peak Value (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Azimuth (Degrees)	Pol (H/V)	Ch
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Spurious Emissions ranging from 9kHz – 30MHz *See Note 4 & 5

Frequency (MHz)	Q-P Value (dBµV/m)	Q-P Limit (dBµV/m)	Q-P Margin (dB)	Height (cm)	Azimuth (Degrees)	Pol (H/V)	Channel
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Spurious Emissions ranging from 30MHz – 1GHz

Frequency (MHz)	Q-P Value (dBµV/m)	Q-P Limit (dBµV/m)	Q-P Margin (dB)	Height (cm)	Azimuth (Degrees)	Pol (H/V)	Channel (Worst)
39.7970	26.7	40.0	13.3	100	213	V	39
59.3910	26.4	40.0	13.6	400	187	V	39
78.9850	28.8	40.0	11.2	298	321	V	39
336.1560	31.9	46.0	14.1	100	31	V	39
399.8370	31.2	46.0	14.8	100	109	V	39
671.7040	38.0	46.0	8.0	200	314	H	39

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Spurious Emissions above 1GHz – 25GHz

Freq (GHz)	Peak Value (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Azimuth (Degrees)	Pol (H/V)	Ch
1.2475	41.0	74.0	33.0	23.8	54.0	30.2	200	341	H	0
1.6570	41.7	74.0	32.3	27.2	54.0	26.8	200	341	H	0
2.1211	44.7	74.0	29.3	32.2	54.0	21.8	398	117	V	0
3.3239	42.0	74.0	32.0	22.7	54.0	31.3	200	347	H	0
4.8027	43.9	74.0	30.1	31.3	54.0	22.7	200	335	H	0
17.6782	56.8	74.0	17.2	47.2	54.0	6.8	300	312	V	0

Spurious Emissions above 1GHz – 25GHz

Freq (GHz)	Peak Value (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Azimuth (Degrees)	Pol (H/V)	Ch
4.8835	48.5	74.0	25.5	41.8	54.0	12.2	199	316	H	19
7.3211	49.4	74.0	24.6	40.7	54.0	13.3	200	346	H	19
9.7572	44.3	74.0	29.7	40.7	54.0	13.3	101	265	H	19
2.9998	42.3	74.0	31.7	34.6	54.0	19.4	100	108	H	19
3.7523	44.5	74.0	29.5	38.0	54.0	16.0	100	96	H	19
2.1211	40.5	74.0	33.5	35.2	54.0	18.8	399	26	V	19

Spurious Emissions above 1GHz – 25GHz

Freq (GHz)	Peak Value (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Azimuth (Degrees)	Pol (H/V)	Ch
1.0404	32.3	74.0	41.7	25.7	54.0	28.3	300	157	V	39
1.8434	35.8	74.0	38.2	26.9	54.0	27.1	300	58	V	39
2.1211	40.5	74.0	33.5	34.8	54.0	19.2	399	278	V	39
2.4797	40.2	74.0	33.8	38.7	54.0	15.3	200	130	H	39
4.9592	51.7	74.0	22.3	45.9	54.0	8.1	200	66	H	39
7.4362	46.8	74.0	27.2	40.0	54.0	14.0	399	349	V	39

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Notes

1.	All possible modes of operation were investigated. Only the worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2.	A "positive margin" indicates a PASS as it refers to the margin present below the limit line at the particular frequency. Conversely, a "negative margin" indicates a FAIL.
3.	EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings: 9kHz – 30MHz RBW: 9kHz VBW: 30kHz 30MHz - 1GHz RBW: 120kHz VBW: 1MHz >1GHz RBW: 1MHz VBW: 3MHz
4.	"--" indicates no emissions were found and shows compliance to the limits.
5.	The measurement was done at 3m. The measured results were extrapolated to the specified test limits as specified in § 15.209 (a) based on 40dB/decade.
6.	Quasi-peak measurement was used for frequency measurement up to 1GHz. Average and peak measurements were used for emissions above 1GHz. The average measurement was done by averaging over a complete cycle of the pulse train, including the blanking interval as the pulse train duration does not exceed 0.1 second.
7.	A "positive" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency. Conversely, a "negative" margin indicates a FAIL.
8	EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings: 30MHz - 1GHz RBW: 120kHz VBW: 1MHz >1GHz RBW: 1MHz VBW: 3MHz
9.	The upper frequency of radiated emission investigations was according to requirements stated in Section 15.33 (a) for intentional radiators & Section 15.33 (b) for unintentional radiators.
10.	The channel in the table refers to the transmit channel of the EUT.

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2.3 Carrier Frequency Separation

2.3.1 Test Limits

The EUT shows compliance to the requirements of this section, which states the adjacent carrier frequencies must be separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, the EUT may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125mW (21dBm).

2.3.2 Test Setup

2.3.2.1 The EUT and supporting equipment were set up as shown in the setup photo.

2.3.2.2 The power supply for the EUT was connected to a filtered mains.

2.3.2.3 The RF antenna connector was connected to the spectrum analyser via a low-loss coaxial cable.

2.3.2.4 The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were respectively set to *100kHz* and 3*00kHz*.

2.3.2.5 All other supporting equipment were powered separately from another filtered mains.

2.3.3 Test Method

2.3.3.1 The EUT was switched on and allowed to warm up to its normal operating condition. The EUT was then configured to operate in the test mode with frequency hopping sequence on.

2.3.3.2 The start and stop frequencies of the spectrum analyser were set to 2.390GHz and 2.408GHz.

2.3.3.3 The spectrum analyser was set to max hold to capture the two adjacent transmitting frequencies within the span. The signal capturing was continuous until no further signals were detected.

2.3.3.4 The carrier frequency separation of the two adjacent transmitting / operating frequency was measured by finding the carrier frequency difference between the two adjacent channels.

2.3.3.5 The measurements were repeated with the following start and stop frequencies settings:
a. 2.4365GHz to 2.4475GHz
b. 2.473GHz to 2.500GHz

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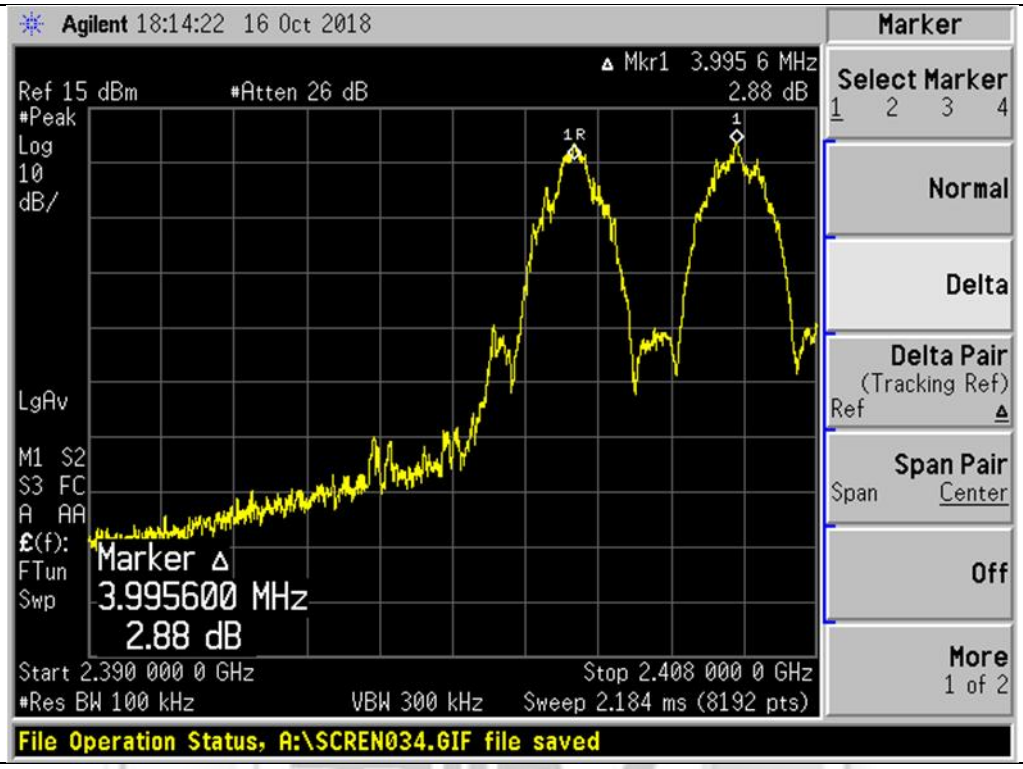
2.3.4 Test Results

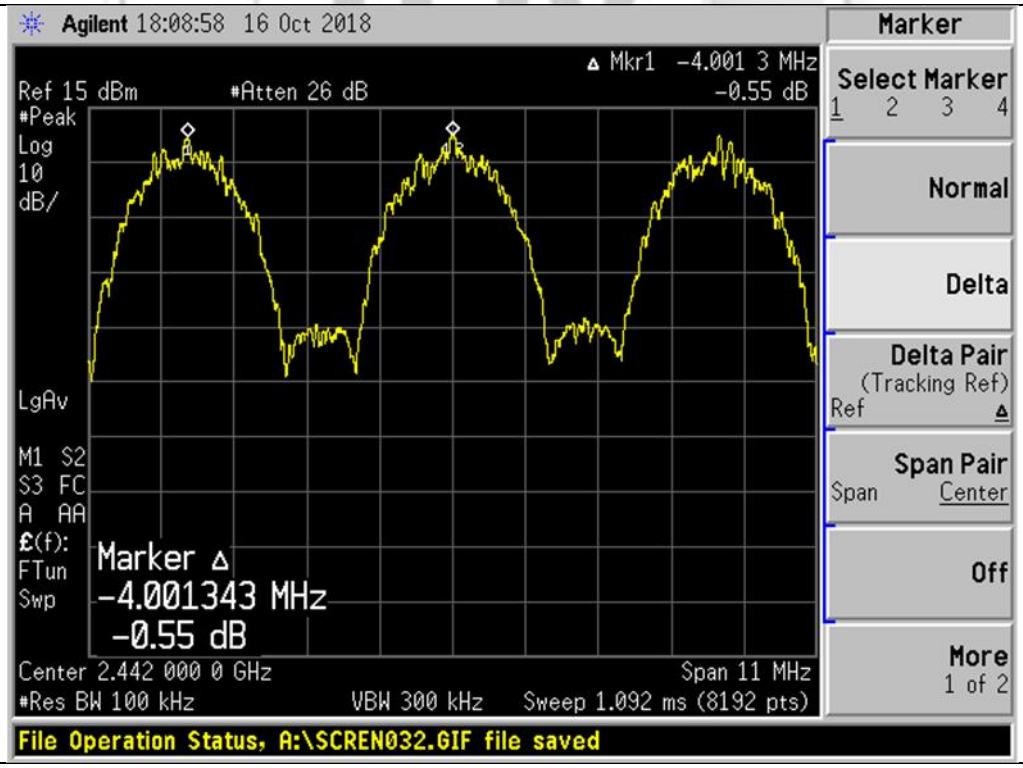
Test Input Power	5Vdc	Temperature	23°C
Attached Plots	1 – 4	Relative Humidity	58%
Mode	Frequency Hopping On	Atmospheric Pressure	1030mbar
Worst Antenna	0	Tested By	Chang Wai Kit
Worst Data Rate	2Mbps	Test Date	16 Oct 2018

Adjacent Channels	Channel Separation (MHz)
0 and 2 (2.402GHz and 2.406GHz)	3.996
18 and 20 (2.434GHz and 2.438GHz)	4.001
20 and 22 (2.438GHz and 2.442GHz)	4.023
36 and 39 (2.474GHz and 2.480GHz)	5.977

Carrier Frequency Separation Plots



Plot 1 - Channels 0 *(lower ch)* and 2 *(ch after lower ch)* Separation



Plot 2 – Channels 18 *(preceding mid ch)* and 20 *(mid ch)* Separation

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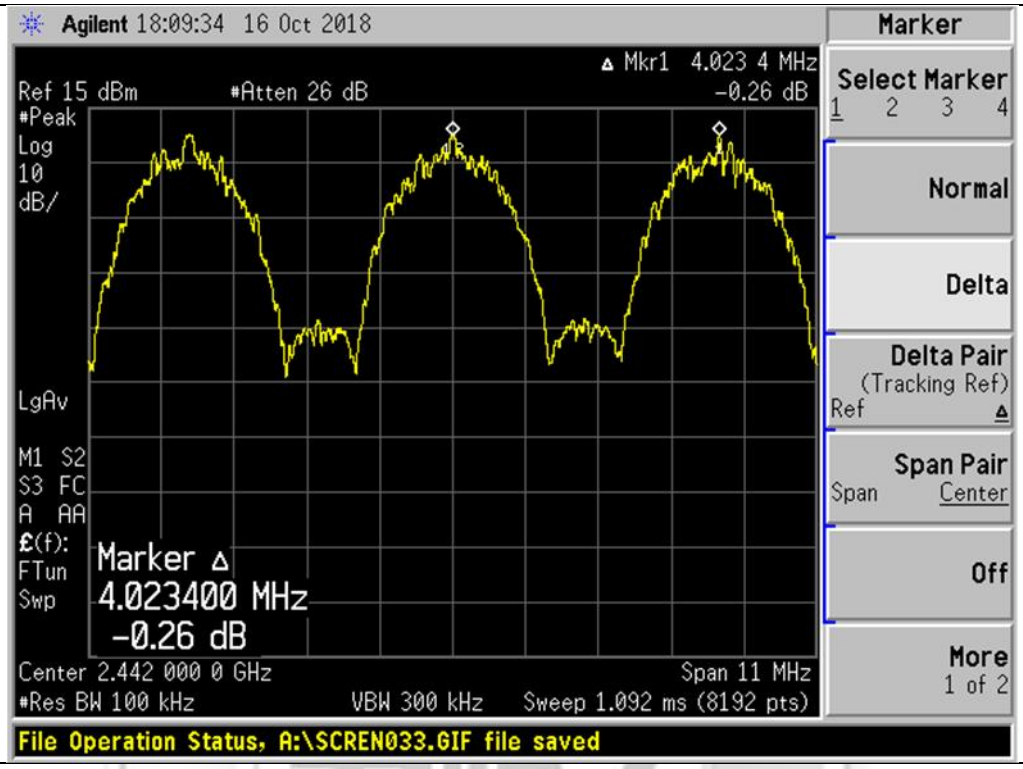
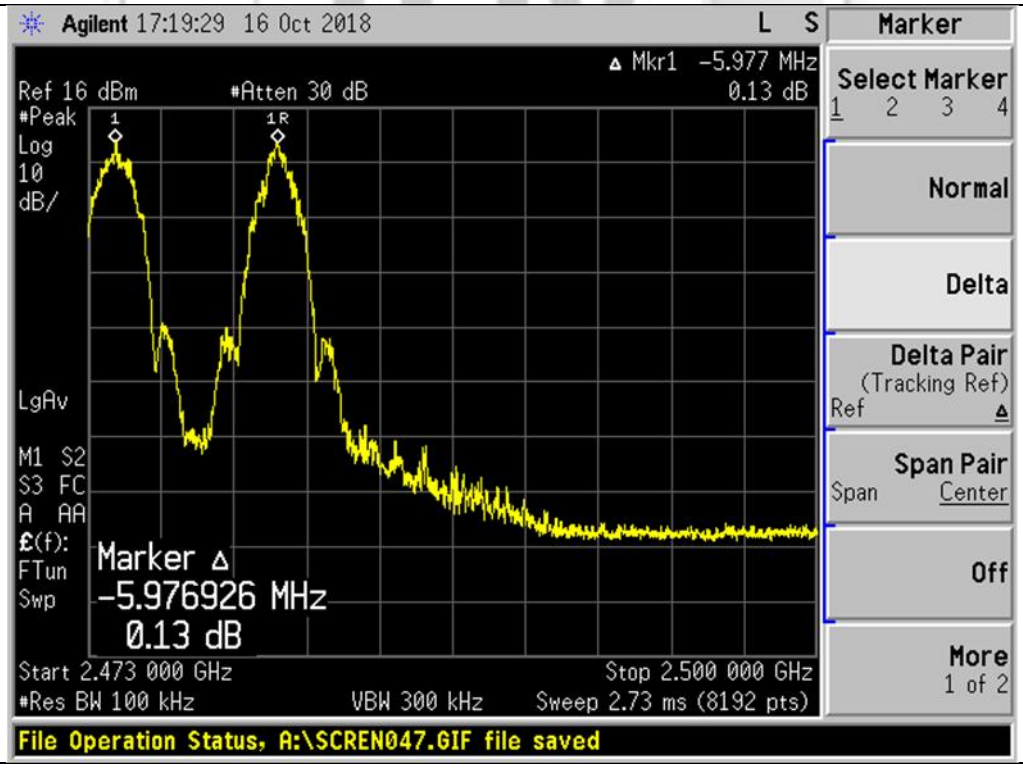
Carrier Frequency Separation Plots



Plot 3 - Channels 20 *(mid ch)* and 22 *(ch after mid ch)* Separation



Plot 4 - Channels 36 *(preceding upper ch)* and 39 *(upper ch)* Separation

PSB Singapore

2.4 Spectrum Bandwidth (20dB Bandwidth Measurement)

2.4.1 Test Limits

The EUT shows compliance to the requirements of this section, which states that the 20dB bandwidth of the hopping channel shall be the channel frequency separation by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater.

2.4.2 Test Setup

2.4.2.1 The EUT and supporting equipment were set up as shown in the set up photo.

2.4.2.2 The power supply for the EUT was connected to a filtered mains.

2.4.2.3 The RF antenna connector was connected to the spectrum analyser via a low-loss coaxial cable.

2.4.2.4 The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were respectively set to 20kHz and 60kHz.

2.4.2.5 All other supporting equipment were powered separately from another filtered mains.

2.4.3 Test Method

2.4.3.1 EUT was switched on and allowed to warm up to its normal operating condition. The EUT was then configured to operate in the test mode, non-hopping with transmitting frequency at lower channel.

2.4.3.2 The center frequency of the spectrum analyser was set to the transmitting frequency with the frequency span was set in between two to five times of the captured 20dB bandwidth of the transmitting frequency.

2.4.3.3 The spectrum analyser was set to max hold to capture the transmitting frequency. The signal capturing was continuous until no further changes were observed.

2.4.3.4 The peak of the transmitting frequency was detected with the marker peak function of the spectrum analyser. The frequencies below the 20dB peak frequency at lower (f_L) and upper (f_H) sides of the transmitting frequency were marked and measured by using the marker-delta function of the spectrum analyser.

2.4.3.5 The 20dB bandwidth of the transmitting frequency is the frequency difference between the marked lower and upper frequencies, $| f_H - f_L |$.

2.4.3.6 The measurements were repeated with the transmitting frequency was set to middle channel and upper channel respectively.

PSB Singapore

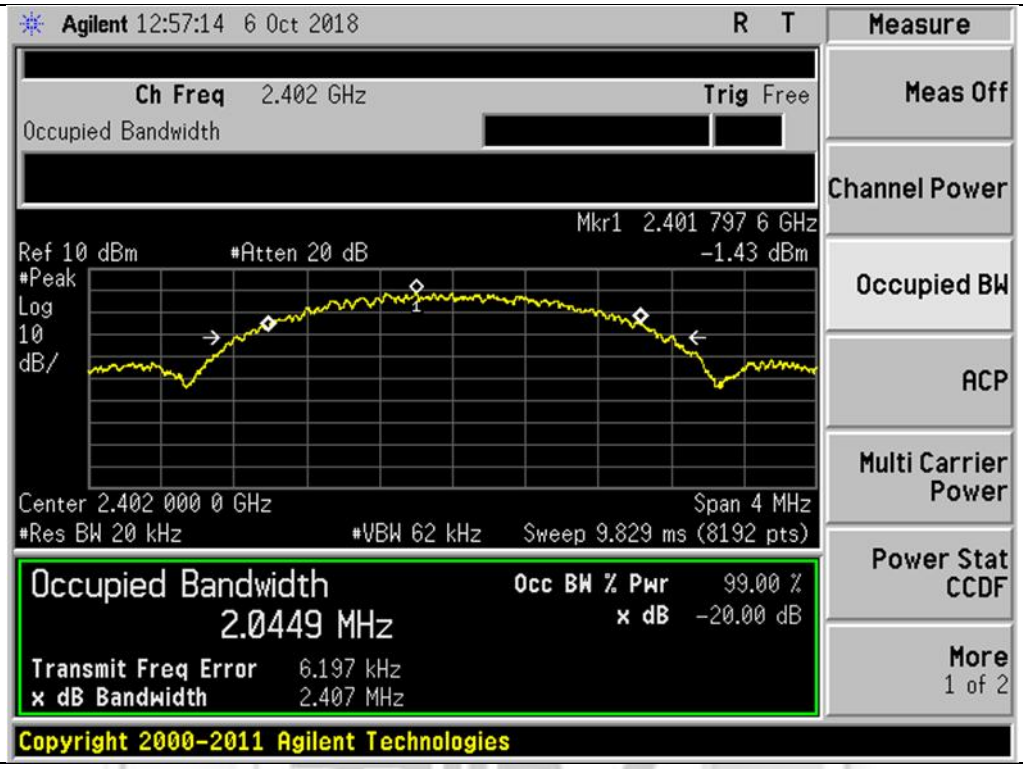
2.4.4 Test Results

Test Input Power	5Vdc	Temperature	23ºC
Attached Plots	5 – 7	Relative Humidity	58%
Mode	Frequency Hopping Off	Atmospheric Pressure	1030mbar
Worst Antenna	0	Tested By	Chang Wai Kit
Worst Data Rate	2Mbps	Test Date	06 Oct 2018

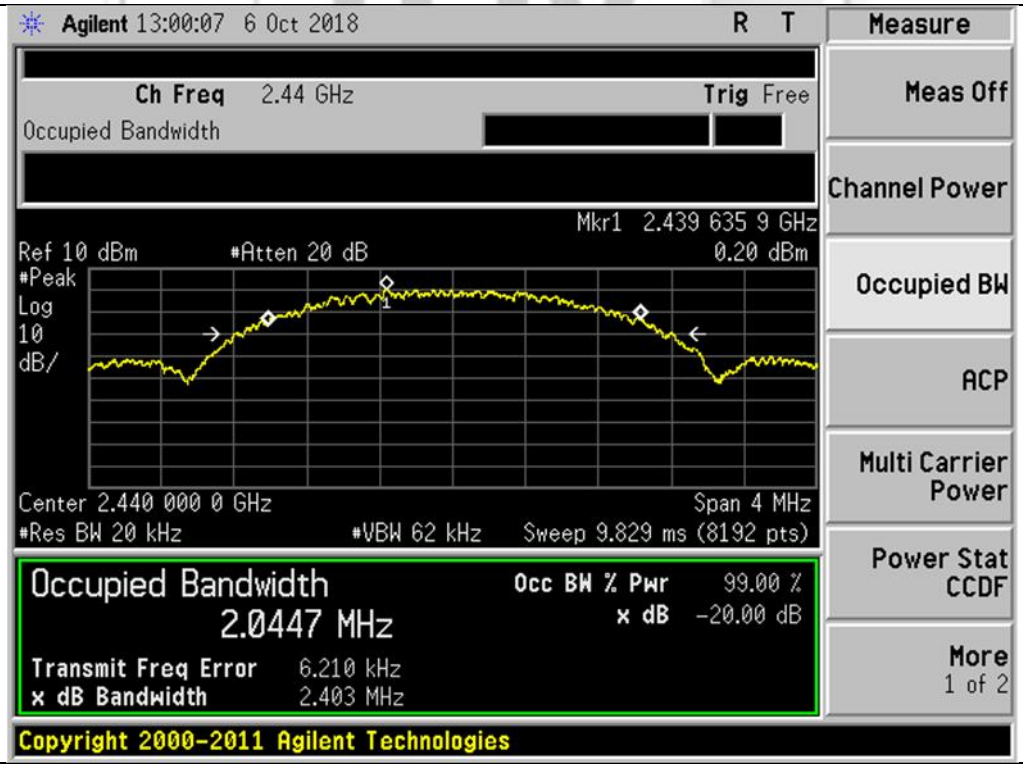
Channel	Channel Frequency (GHz)	20dB Bandwidth (MHz)
Lower	2.402	2.407
Middle	2.440	2.403
Upper	2.480	2.405

PSB Singapore

Spectrum Bandwidth (20dB Bandwidth Measurement) Plots



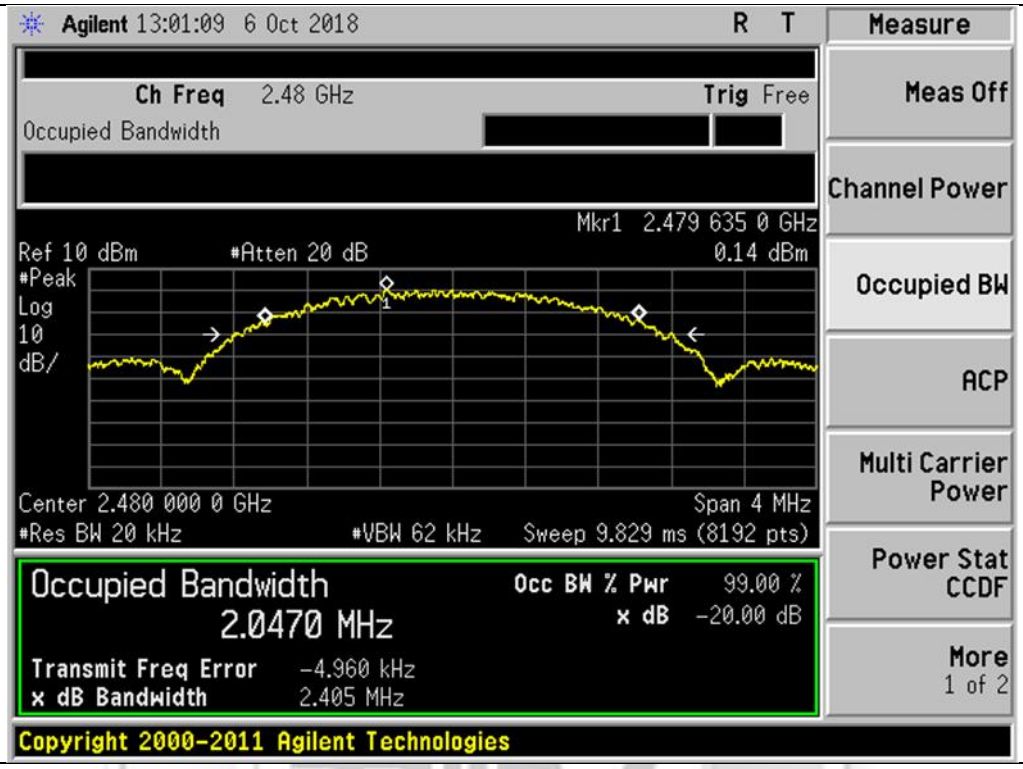
Plot 5 – Lower Channel



Plot 6 – Middle Channel

PSB Singapore

Spectrum Bandwidth (20dB Bandwidth Measurement) Plots



Plot 7 – Upper Channel

PSB Singapore

2.5 Number of Hopping Frequencies

2.5.1 Test Limits

The EUT shows compliance to the requirements of this section, which states the EUT shall use at least 15 channels.

2.5.2 Test Setup

2.5.2.1 The EUT and supporting equipment were set up as shown in the setup photo.

2.5.2.2 The power supply for the EUT was connected to a filtered mains.

2.5.2.3 The RF antenna connector was connected to the spectrum analyser via a low-loss coaxial cable.

2.5.2.4 The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were respectively set to 100kHz and 300kHz.

2.5.2.5 All other supporting equipment were powered separately from another filtered mains.

2.5.3 Test Method

2.5.3.1 The EUT was switched on and allowed to warm up to its normal operating condition. The EUT was then configured to operate in the test mode with frequency hopping sequence on.

2.5.3.2 The start and stop frequencies of the spectrum analyser were set to 2.39GHz and 2.5GHz.

2.5.3.3 The spectrum analyser was set to max hold to capture all the transmitting frequencies within the span. The signal capturing was continuous until all the transmitting frequencies were captured and no further signals were detected.

2.5.3.4 The numbers of transmitting frequencies were counted and recorded.

2.5.3.5 The total number of hopping frequencies is the sum of the number of the hopping frequencies found.

PSB Singapore

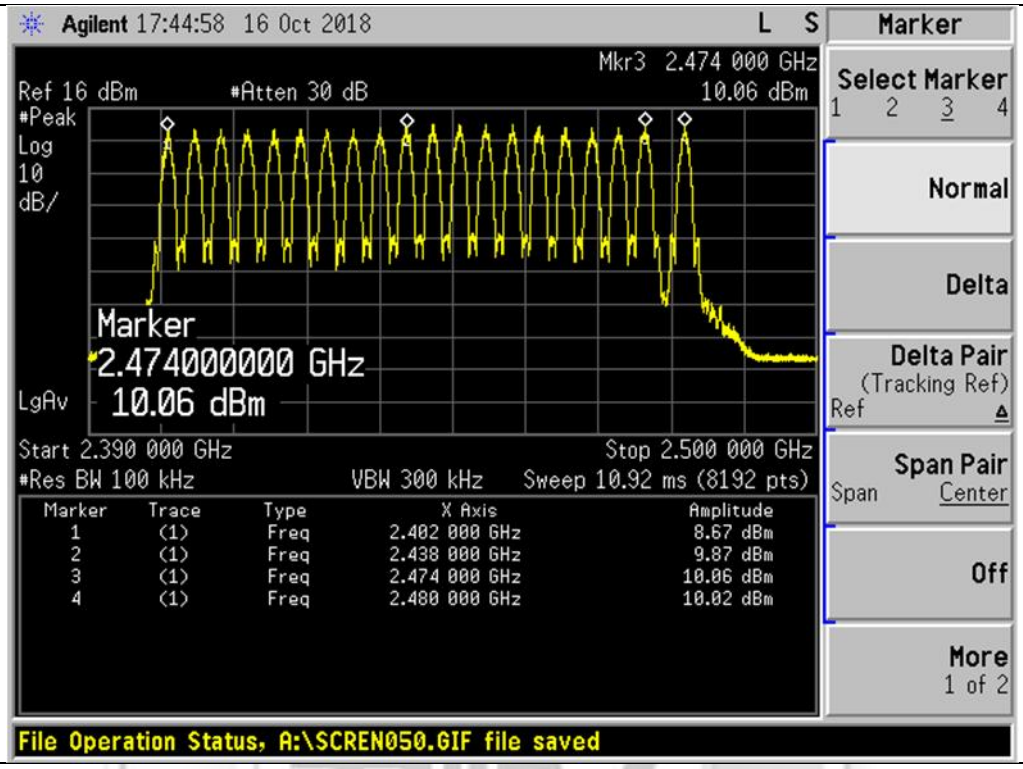
2.5.4 Test Results

Test Input Power	5Vdc	Temperature	23°C
Attached Plots	8	Relative Humidity	58%
Mode	Frequency Hopping On	Atmospheric Pressure	1030mbar
Worst Antenna	0	Tested By	Chang Wai Kit
Worst Data Rate	2Mbps	Test Date	16 Oct 2018

The EUT was found to have 20 hopping frequencies. Please refer to the attached plots.

PSB Singapore

Number of Hopping Frequencies Plots



Plot 8 - Channels 0 to 39

PSB Singapore

2.6 Average Frequency Dwell Time

2.6.1 Test Limits

The EUT shows compliance to the requirements of this section, which states the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

2.6.2 Test Setup

2.6.2.1 The EUT and supporting equipment were set up as shown in the setup photo.

2.6.2.2 The power supply for the EUT was connected to a filtered mains.

2.6.2.3 The RF antenna connector was connected to the spectrum analyser via a low-loss coaxial cable.

2.6.2.4 The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were respectively set to 1MHz and 3MHz.

2.6.2.5 All other supporting equipment were powered separately from another filtered mains.

2.6.3 Test Method

2.6.3.1 The EUT was switched on and allowed to warm up to its normal operating condition. The EUT was then configured to operate in the test mode with frequency hopping sequence on.

2.6.3.2 The center frequency of the spectrum analyser was set to lower channel with zero frequency span (spectrum analyser acts as an oscilloscope).

2.6.3.3 The sweep time of the spectrum analyser was adjusted until a stable signal can be seen on the spectrum analyser.

2.6.3.4 The duration (dwell time) of a packet (transmit time per hop) was measured using the marker-delta function of the spectrum analyser.

2.6.3.5 The measurement was repeated with the sweep time was set to equal to period specified in the requirement.

2.6.3.6 The number of hops in the period specified in the requirement, N was computed as below:
N = [number of hops on spectrum analyser] x [period specified in the requirement / spectrum analyser sweep time]

2.6.3.7 The average time of occupancy is calculated from the transmit time per hop multiplied by the number of hops in the period specified in the requirement, N.

2.6.3.8 The measurements were repeated with the center frequency of the spectrum analyser were set to middle channel and upper channel respectively.

PSB Singapore

2.6.4 Test Results

Test Input Power	5Vdc	Temperature	23°C
Attached Plots	9 – 14	Relative Humidity	58%
Hopping Rate	488 hops / s	Atmospheric Pressure	1030mbar
Number of Hopping Channels	20 channels	Tested By	Chang Wai Kit
Mode	Frequency Hopping On	Test Date	16 Oct 2018

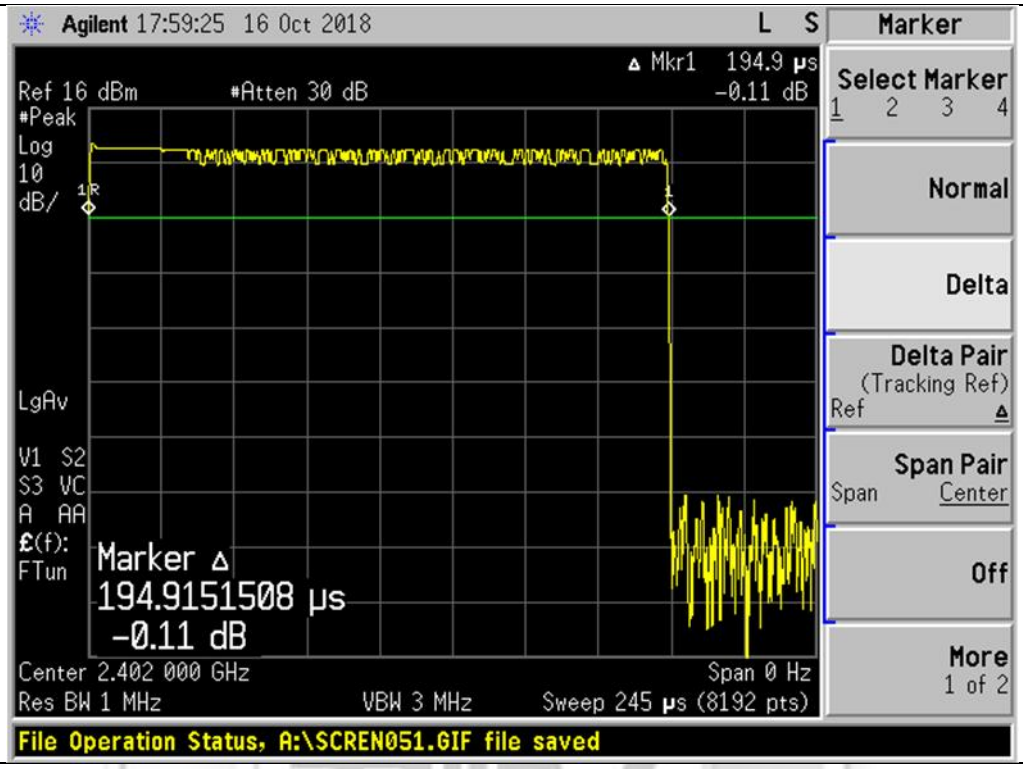
Channel	Channel Frequency (GHz)	Measured Time Slot Length (ms)	Average Frequency Dwell Time (s)	Average Occupancy Limit (s)
Lower	2.402	0.1949	0.0515	0.4
Middle	2.442	0.3917	0.0595	0.4
Upper	2.480	0.3872	0.1022	0.4

Notes

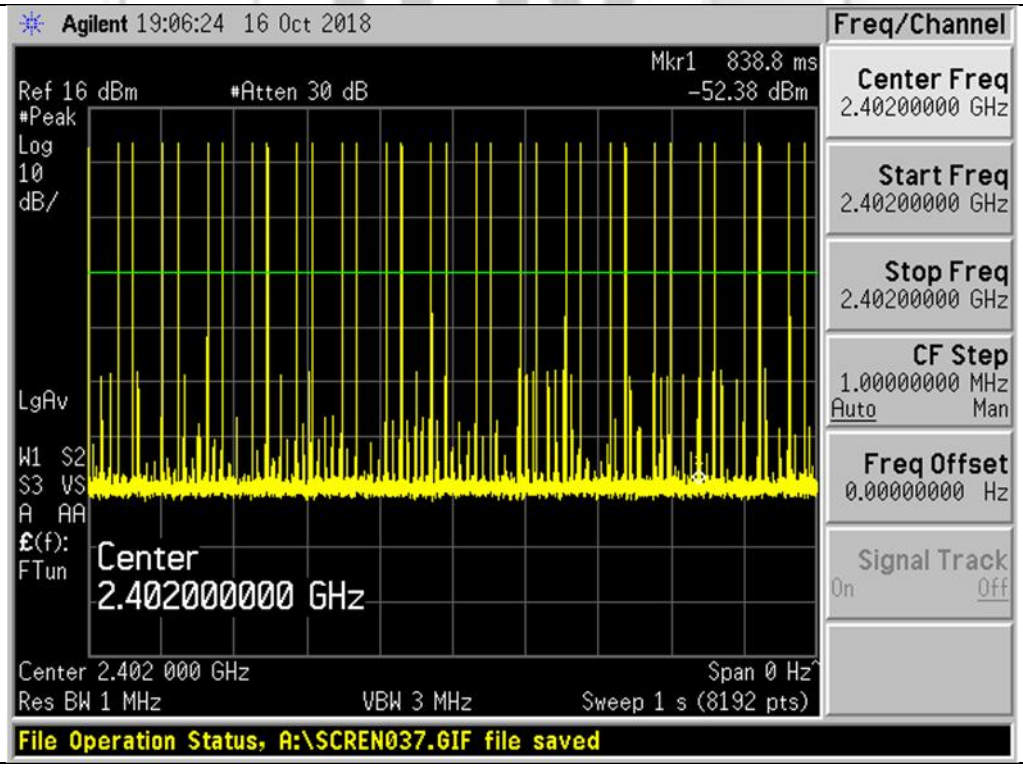
1.	Nil

PSB Singapore

Average Frequency Dwell Time Plots



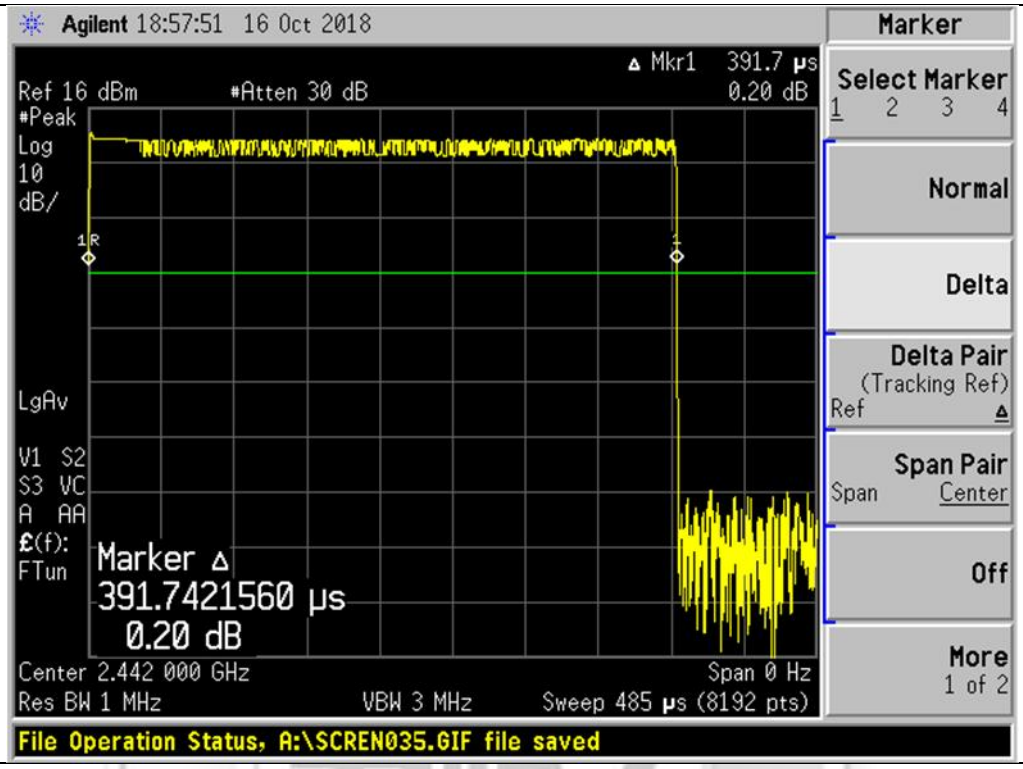
Plot 9 – Channel 0 *(lower ch) – Transmit Time per Hop*



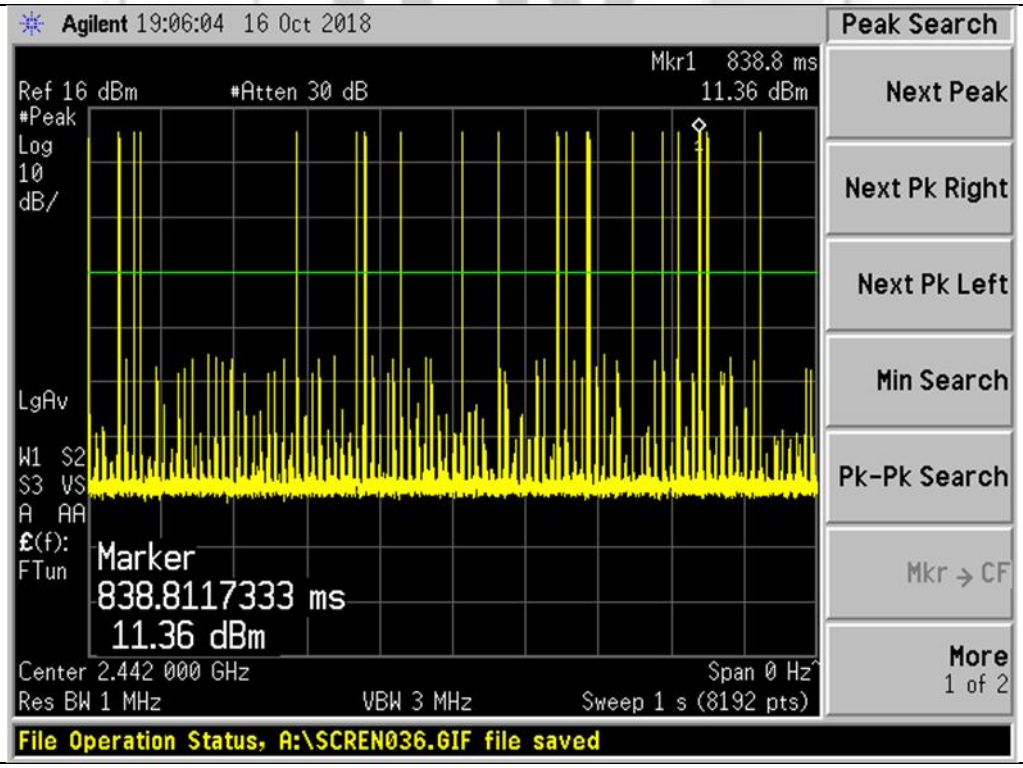
Plot 10 – Channel 0 *(lower ch) – Number of Hops in 1s*

PSB Singapore

Average Frequency Dwell Time Plots



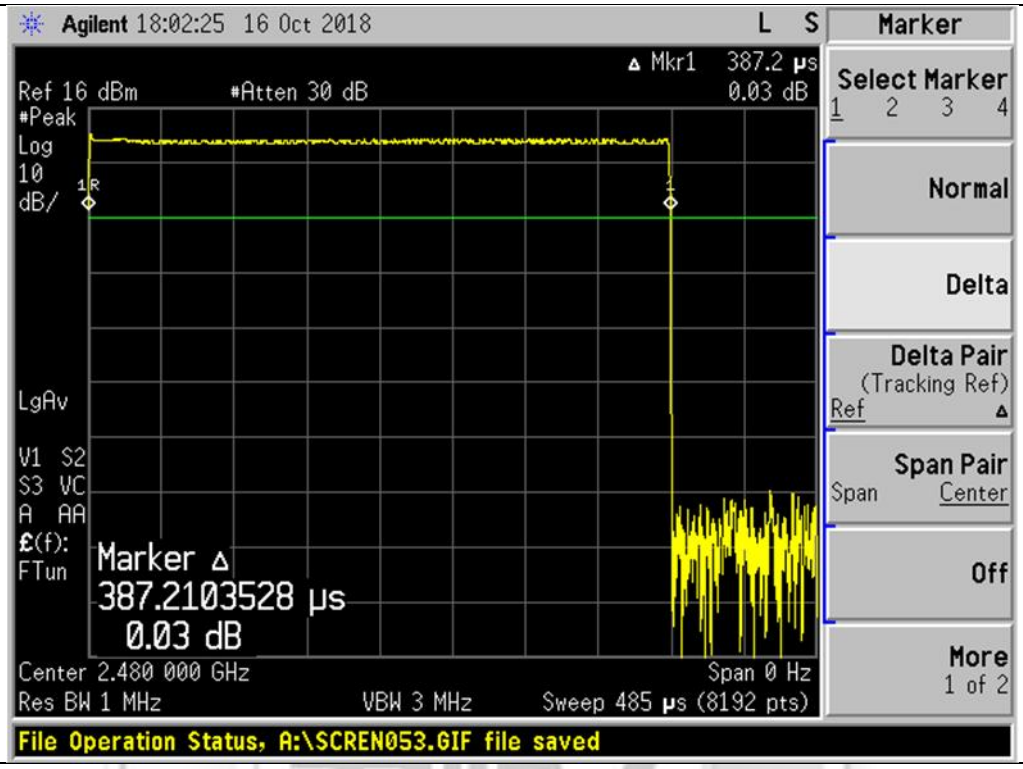
Plot 11 – Channel 20 *(mid ch)* – *Transmit Time per Hop*



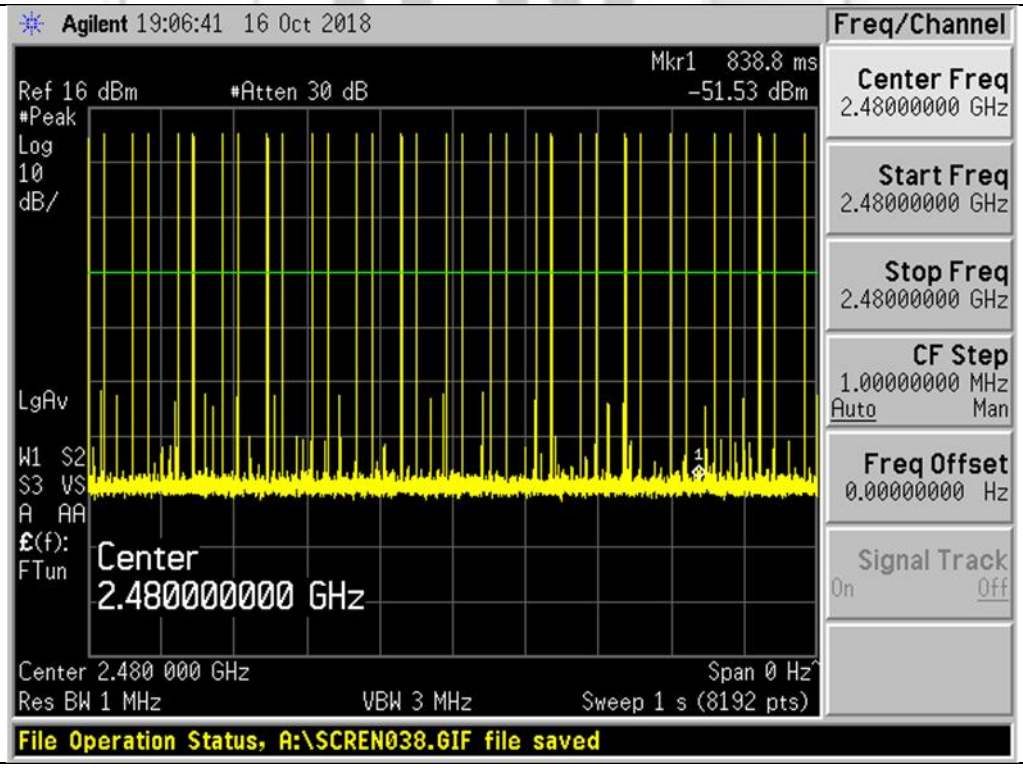
Plot 12 – Channel 20 *(mid ch)* – *Number of Hops in 1s*

PSB Singapore

Average Frequency Dwell Time Plots



Plot 13 – Channel 39 *(upper ch) – Transmit Time per Hop*



Plot 14 – Channel 39 *(upper ch) – Number of Hops in 1s*

PSB Singapore

2.7 Maximum Peak Power

2.7.1 Test Limits

The EUT shows compliance to the requirements of this section, which states the EUT employing at least 75 non-overlapping hopping channels shall not exceed 1W (30dBm). For the EUT employs other frequency hopping systems, the peak power shall not greater than 0.125W (21dBm).

2.7.2 Test Setup

2.7.2.1 The EUT and supporting equipment were set up as shown in the setup photo.

2.7.2.2 The power supply for the EUT was connected to a filtered mains.

2.7.2.3 The RF antenna connector was connected to a power meter via a low-loss coaxial cable.

2.7.2.4 All other supporting equipment were powered separately from another filtered mains.

2.7.3 Test Method

2.7.3.1 The EUT was switched on and allowed to warm up to its normal operating condition. The EUT was then configured to operate in the test mode, non-hopping with transmitting frequency at lower channel.

2.7.3.2 The maximum peak power of the transmitting frequency was detected and recorded.

2.7.3.3 The measurement were repeated with the transmitting frequency was set to middle channel and upper channel respectively.

PSB Singapore

2.7.4 Test Results

Test Input Power	5Vdc	Temperature	23ºC
Antenna Gain	3.4 dBi	Relative Humidity	58%
Mode	Frequency Hopping Off	Atmospheric Pressure	1030mbar
Antenna	0	Tested By	Chang Wai Kit
		Test Date	06 Oct 2018

1Mbps

Channel	Channel Frequency (GHz)	Maximum Peak Power (W)	Limit (W)
Lower	2.402	0.0072	1.0
Middle	2.440	0.0102	1.0
Upper	2.480	0.0103	1.0

2Mbps

Channel	Channel Frequency (GHz)	Maximum Peak Power (W)	Limit (W)
Lower	2.402	0.0073	1.0
Middle	2.440	0.0106	1.0
Upper	2.480	0.0104	1.0

Test Input Power	5Vdc	Temperature	23ºC
Antenna Gain	2.0 dBi	Relative Humidity	58%
Mode	Frequency Hopping Off	Atmospheric Pressure	1030mbar
Antenna	1	Tested By	Chang Wai Kit
		Test Date	06 Oct 2018

1Mbps

Channel	Channel Frequency (GHz)	Maximum Peak Power (W)	Limit (W)
Lower	2.402	0.0077	1.0
Middle	2.440	0.0105	1.0
Upper	2.480	0.0095	1.0

2Mbps

Channel	Channel Frequency (GHz)	Maximum Peak Power (W)	Limit (W)
Lower	2.402	0.0079	1.0
Middle	2.440	0.0105	1.0
Upper	2.480	0.0097	1.0

PSB Singapore

Notes

1.	Nil.

PSB Singapore

2.8 RF Conducted Spurious Emissions

2.8.1 Test Limits

The EUT shows compliance to the requirements of this section, which states in any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator (EUT) is operating, the radio frequency power that is produced by the EUT shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of desired power.

2.8.2 Test Setup

2.8.2.1 The EUT and supporting equipment were set up as shown in the setup photo.

2.8.2.2 The power supply for the EUT was connected to a filtered mains.

2.8.2.3 The RF antenna connector was connected to the spectrum analyser via a low-loss coaxial cable.

2.8.2.4 The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were respectively set to 100kHz and 3 times of RBW.

2.8.2.5 All other supporting equipment were powered separately from another filtered mains.

2.8.3 Test Method

2.8.3.1 The EUT was switched on and allowed to warm up to its normal operating condition. The EUT was then configured to operate in the test mode, non-hopping with transmitting frequency at lower channel.

2.8.3.2 The start and stop frequencies of the spectrum analyser were set to 30MHz and 10GHz.

2.8.3.3 The spectrum analyser was set to max hold to capture any spurious emissions within the span. The signal capturing was continuous until no further spurious emissions were detected.

2.8.3.4 The measurements were repeated with frequency span was set from 10GHz to 25GHz.

2.8.3.5 The measurements were repeated with the transmitting frequency was set to middle channel and upper channel respectively.

PSB Singapore

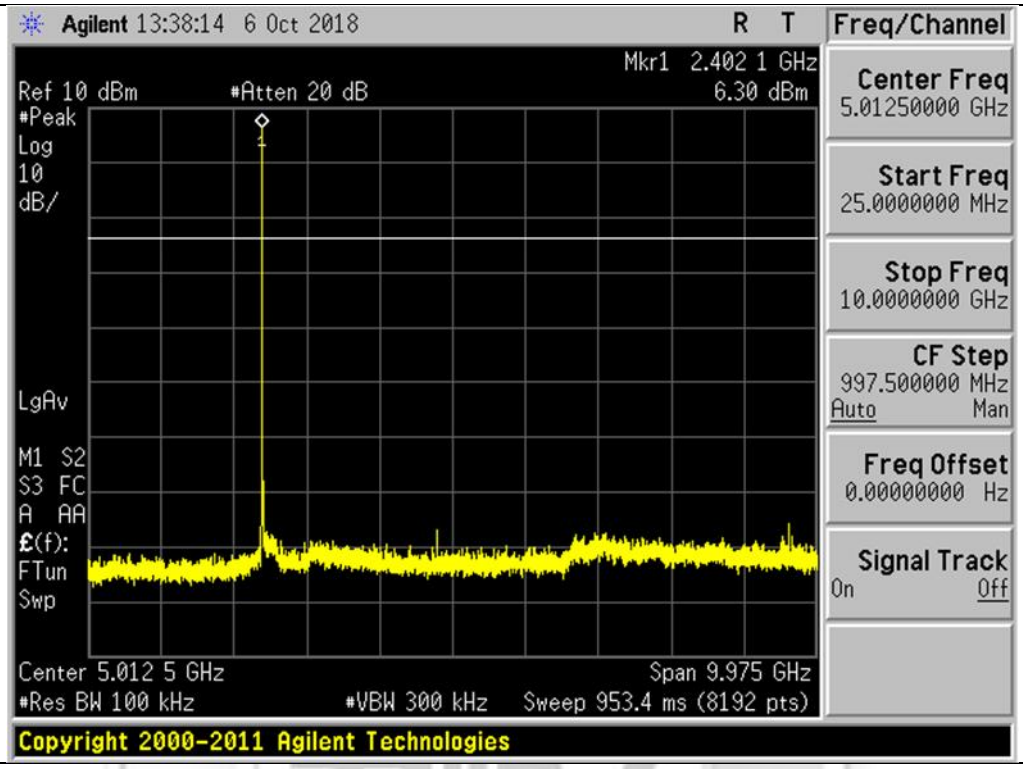
2.8.4 Test Results

Test Input Power	5Vdc	Temperature	23°C
Attached Plots	15 – 20	Relative Humidity	58%
Mode	Frequency Hopping Off	Atmospheric Pressure	1030mbar
Worst Antenna	0	Tested By	Chang Wai Kit
Worst Data Rate	2Mbps	Test Date	06 Oct 2018

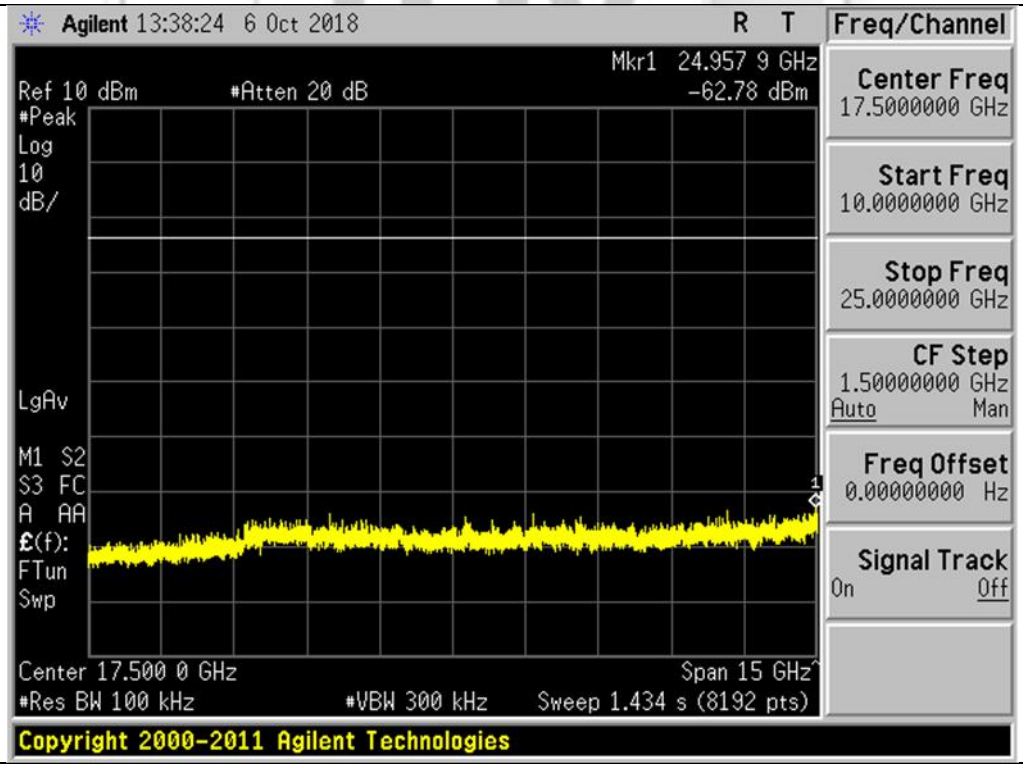
All spurious signals found were below the specified limit. Please refer to the attached plots.

PSB Singapore

RF Conducted Spurious Emissions Plots



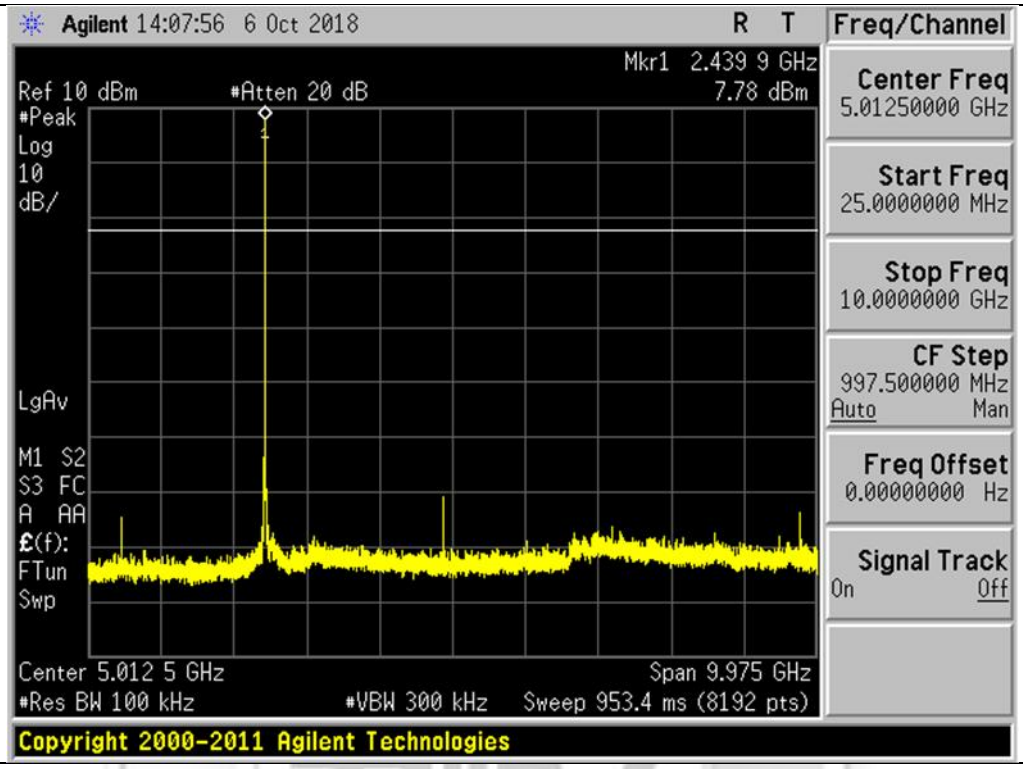
Plot 15 – Lower Channel



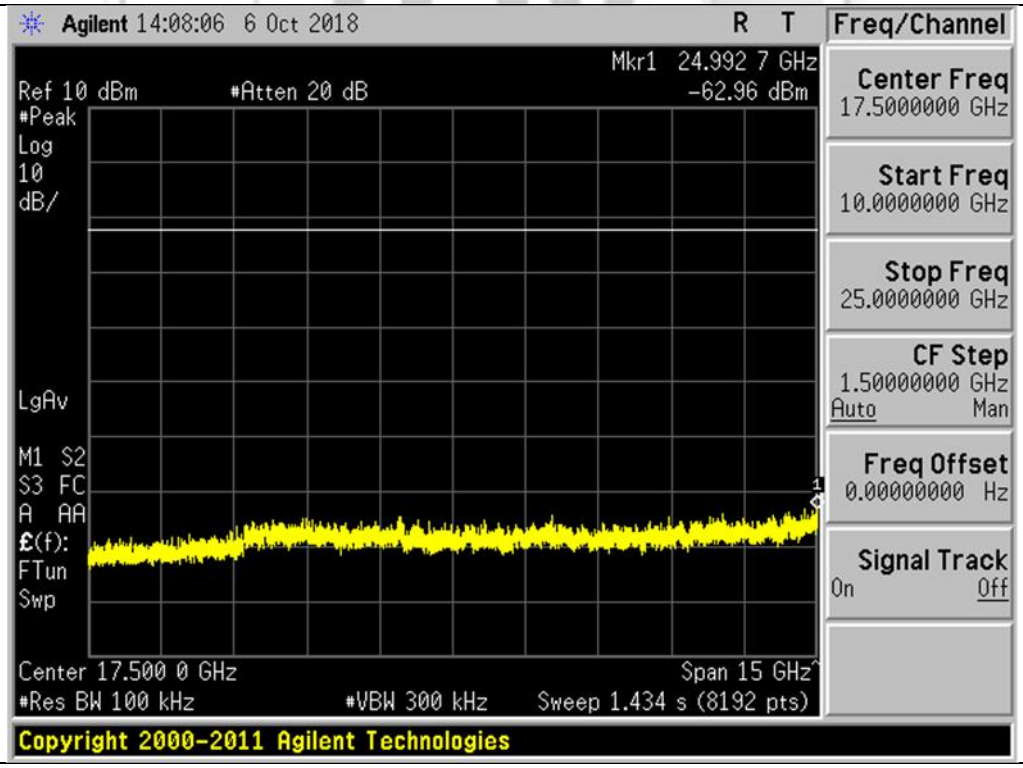
Plot 16 – Lower Channel

PSB Singapore

RF Conducted Spurious Emissions Plots



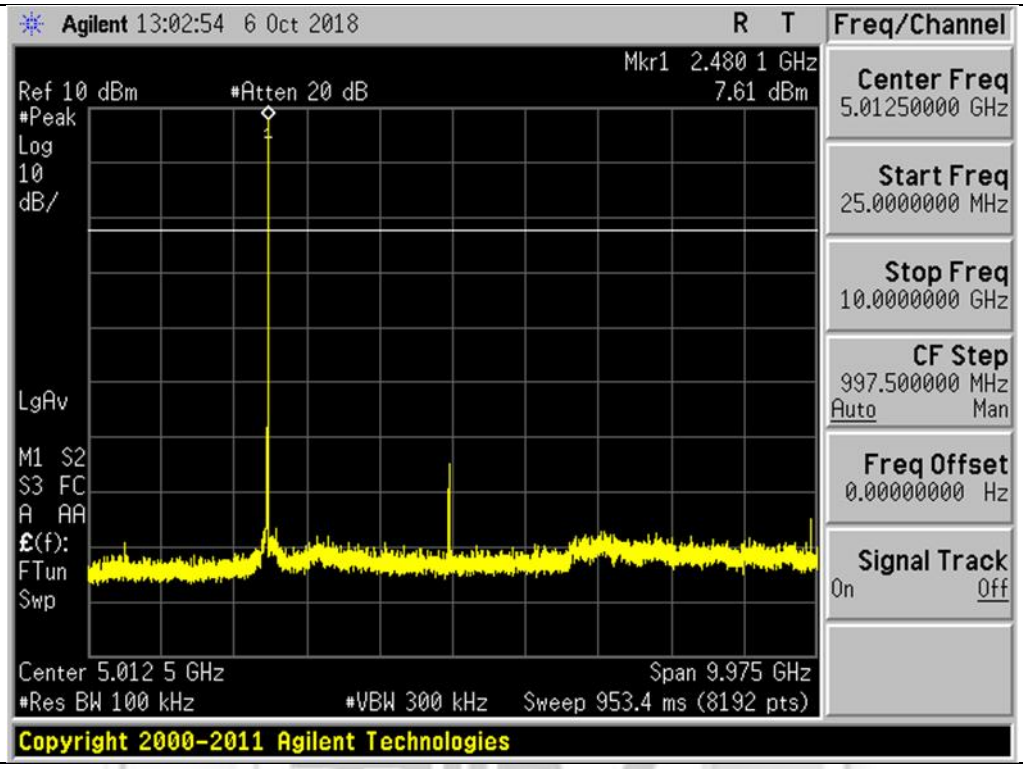
Plot 17 – Middle Channel



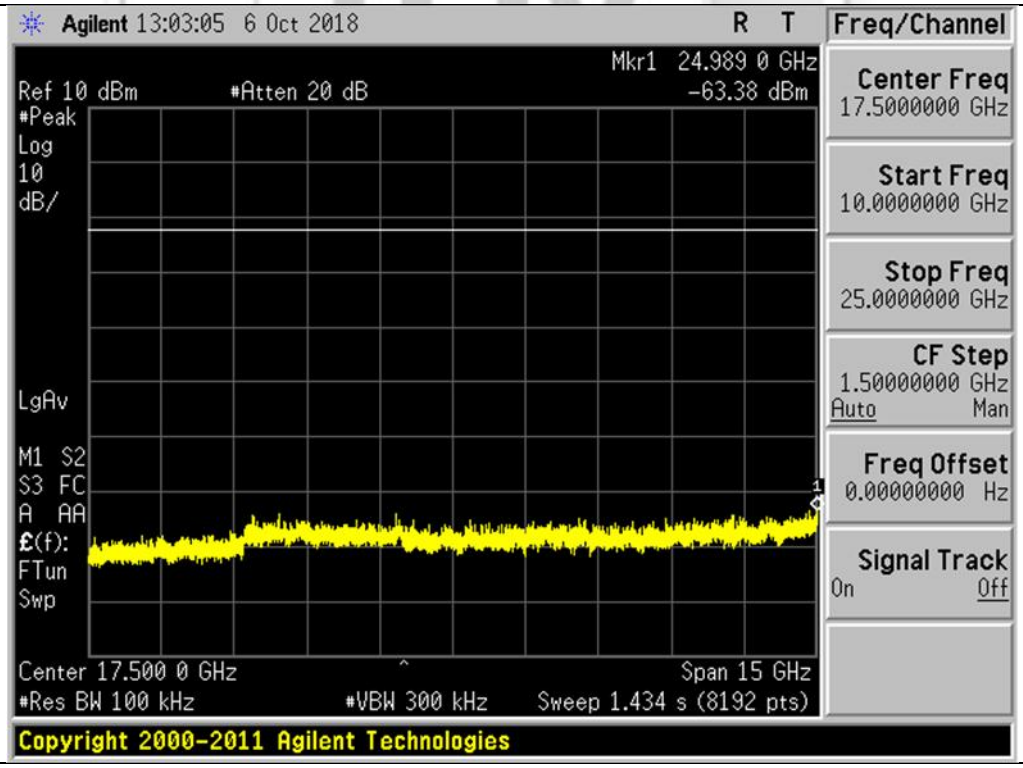
Plot 18 – Middle Channel

PSB Singapore

RF Conducted Spurious Emissions Plots



Plot 19 – Upper Channel



Plot 20 – Upper Channel

PSB Singapore

2.9 Band Edge Compliance (Conducted)

2.9.1 Test Limits

The EUT shows compliance to the requirements of this section, which states in any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator (EUT) is operating, the radio frequency power that is produced by the EUT shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

2.9.2 Test Setup

2.9.2.1 The EUT and supporting equipment were set up as shown in the setup photo.

2.9.2.2 The power supply for the EUT was connected to a filtered mains.

2.9.2.3 The RF antenna connector was connected to the spectrum analyser via a low-loss coaxial cable.

2.9.2.4 The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were respectively set to 100kHz and 300kHz.

2.9.2.5 All other supporting equipment were powered separately from another filtered mains.

2.9.3 .Test Method

2.9.3.1 The EUT was switched on and allowed to warm up to its normal operating condition. The EUT was then configured to operate in the test mode with frequency hopping sequence on.

2.9.3.2 The frequency span of the spectrum analyser was set to wide enough to capture the lower band edge of the transmission band, 2.400GHz and any spurious emissions at the band edge.

2.9.3.3 The spectrum analyser was set to max hold to capture any spurious emissions within the span. The signal capturing was continuous until no further spurious emissions were detected.

2.9.3.4 The measurements were repeated with the frequency span of the spectrum analyser was set to wide enough to capture the upper band edge frequency of the transmission band, 2.4835GHz and the any spurious emissions at the band-edge.

2.9.3.5 The measurements were repeated with turning off the frequency hopping sequence of the EUT.

PSB Singapore

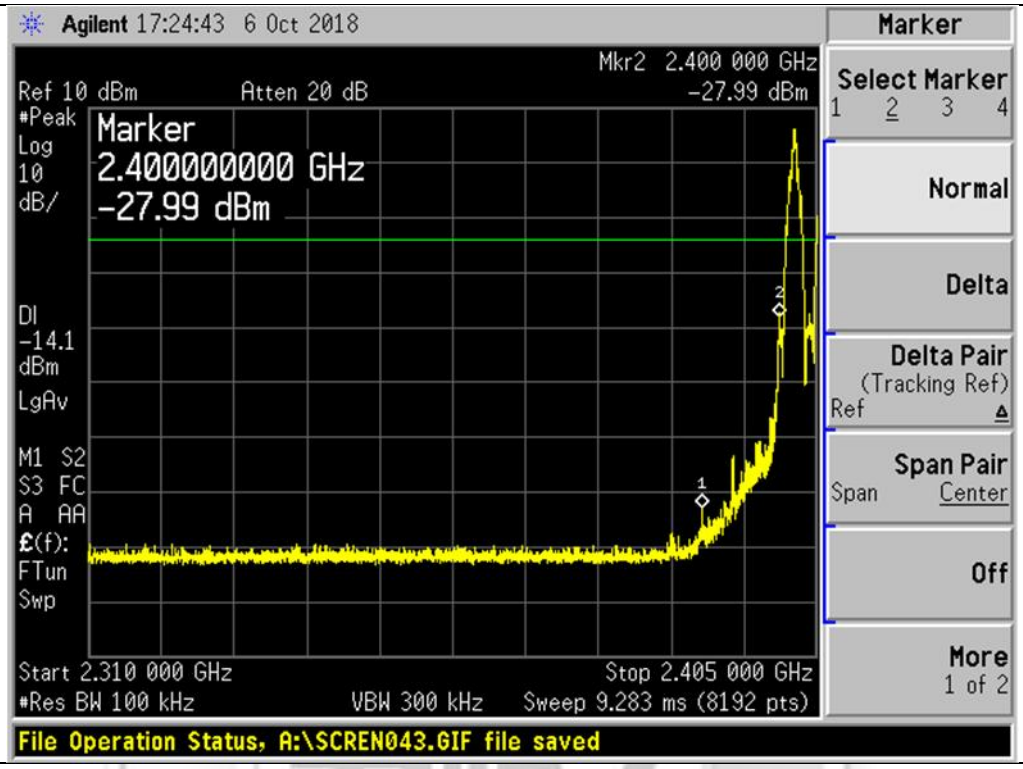
2.9.4 Test Results

Test Input Power	5Vdc	Temperature	23°C
Attached Plots	21 – 24	Relative Humidity	58%
Mode	Frequency Hopping On and Off	Atmospheric Pressure	1030mbar
Worst Antenna	0	Tested By	Chang Wai Kit
Worst Data Rate	2Mbps	Test Date	06 Oct 2018

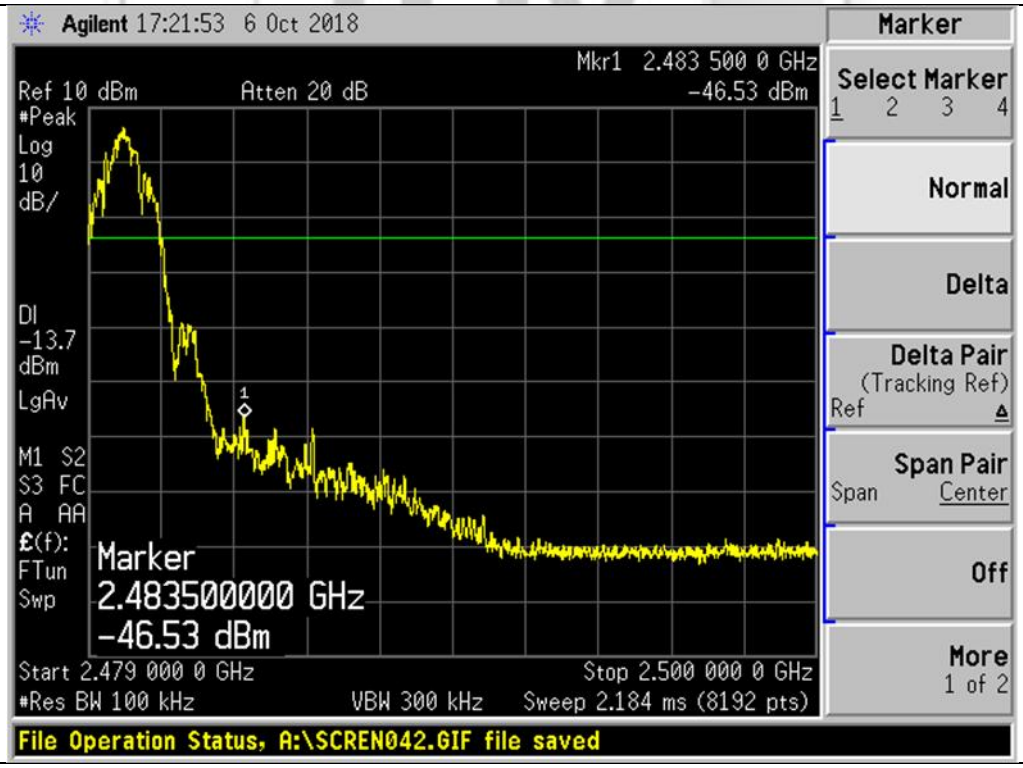
No significant signal was found and they were below the specified limit.

PSB Singapore

Band Edge Compliance (Conducted) Plots – Frequency Hopping On



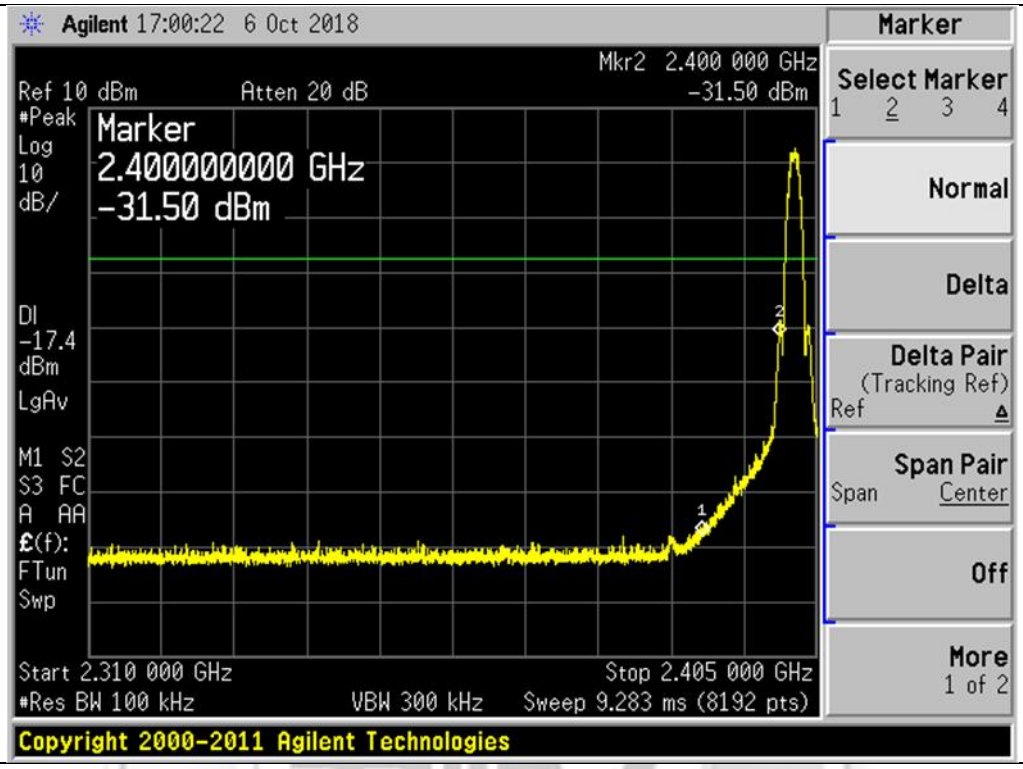
Plot 21 – Lower Band Edge at 2.4000GHz



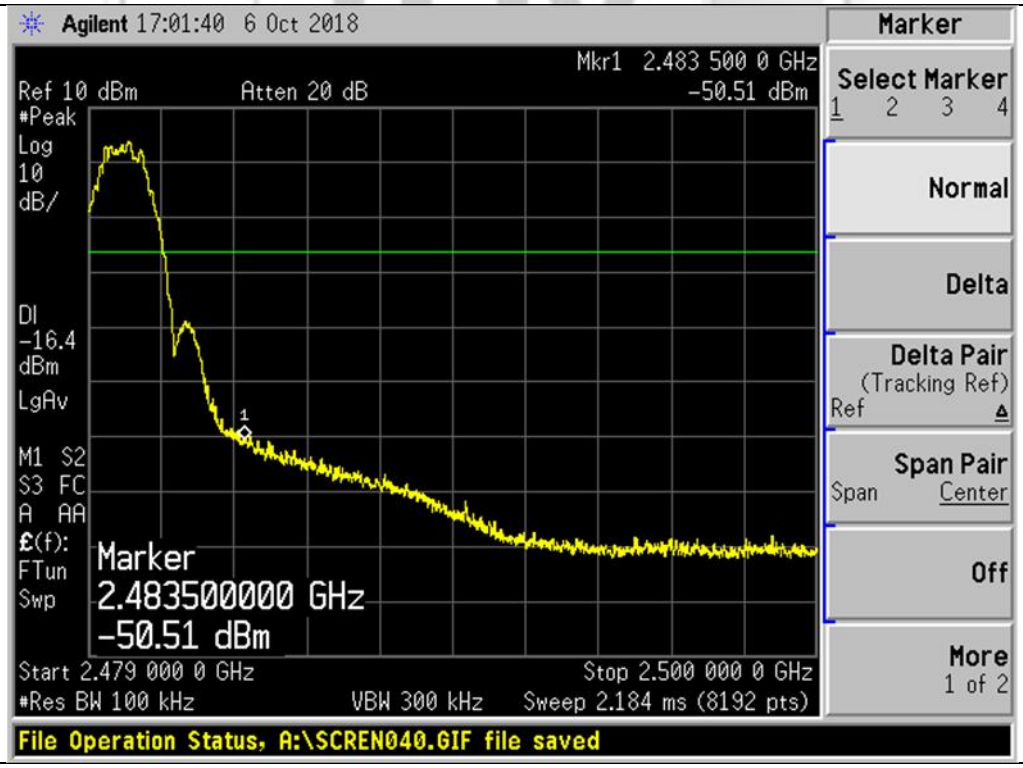
Plot 22 – Upper Band Edge at 2.4835GHz

PSB Singapore

Band Edge Compliance (Conducted) Plots – Frequency Hopping Off



Plot 23 – Lower Band Edge at 2.4000GHz



Plot 24 – Upper Band Edge at 2.4835GHz

PSB Singapore

2.10 Band Edge Compliance (Radiated)

2.10.1 Test Limits

The EUT shows compliance to the requirements of this section, which states in any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator (EUT) is operating, the radio frequency power that is produced by the EUT shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands shall comply to the radiated emission limits specified in 15.209.

2.10.2 Test Setup

2.10.2.1 The EUT and supporting equipment were set up as shown in the setup photo.

2.10.2.2 The power supply for the EUT was connected to a filtered mains.

2.10.2.3 The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were respectively set to 100kHz and 300kHz to show compliance of spurious at band edges are at least 20dB below the carriers. For restricted band spurious at band edges, peak and average measurement plots were taken using the following setting:

a. Peak Plot:
RBW = 1MHz, VBW = 3RBW

b. Average Plot
RBW = 1MHz, VBW = 10Hz

2.10.2.4 All other supporting equipment were powered separately from another filtered mains.

2.10.3 Test Method

2.10.3.1 The EUT was switched on and allowed to warm up to its normal operating condition. The EUT was then configured to operate in the test mode with frequency hopping sequence on.

2.10.3.2 The frequency span of the spectrum analyser was set to wide enough to capture the lower band edge of the transmission band, 2.400GHz and any spurious emissions at the band edge.

2.10.3.3 The spectrum analyser was set to max hold to capture any spurious emissions within the span. The signal capturing was continuous until no further spurious emissions were detected.

2.10.3.4 The measurements were repeated with the frequency span of the spectrum analyser was set to wide enough to capture the upper band edge frequency of the transmission band, 2.4835GHz and the any spurious emissions at the band-edge.

PSB Singapore

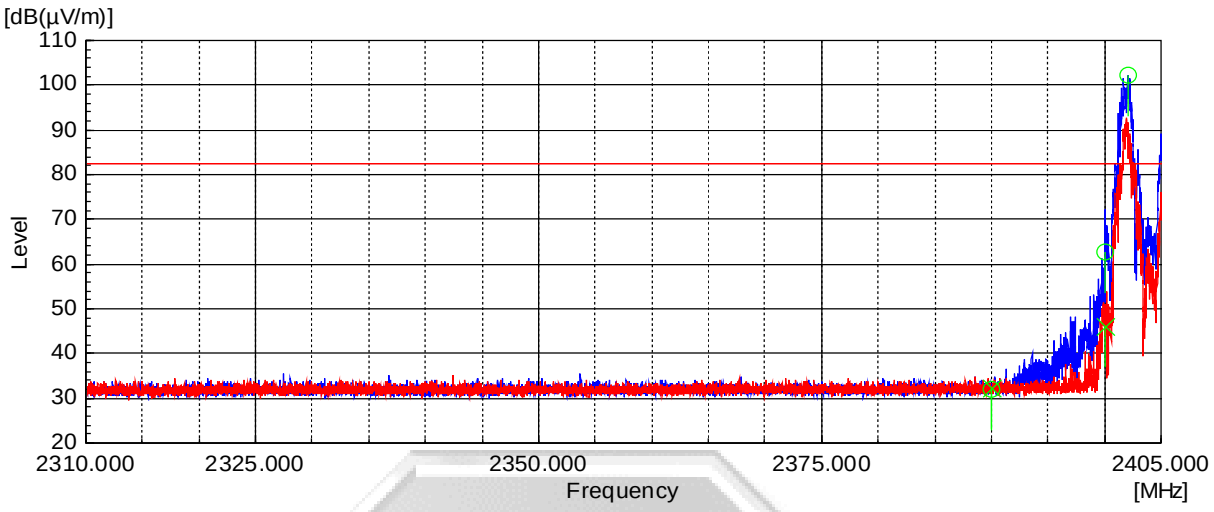
2.10.4 Test Results

Test Input Power	5Vdc	Temperature	22°C
Attached Plots	25 – 30	Relative Humidity	57%
Mode	Frequency Hopping Off	Atmospheric Pressure	1029mbar
Worst Antenna	0	Tested By	Dylan Lin
Worst Data Rate	2Mbps	Test Date	17 Sep 2018

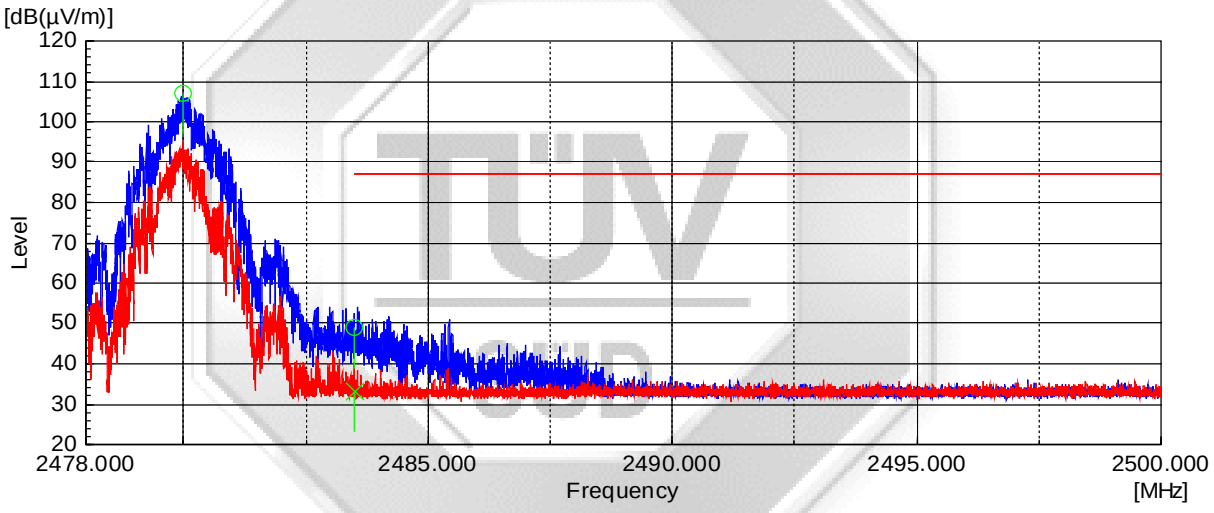
No significant signal was found and they were below the specified limit.

PSB Singapore

Band Edge Compliance (Radiated) Plots (20dB Delta from Carrier at Band Edge)



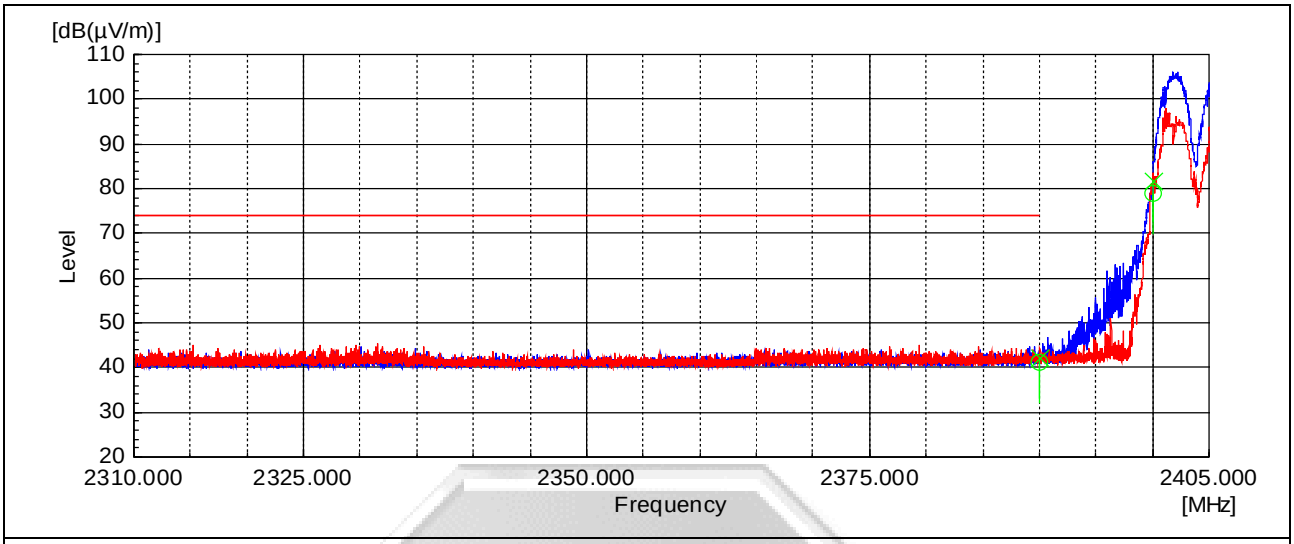
Plot 25 – Lower Band Edge at 2.4000GHz



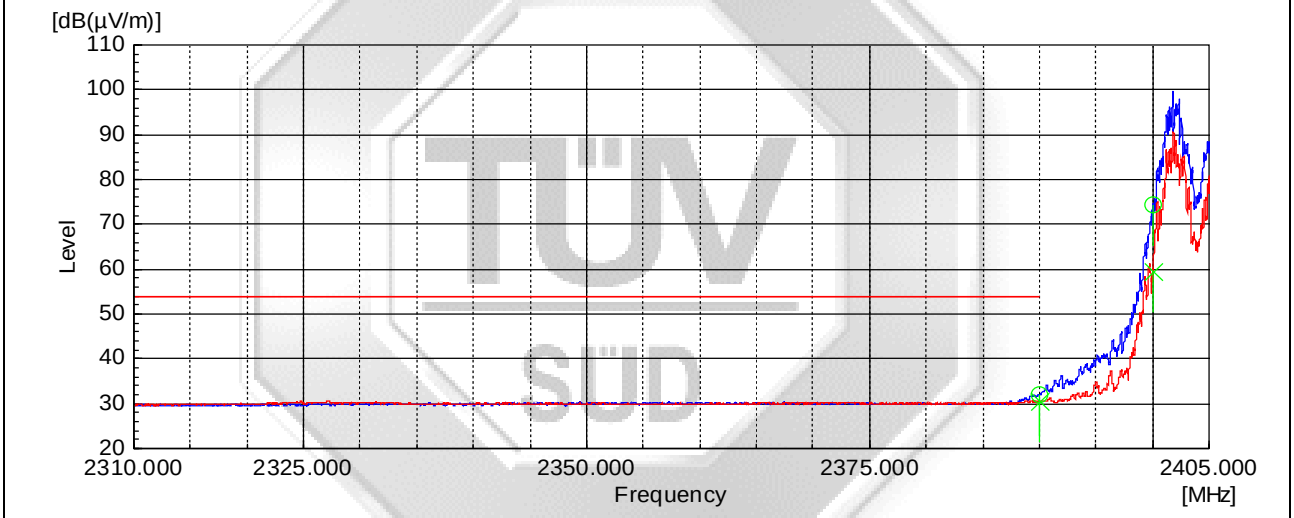
Plot 26 – Upper Band Edge at 2.4835GHz

PSB Singapore

Band Edge Compliance (Radiated) Plots (Restricted Band)



Plot 27 – Peak Plot at Lower Band Edge at 2.4000GHz



Plot 28 – Average Plot at Lower Band Edge at 2.4000GHz

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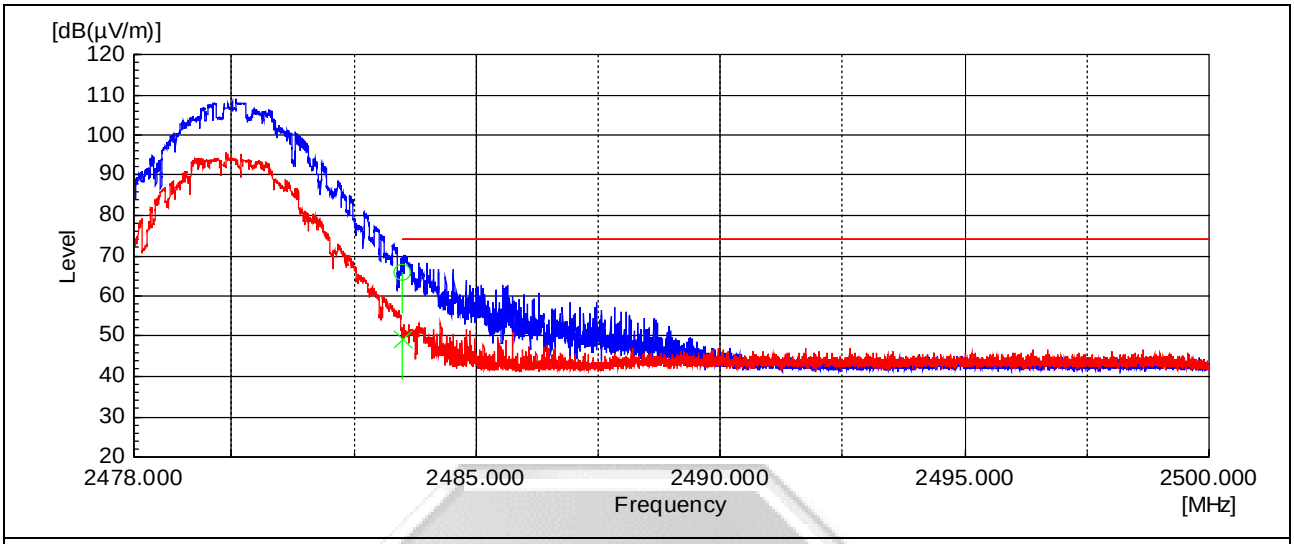
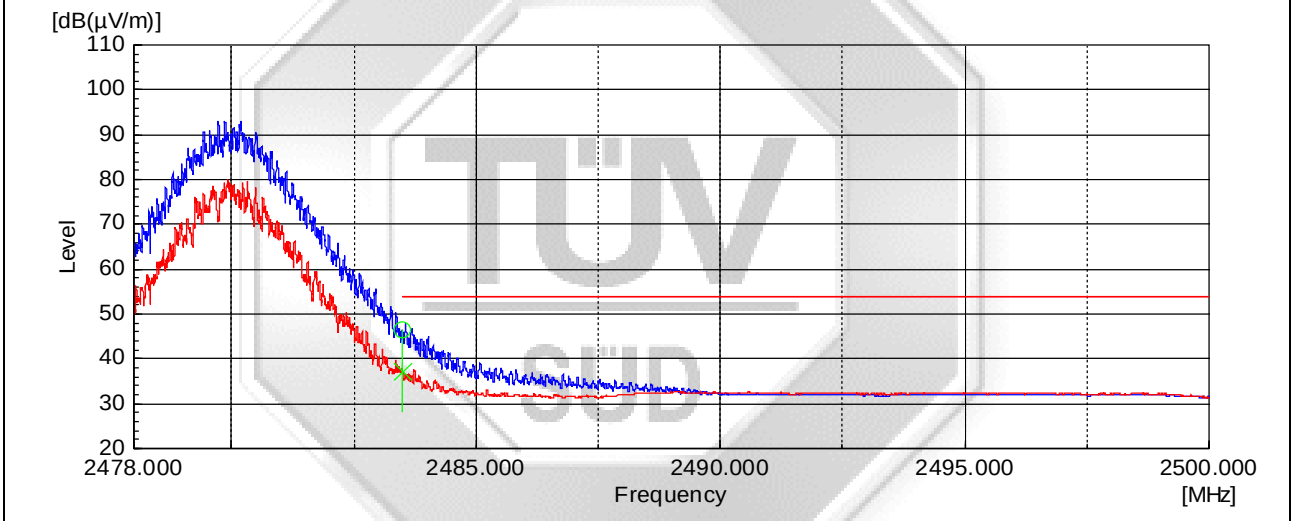
Band Edge Compliance (Radiated) Plots (Restricted Band)



Plot 29 – Peak Plot at Upper Band Edge at 2.4835GHz



Plot 30 – Average Plot at Upper Band Edge at 2.4835GHz

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2.11 Maximum Permissible Exposure (MPE)

2.11.1 Test Results

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (min)
0.3 - 1.34	614	1.63	100 Note 2	30
1.34 - 30	824 / f	2.19 / f	180 / f^2 Note 2	30
30 - 300	27.5	0.073	0.2	30
300 - 1500	-	-	f / 1500	30
1500 - 100000	-	-	1.0	30
Notes				
1.	f = frequency in MHz			
2.	Plane wave equivalent power density			

Maximum Permissible Exposure Computation

The power density at 20cm distance was computed from the following formula:

$S = (30GP) / (377d^2)$

where S = Power density in W/m^2

P = 0.0106W *(maximum peak measured from Maximum Peak Power)*

d = Test distance at 0.2m

G = Numerical isotropic gain, 2.19 (3.4dBi)

Substituting the relevant parameters into the formula:

$S = [(30GP) / 377d^2]$

$= 0.0462\ W/m^2$

$= 0.0046\ mW/cm^2$

∴ The power density of the EUT at 20cm distance is $0.0046mW/cm^2$ based on the above computation and found to be lower than the power density limit of $1.0mW/cm^2$.

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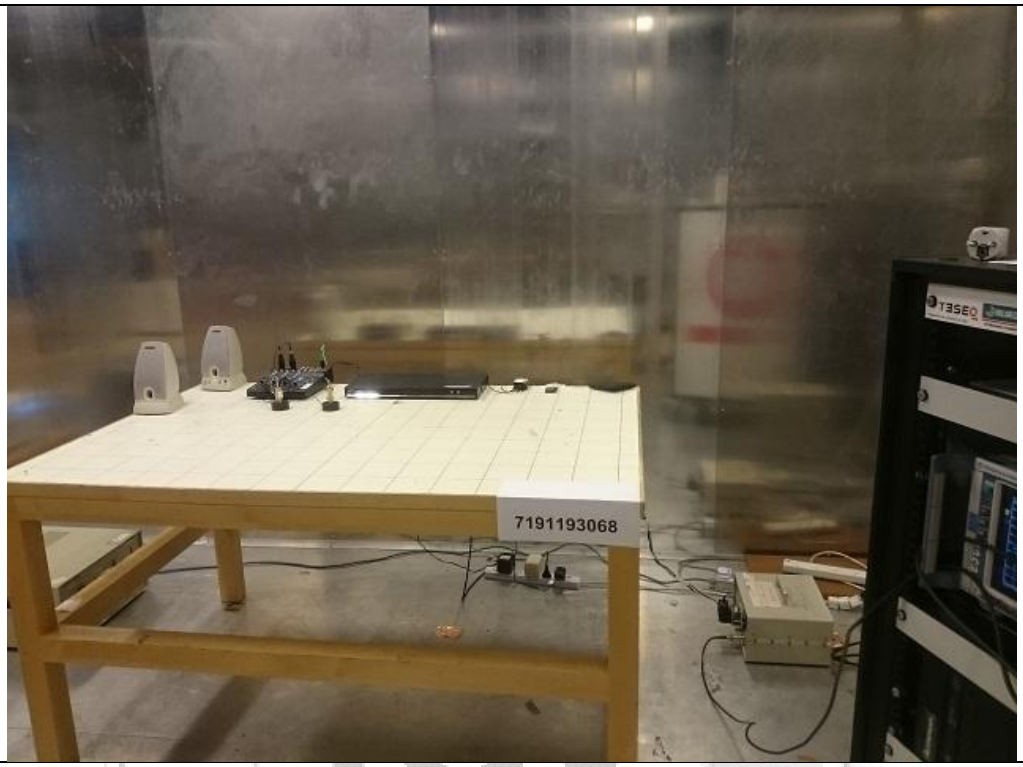
3 Photographs

TEST SETUP



Conducted Emissions Test Setup (Front View)

Conducted Emissions Test Setup (Rear View)

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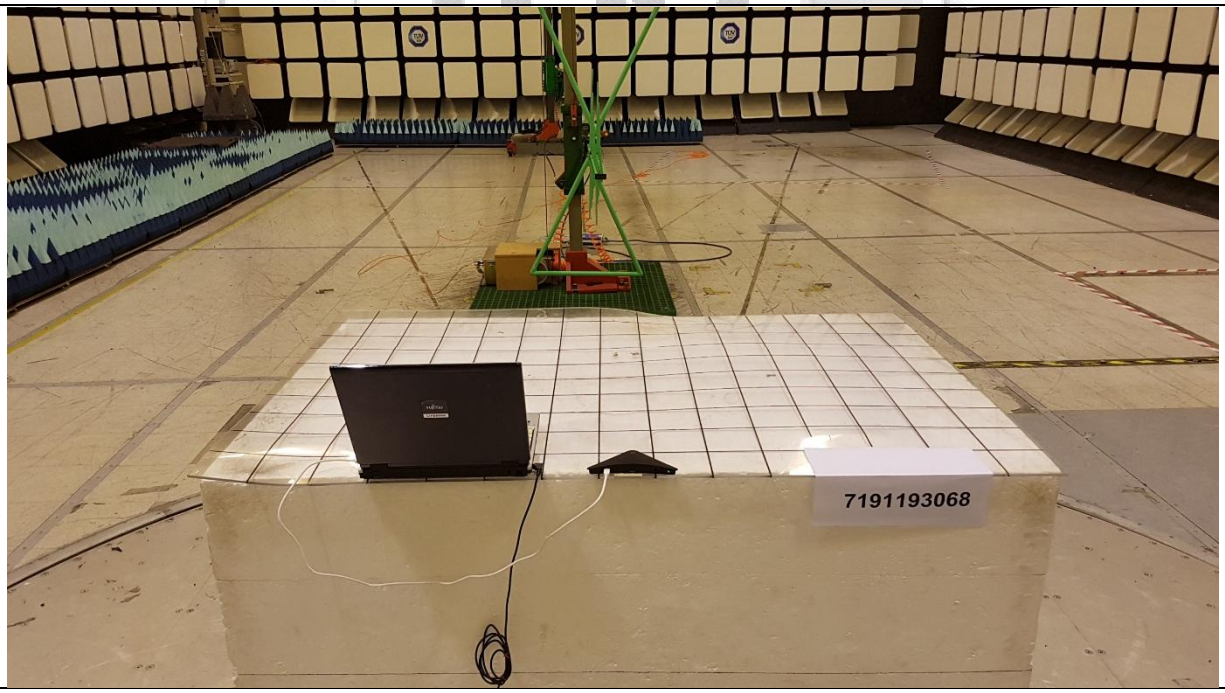
TEST SETUP (30MHz to 1GHz)

Radiated Emissions (Spurious Emissions Inclusive Restricted Bands Requirement) Test Setup (Front View)



Radiated Emissions (Spurious Emissions Inclusive Restricted Bands Requirement) Test Setup (Rear View)

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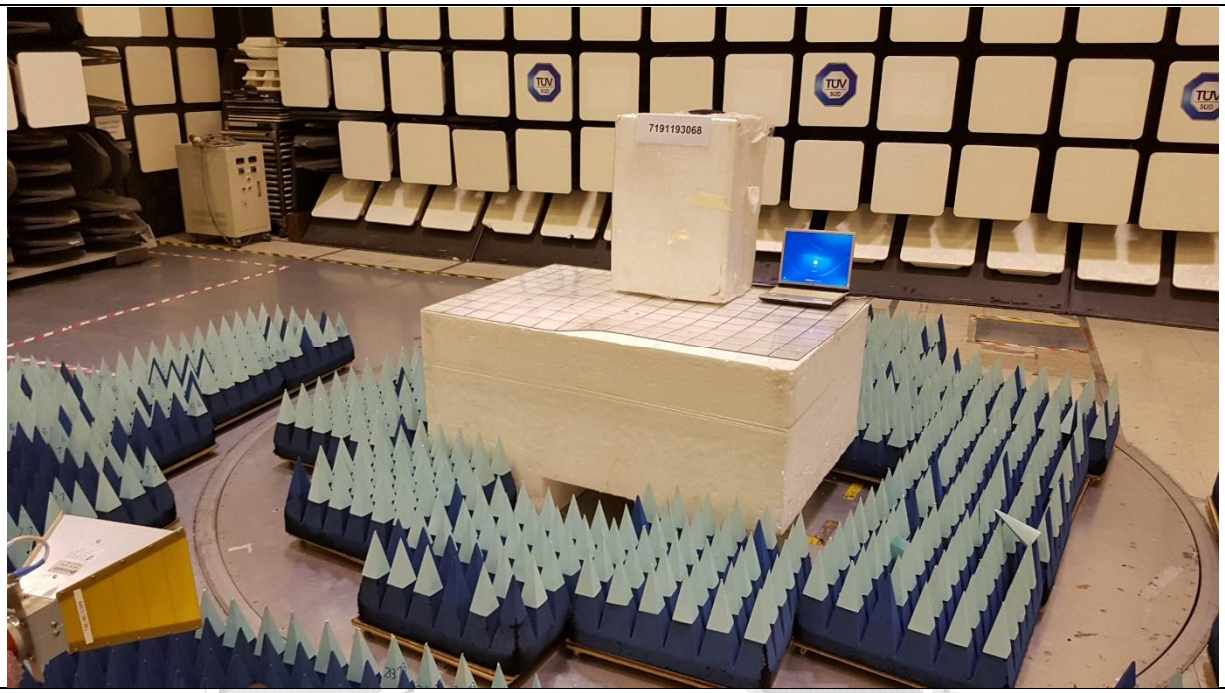
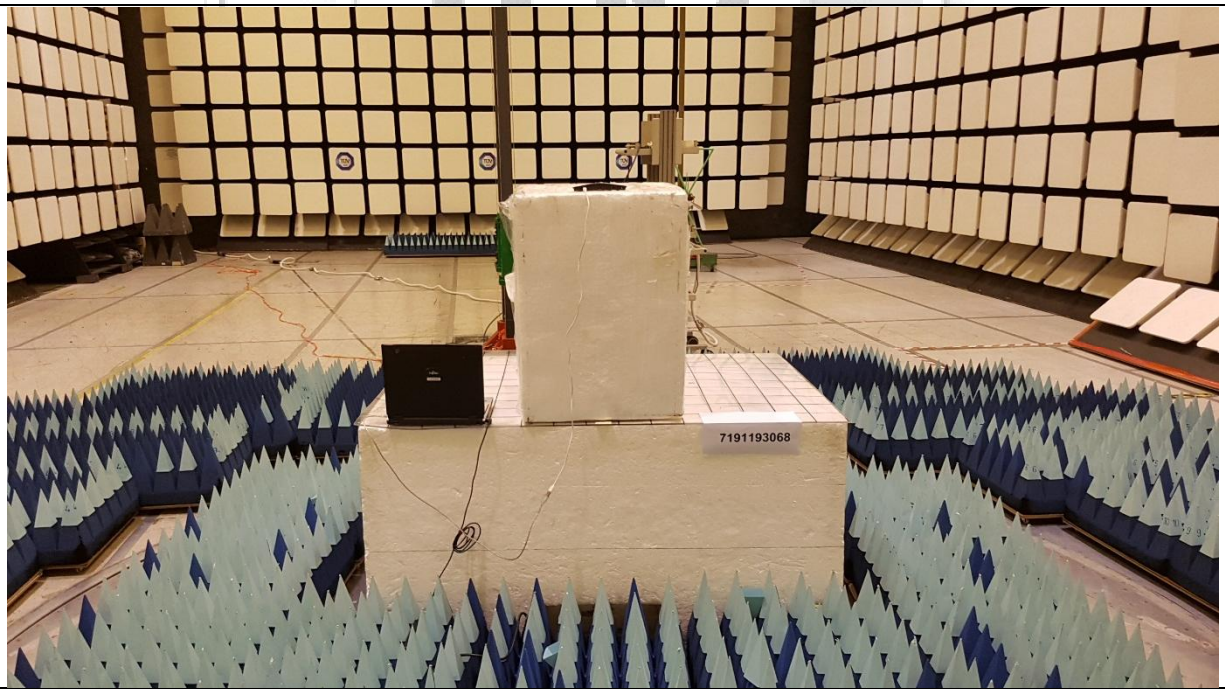
TEST SETUP (Above 1GHz)



Radiated Emissions (Spurious Emissions Inclusive Restricted Bands Requirement) Test Setup (Front View)



Radiated Emissions (Spurious Emissions Inclusive Restricted Bands Requirement) Test Setup (Rear View)

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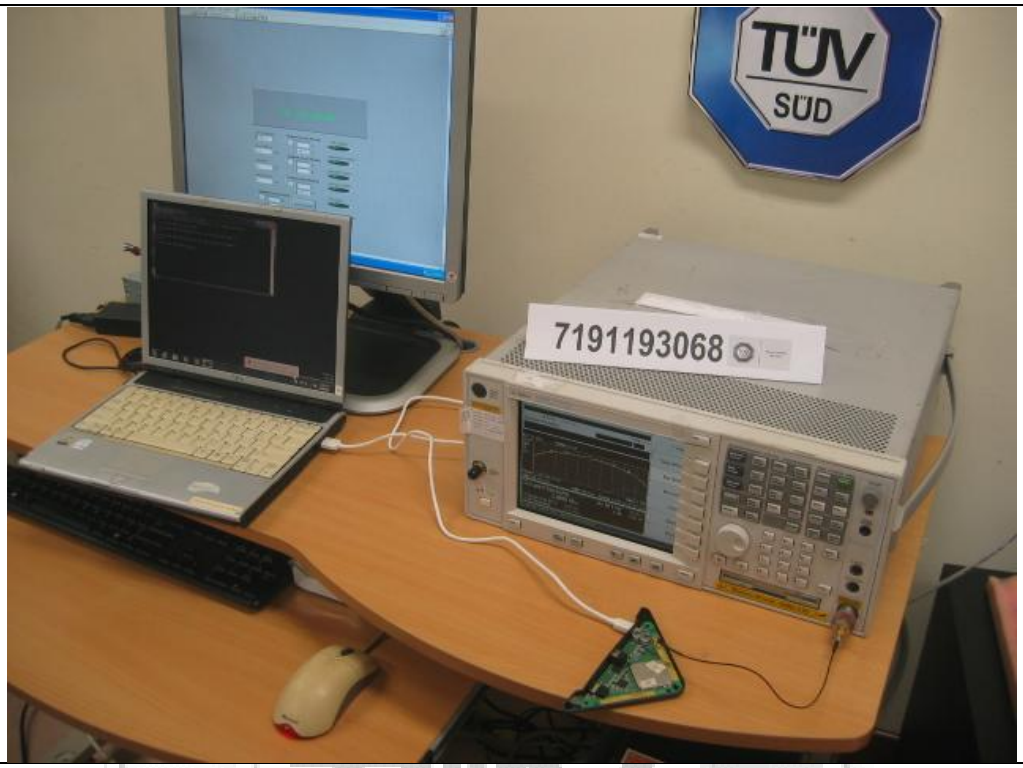
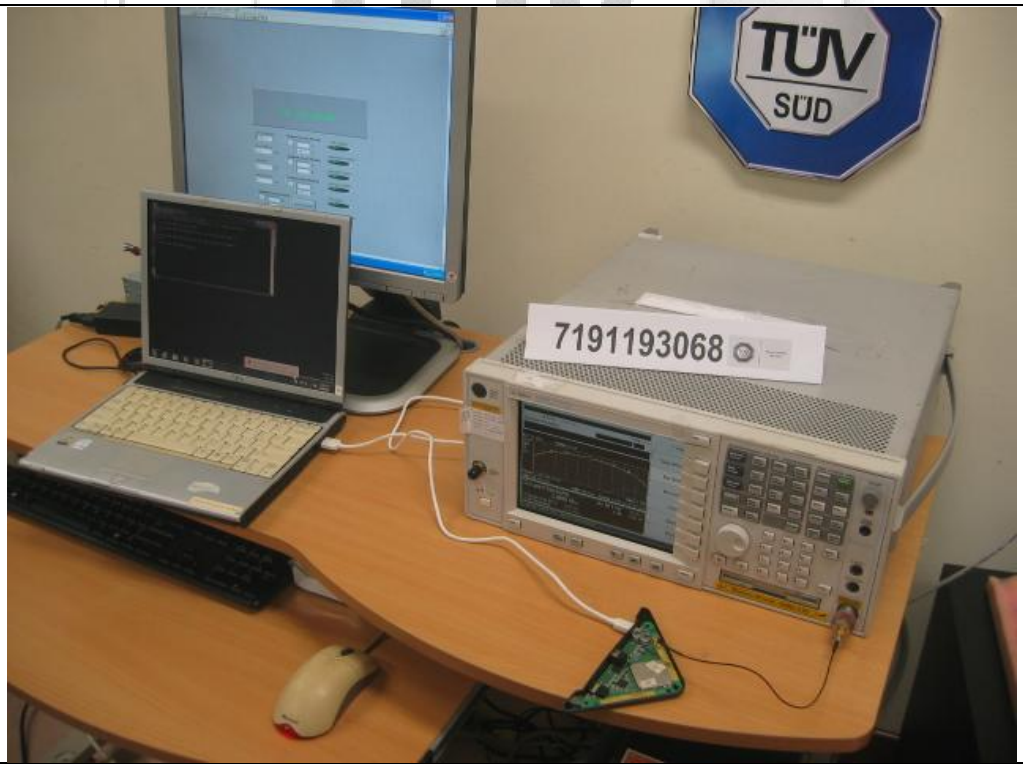
TEST SETUP



Carrier Frequency Separation Test Setup



Spectrum Bandwidth (20dB Bandwidth Measurement) Test Setup

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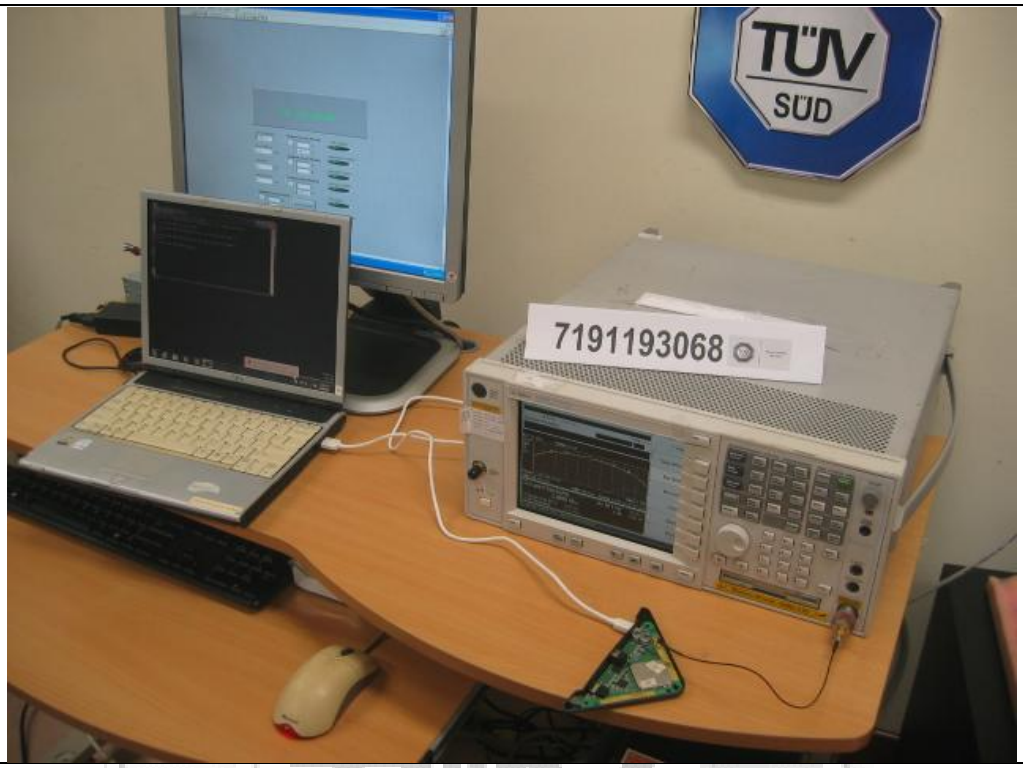
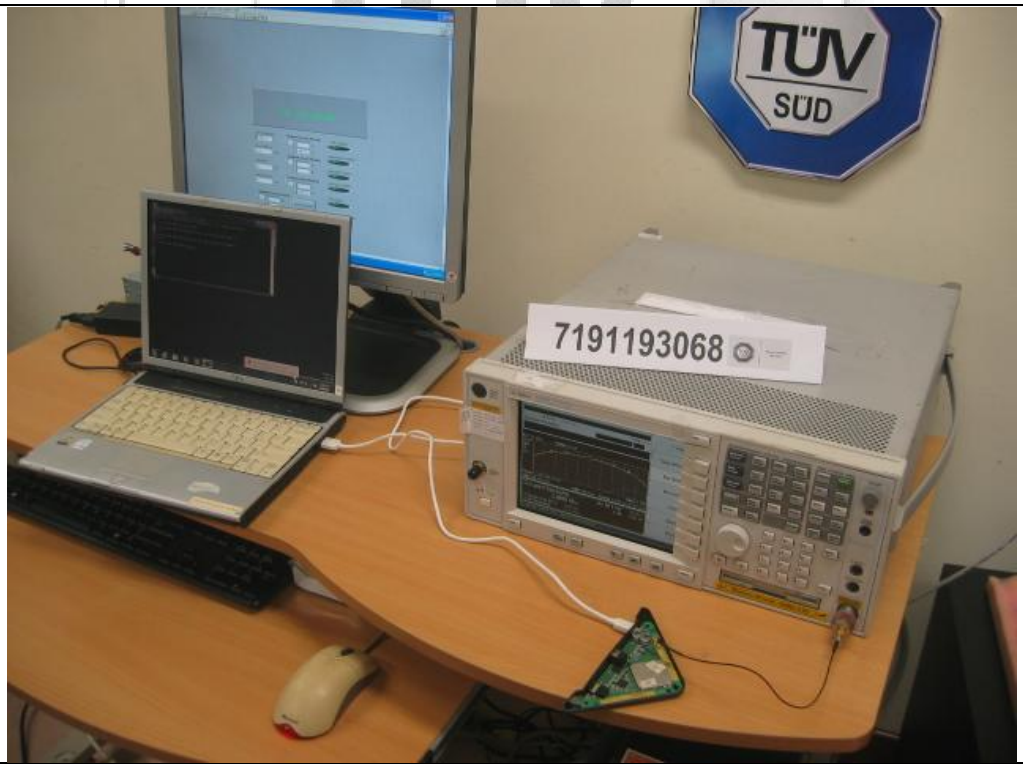
TEST SETUP



Number of Hopping Frequencies Test Setup



Average Frequency Dwell Time Test Setup

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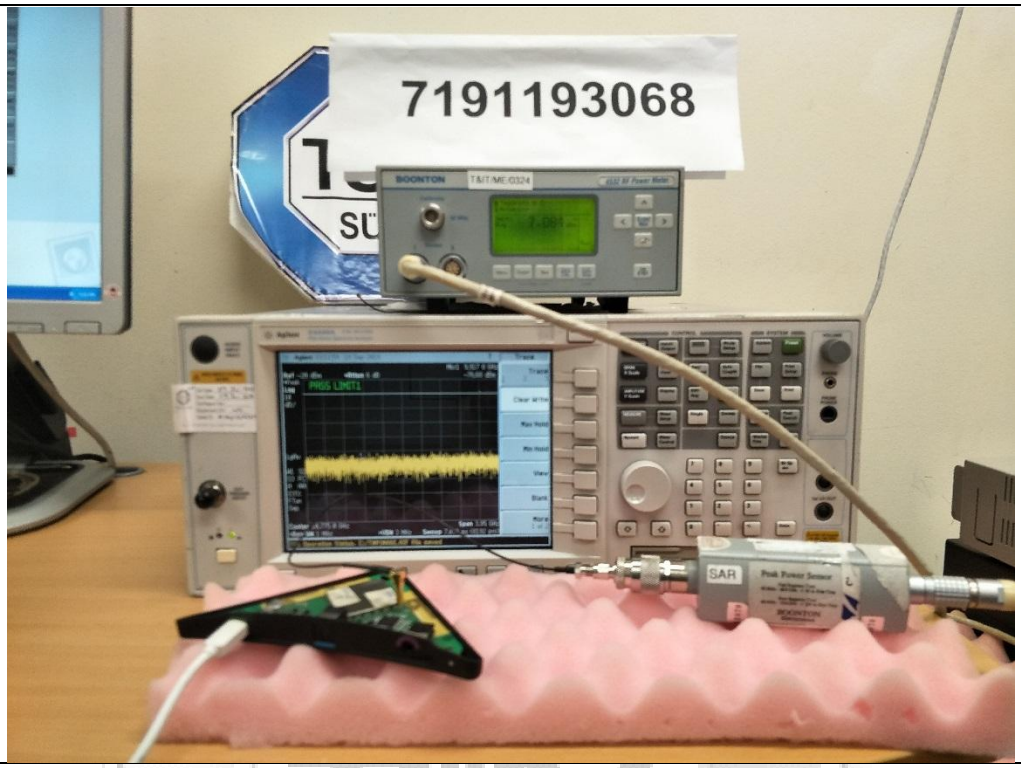
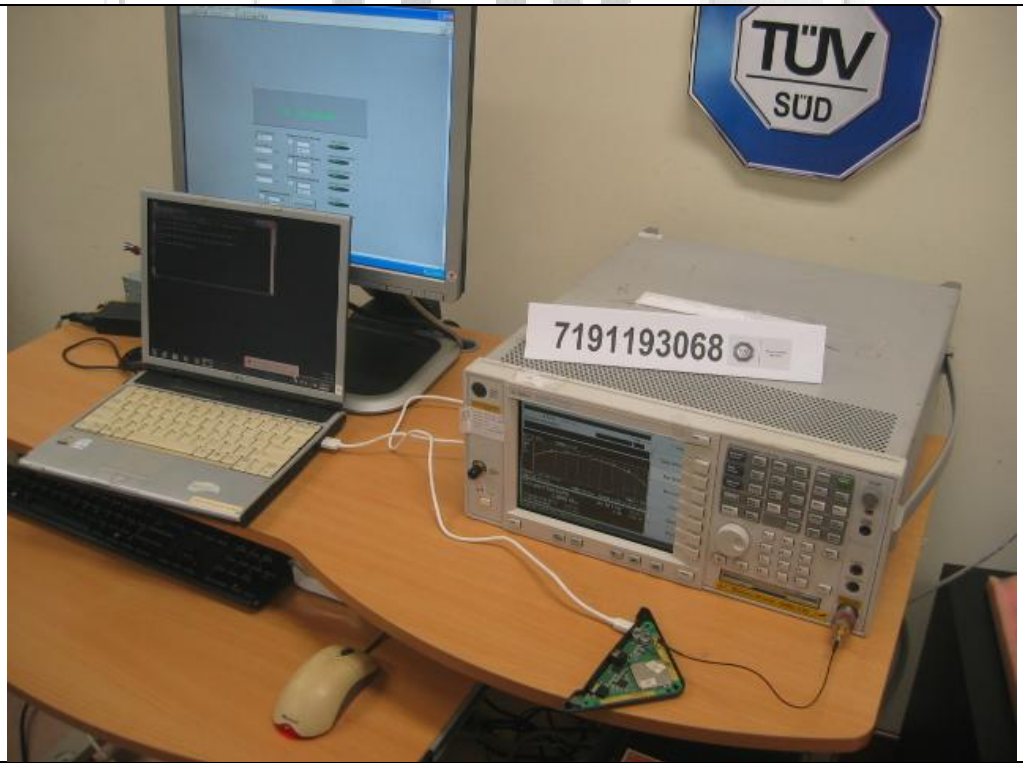
TEST SETUP



Maximum Peak Power Test Setup



RF Conducted Spurious Emissions Test Setup

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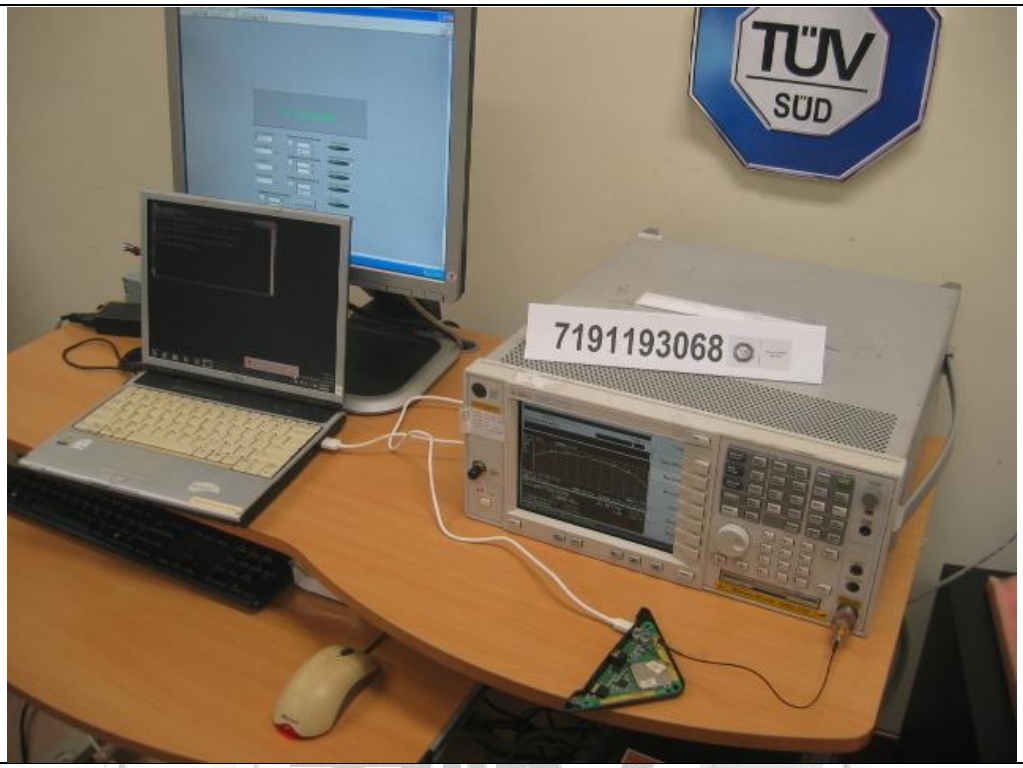
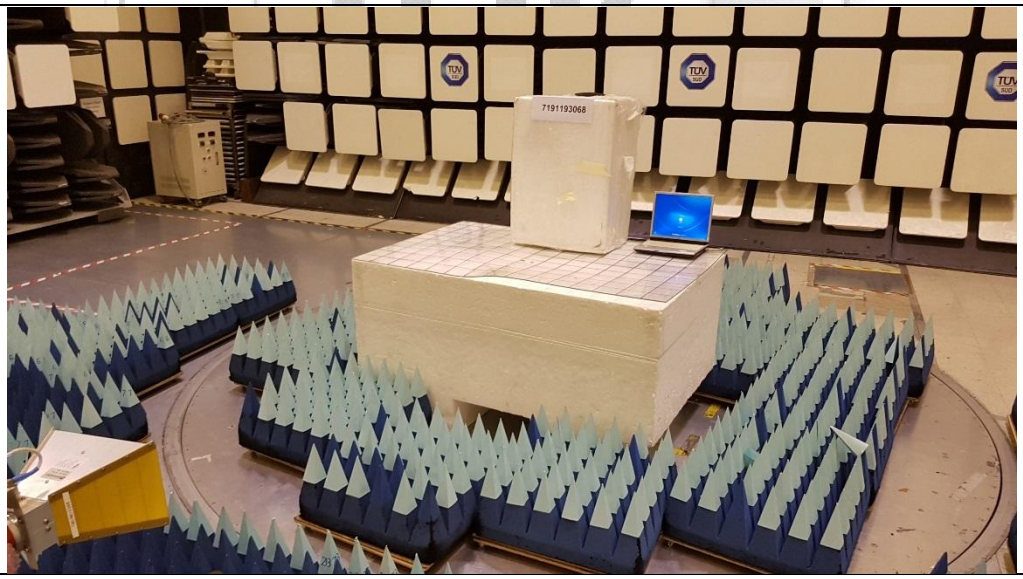
TEST SETUP



Band Edge Compliance (Conducted) Test Setup



Band Edge Compliance (Radiated) Test Setup

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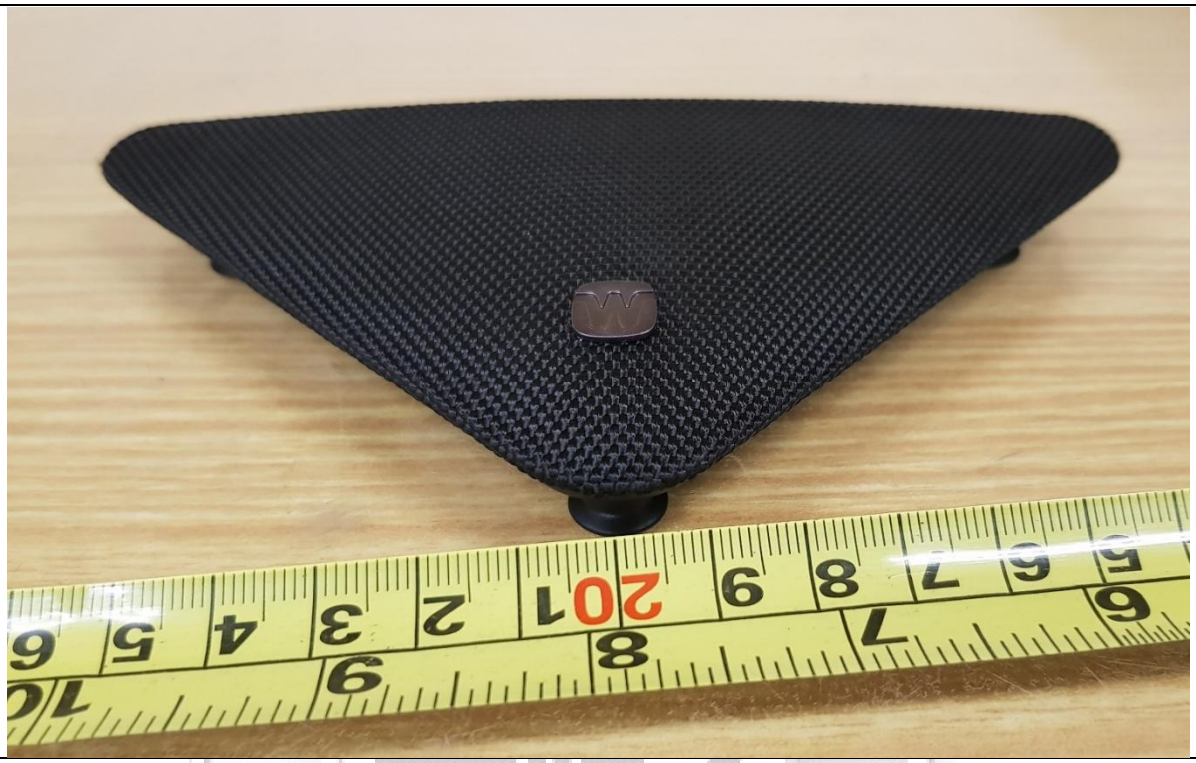
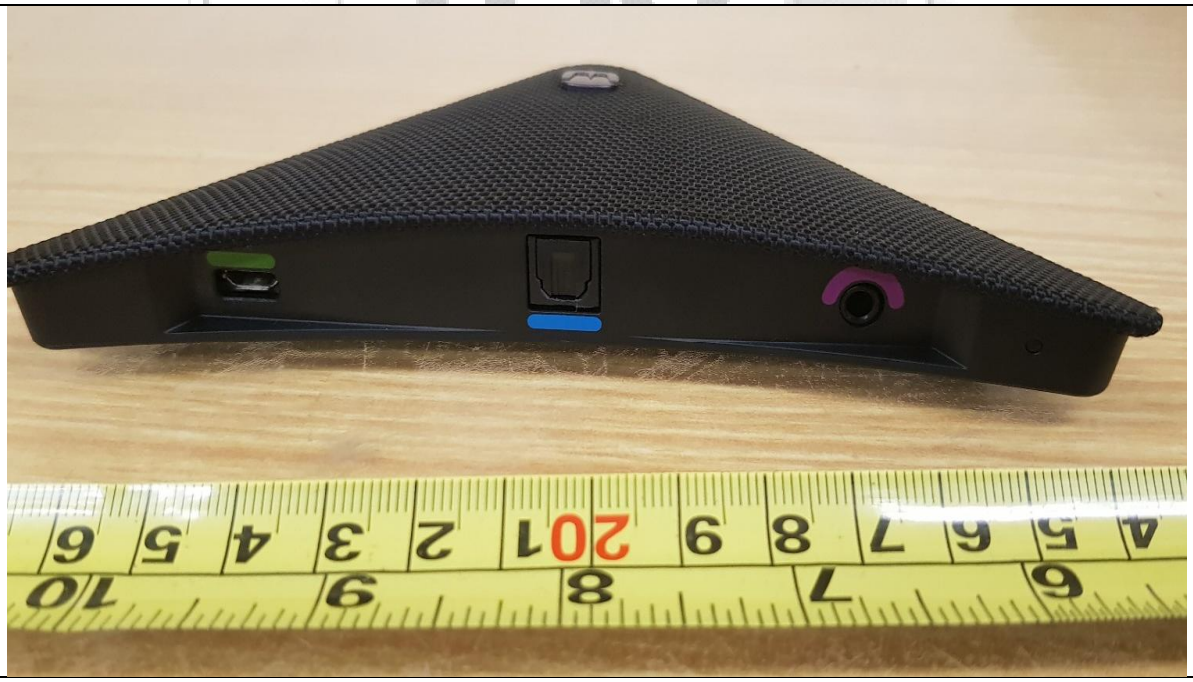
EUT PHOTOGRAPHS



View 1



View 2

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View 3

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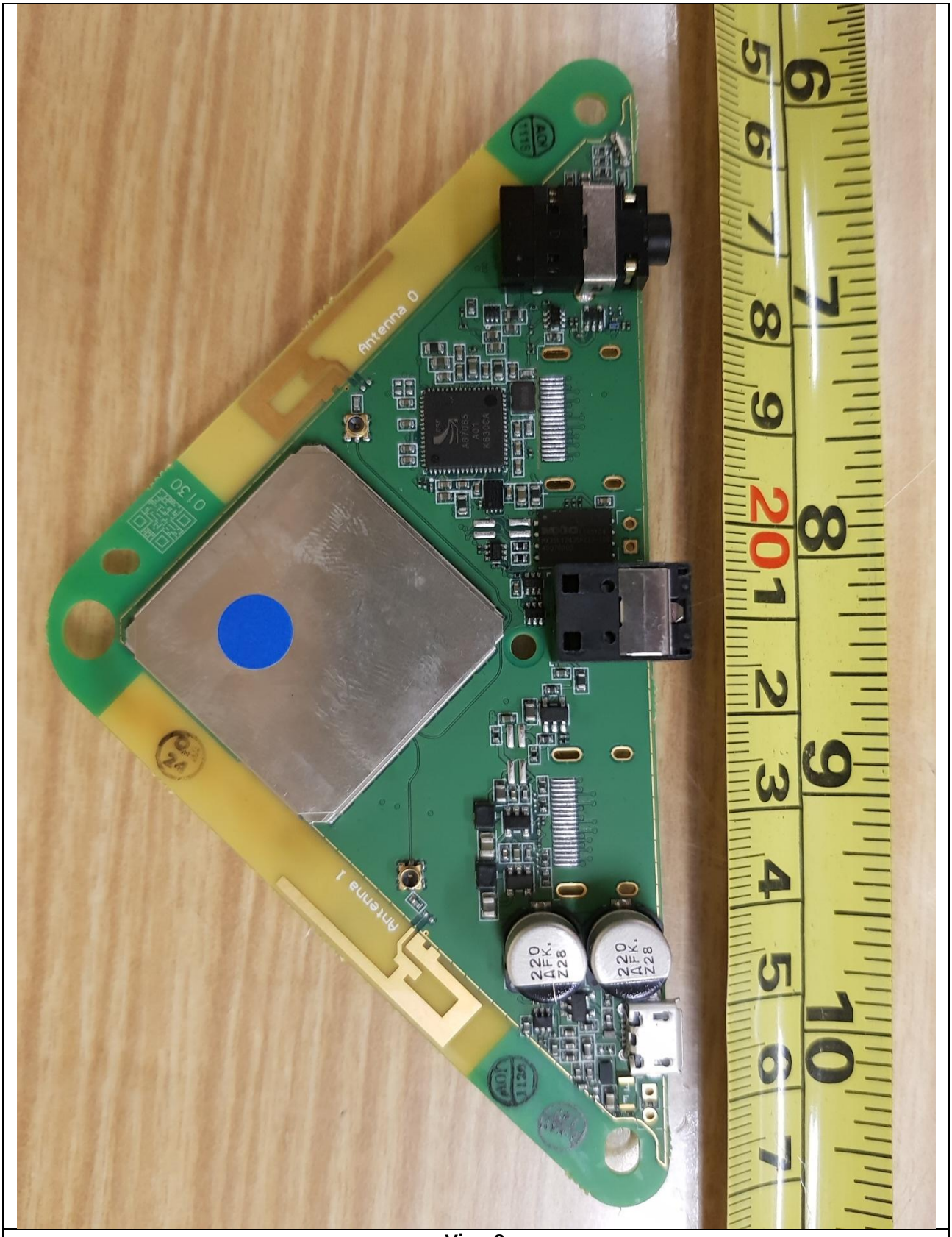
PCB PHOTOGRAPHS

View 1

PSB Singapore



View 2

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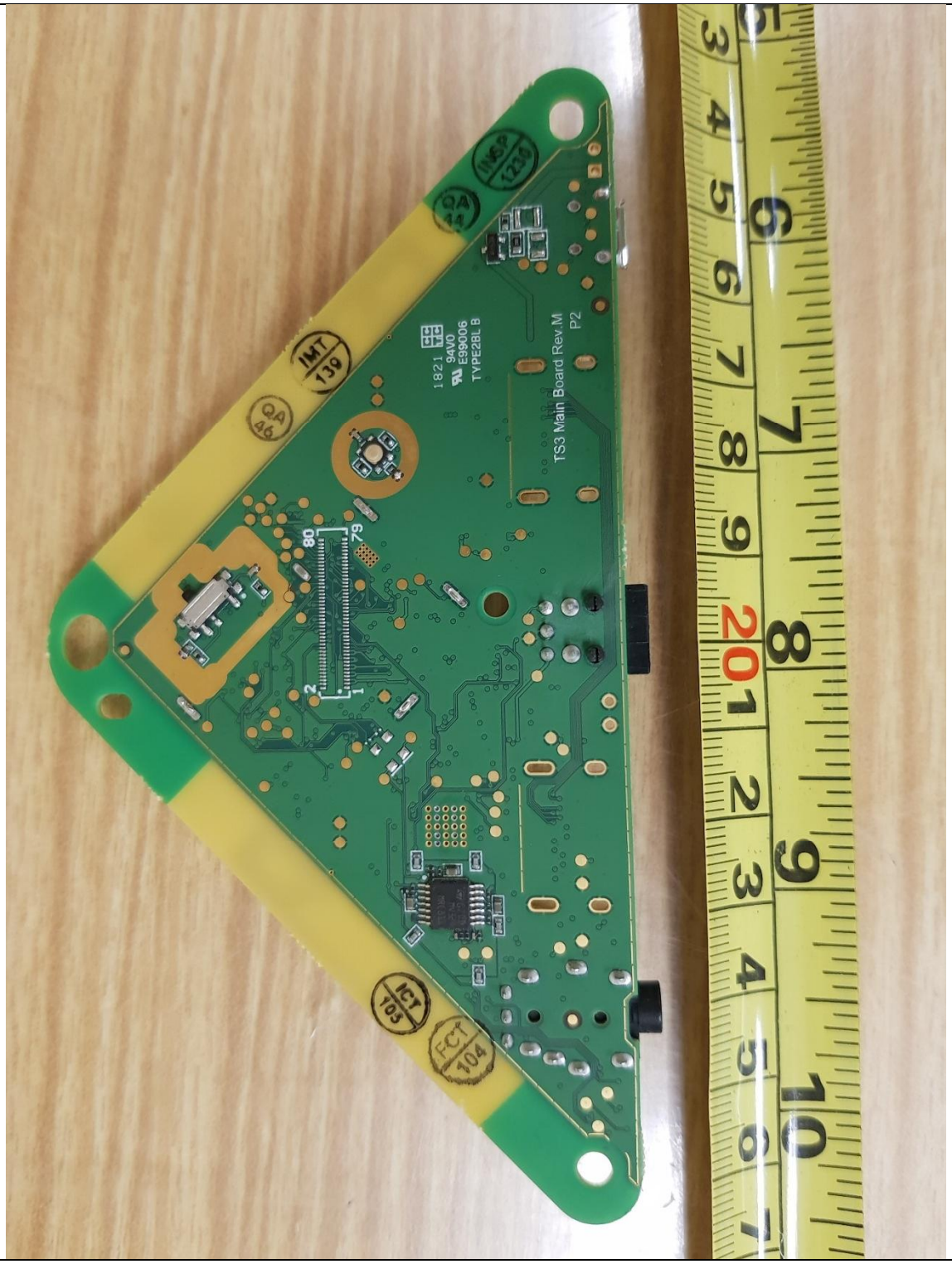
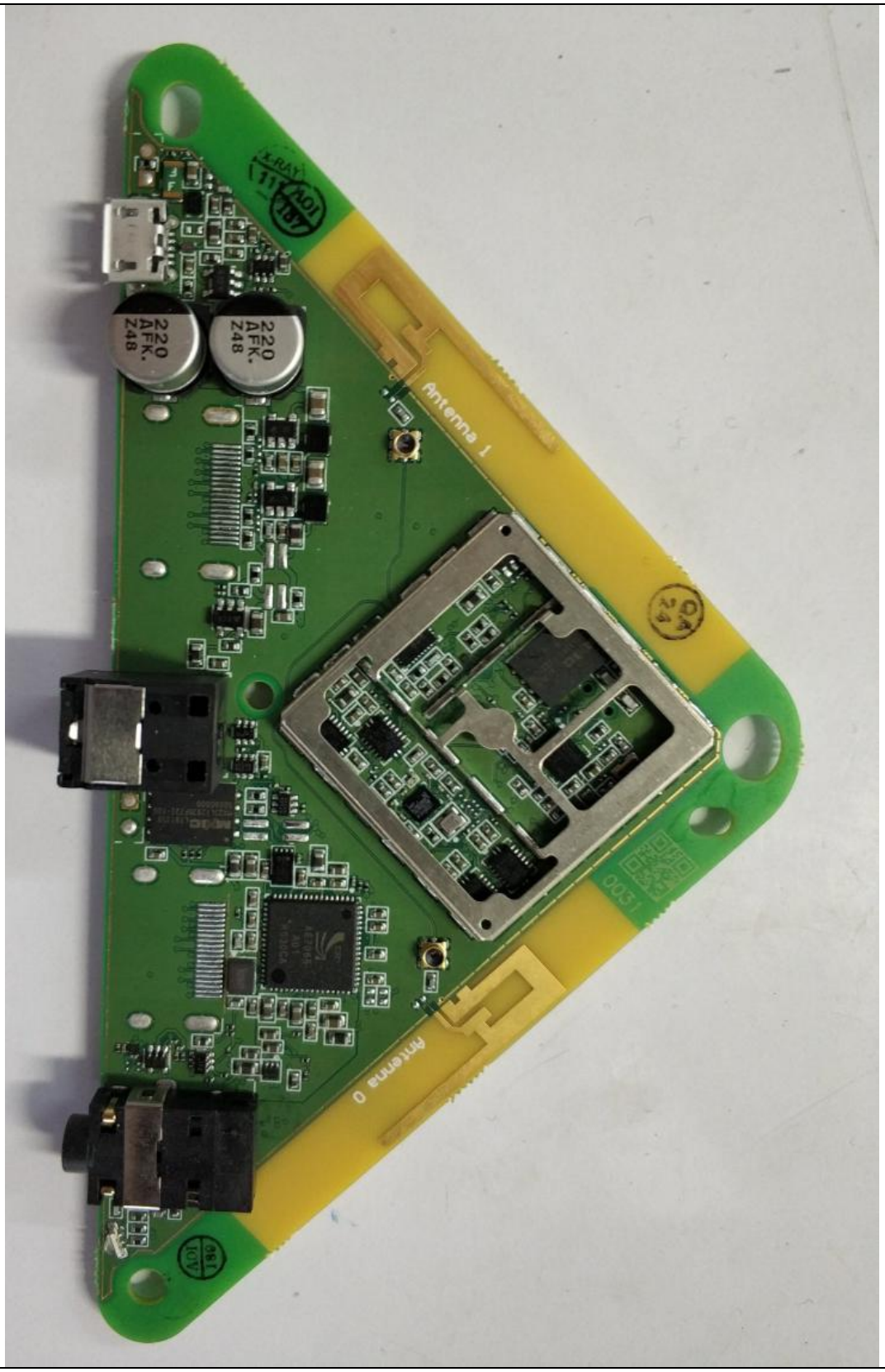


View 3

PSB Singapore



RF Module Circuit with RF Shield Removed

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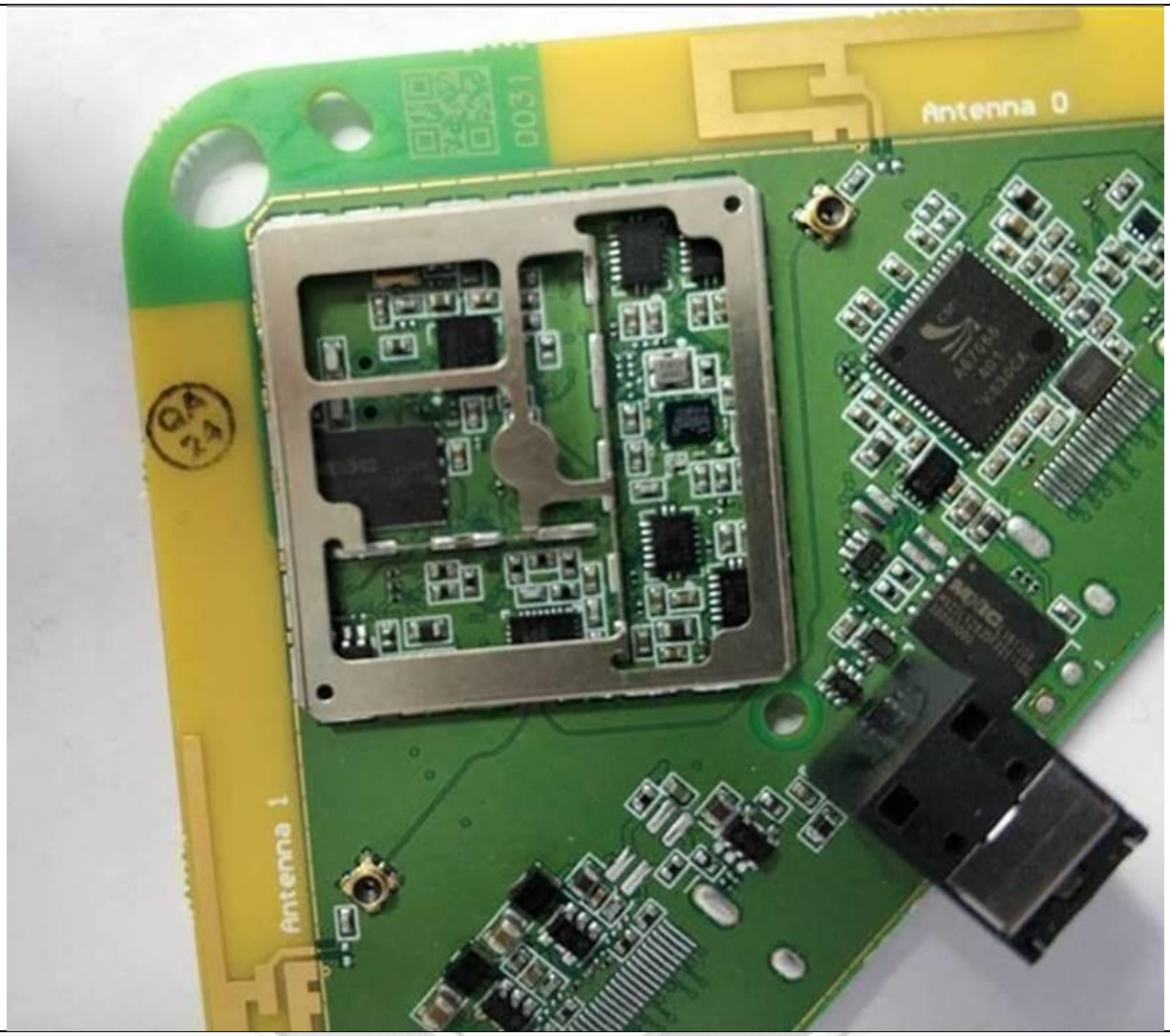

RF Module Circuit with RF Shield Removed

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4 Test Equipment

Instrument	Model	S/No	Cal Due Date
Conducted Emissions			
Rohde & Schwarz EMI Test Receiver (9kHz - 3GHz)	ESCI	100477	13 May 2019
Schaffner LISN 2-Line V-Network	NNB41	04/10151	01 Feb 2019
Radiated Emissions (Spurious Emissions Inclusive Restricted Bands Requirement)			
ESU 40 EMI Test Receiver	ESU 40	1302.6005k40-100355-wq	29 Mar 2019
EMCO Loop Antenna	6502	134413	28 Oct 2018
Schaffner Bilog Antenna –(30MHz-2GHz)	CBL6112B	2597	20 Feb 2019
Com-Power Preamplifier (1MHz-1GHz)	PAM-103	441058	22 Mar 2019
TDK-RF Horn Antenna	HRN-0118	130256	22 Feb 2019
R&S Preamplifier (1GHz -18GHz)	SCU18	102191	09 Mar 2019
ETS Horn Antenna(18GHz-40GHz)	3116	0004-2474	15 Nov 2018
Agilent Preamplifier(1GHz-26.5GHz) (PA18)	8449D	3008A02305	28 Sep 2019
Toyo Preamplifier (26.5GHz-40GHz)	HAP26-40W	00000005	15 Nov 2018
Micro-tronics Bandstop Filter (2.4GHz)	BRM50701-02	007	13 Feb 2019
Carrier Frequency Separation			
Agilent Spectrum Analyzer	E4440A	MY45304764	09 Jan 2019
Spectrum Bandwidth (20dB Bandwidth Measurement)			
Agilent Spectrum Analyzer	E4440A	MY45304764	09 Jan 2019
Number of Hopping Frequencies			
Agilent Spectrum Analyzer	E4440A	MY45304764	09 Jan 2019
Average Frequency Dwell Time			
Agilent Spectrum Analyzer	E4440A	MY45304764	09 Jan 2019
Maximum Peak Power			
Boonton RF Power Meter	4532	97701.1417	27 Feb 2019
Boonton Peak Power Sensor	56218-S/1	1417	27 Feb 2019
RF Conducted Spurious Emissions			
Agilent Spectrum Analyzer	E4440A	MY45304764	09 Jan 2019
Band Edge Compliance (Conducted)			
Agilent Spectrum Analyzer	E4440A	MY45304764	09 Jan 2019
Band Edge Compliance (Radiated)			
ESU 40 EMI Test Receiver	ESU 40	1302.6005k40-100355-wq	29 Mar 2019
TDK-RF Horn Antenna	HRN-0118	130256	22 Feb 2019
R&S Preamplifier (1GHz -18GHz)	SCU18	102191	09 Mar 2019

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5 Measurement Uncertainty

All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95%, with a coverage factor of 2.

Test Name	Measurement Uncertainty
Conducted Emissions at Mains Terminals	9kHz to 30MHz, ±2.1dB
Radiated Emissions	9kHz to 30MHz, ±3.8dB 30MHz to 1GHz, ±3.8dB >1GHz to 40GHz, ±4.5dB
Maximum Permissible Exposure	0.1MHz – 18GHz is ±15.0%

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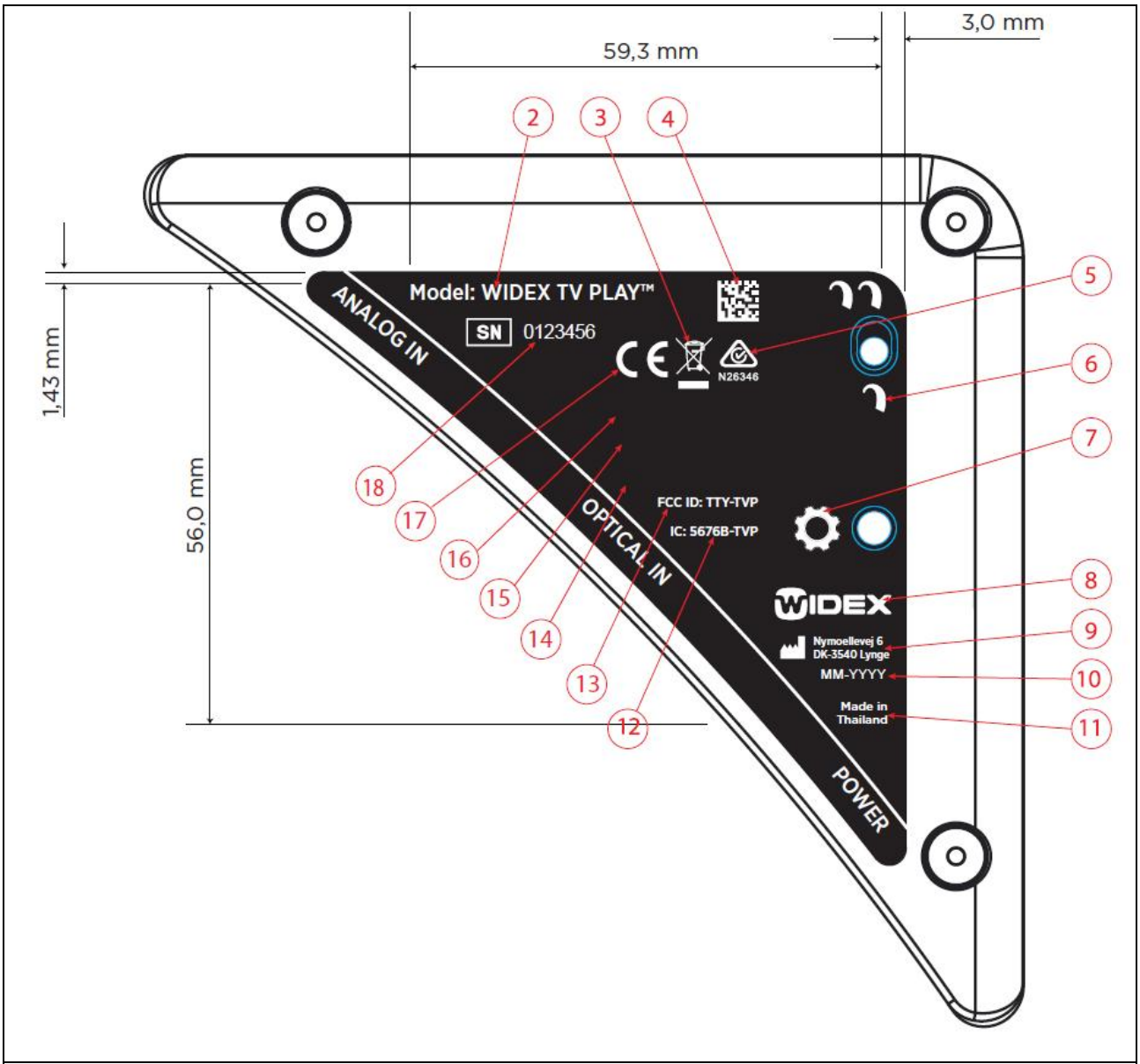
6 Annex A – FCC Label and Position

Labelling requirements per Section 2.925 & 15.19

The label shown will be permanently affixed at a conspicuous location on the device and be readily visible to the user at the time of purchase.



Physical Location of FCC Label on EUT

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July 2011

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End of the Test Report