Test Report No. 7191083560-EEC14/03
dated 27 Mar 2014

PSB Singapore

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FORMAL REPORT ON TESTING IN ACCORDANCE WITH
47 CFR FCC Parts 15B & C : 2012
OF A
HOME THEATER AUDIO SYSTEM
[Model : SC-HTB880]
(MAIN UNIT SU-HTB880 & ACTIVE SUBWOOFER SB-HWA880)
[FCC ID : ACJ-B30R1402]

TEST FACILITY	TÜV SÜD PSB Pte Ltd Electrical & Electronics Centre (EEC), Product Services, No. 1 Science Park Drive, Singapore 118221
FCC REG. NO.	99142 (3m and 10m Semi-Anechoic Chamber, Science Park)
IND. CANADA REG. NO.	2932I-1 (3m and 10m Semi-Anechoic Chamber, Science Park)
PREPARED FOR	Panasonic AVC Networks Singapore 202, Bedok South Avenue 1, Singapore 469332
	Tel : (+65) 6240 1891 Fax : (+65) 6245 8804
QUOTATION NUMBER	219188536
JOB NUMBER	7191083560
TEST PERIOD	05 Feb 2014 – 19 Mar 2014

PREPARED BY

Quek Keng Huat
Higher Associate Engineer

APPROVED BY

Lim Cher Hwee
Assistant Vice President

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 laboratory's terms of accreditation under the Singapore Accreditation Council - Singapore Laboratory Accreditation Scheme. Tests/Calibrations marked "Not SAC-SINGLAS Accredited" in this Report are not included in the SAC-SINGLAS Accreditation Schedule for our laboratory.

Laboratory:
TÜV SÜD PSB Pte. Ltd.
No.1 Science Park Drive
Singapore 118221

Phone : +65-6885 1333
Fax : +65-6776 8670
E-mail: testing@tuv-sud-psb.sg
www.tuv-sud-psb.sg
Co. Reg : 199002667R

Regional Head Office:
TÜV SÜD Asia Pacific Pte. Ltd.
3 Science Park Drive, #04-01/05
The Franklin, Singapore 118223

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TEST SUMMARY

The product was tested in accordance with the customer's specifications.

Test Results Summary

Test Standard	Description	Pass / Fail
47 CFR FCC Part 15: 2012		
15.107(a), 15.207	Conducted Emissions	Pass
15.109(a), 15.205, 15.209	Radiated Emissions (Spurious Emissions inclusive Restricted Bands Requirement)	Pass
15.247(a)(1)	Carrier Frequency Separation	Pass
	Spectrum Bandwidth (20dB Bandwidth Measurement)	Pass
15.247(a)(1)(iii)	Number of Hopping Frequencies	Pass
	Average Frequency Dwell Time	
15.247(b)(1)	Maximum Peak Power	Pass
15.247(d)	RF Conducted Spurious Emissions	Pass
15.247(d)	Band Edge Compliance (Conducted)	Pass
15.247(d)	Band Edge Compliance (Radiated)	Pass
15.247(e)	Peak Power Spectral Density	Pass
1.1310	Maximum Permissible Exposure	Refer to page 80 for details

TEST SUMMARY

Notes

1. Three channels as listed below, which respectively represent the lower, middle and upper channels of the Equipment Under Test (EUT) were chosen and tested. For each channel, the EUT was configured to operate in the test mode.

Transmit Channel	Frequency (GHz)
Channel 0	2.402
Channel 39	2.441
Channel 78	2.480

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

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

4. All test measurement procedures are according to ANSI C63.4: 2003.

5. The maximum measured RF power of the Equipment Under Test is 1.76dBm.

6. The Tx and Rx cards used in the EUT for wireless subwoofer audio were tested by TÜV SÜD PSB Pte Ltd in 2012 and the cards were integrated into the EUT without any modification as per information from Panasonics AVC Networks Singapore. The Tx and Rx cards were reported in 7191048274-EEC12/04 dated 10th Jan 2013.

Modifications

No modifications were made.

PRODUCT DESCRIPTION

Description	:	The Equipment Under Test (EUT) is a **HOME THEATER AUDIO SYSTEM**. It consists of i. Main Unit SU-HTB880 ii. Active Subwoofer SB-HWA880
Applicant	:	Panasonic AVC Networks Singapore 202, Bedok South Avenue 1, Singapore 469332
Manufacturer	:	Panasonic Corporation 1006, Oaza Kadoma, Kadoma-City, Osaka 571 8501, Japan
Factor(ies)	:	Panasonic AVC Networks Johor Malaysia Sdn Bhd IE, PLO 460, Jalan Bandar, 81700 Pasir Gudang, Johor, Malaysia
Model Number	:	SC-HTB880
Serial Number	:	Nil
Microprocessor	:	Avnera AV6210 (Tx/Rx) CSR BC57E687C-G1TB-E4 (Bluetooth)
Operating / Transmitting Frequency	:	2.40335GHz - 2.47735GHz (Tx/Rx Card) 2.402GHz - 2.480GHz (Bluetooth)
Clock / Oscillator Frequency	:	16MHz (Tx/Rx) 26MHz (Bluetooth)
Modulation	:	Tx/Rx Direct-Sequence Spread Spectrum (DSSS) Bluetooth BDR 1Mbps: DH5 (1Mbps): Gaussian Frequency Shift Keying (GFSK) EDR 2Mbps: 2-DH5 (2Mbps): π/4 Differential-Quadrature Phase Shift Keying (DQPSK) EDR 3Mbps: 3-DH5 (3Mbps): 8 Differential Phase-Shift Keying (DPSK)
Antenna Gain	:	3.0dBi (Tx/Rx) 2.0dBi (Bluetooth)
Port / Connectors	:	Refer to Operating Instructions
Rated Input Power	:	i. 120V 60Hz 31W ii. 120V 60Hz 46W
Accessories	:	1. Remote Control with Battery 2. AC Cord 3. OI Book 4. Easy Setup Guide

SUPPORTING EQUIPMENT DESCRIPTION

Equipment Description (Including Brand Name)	Model, Serial & FCC ID Number	Cable Description (List Length, Type & Purpose)
Fujitsu Lifebook	M/N: S6310 S/N: R6Z00061 FCC ID: DoC	2.00m unshielded power cable
Fujitsu AC Adapter	M/N: CP293662-01 S/N: 06X00159B FCC ID: DoC	2.00m unshielded power cable
CSR USB-SPI Converter	M/N: 1324 S/N: 288485 FCC ID: DoC	1.50m USB cable 1.50m RJ45 cable

EUT OPERATING CONDITIONS

47 CFR FCC Part 15
1. Conducted Emissions * Note **2. Radiated Emissions (Spurious Emissions inclusive Restricted Bands Requirement)** * Note **3. Spectrum Bandwidth (20dB Bandwidth Measurement)** **4. Maximum Peak Power** **5. RF Conducted Spurious Emissions** **6. Peak Power Spectral Density** **7. Maximum Permissible Exposure**
The EUT was exercised by operating in maximum continuous transmission with frequency hopping off, i.e transmitting at lower, middle and upper channels respectively at one time. *Note: For Conducted Emissions and Radiated Emissions, the EUT was exercised with Bluetooth + Wireless Audio Streaming simultaneously.
47 CFR FCC Part 15
1. Carrier Frequency Separation **2. Number of Hopping Frequencies** **3. Average Frequency Dwell Time** **4. Band Edge Compliance (Conducted)** **5. Band Edge Compliance (Radiated)**
The EUT was exercised by operating in maximum continuous transmission with frequency hopping on.

CONDUCTED EMISSION TEST

47 CFR FCC Parts 15.107(a) and 15.207 Conducted Emission 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		

47 CFR FCC Parts 15.107(a) and 15.207 Conducted Emission Test Instrumentation

Instrument	Model	S/No	Cal Due Date
Schaffner EMI Receiver	SMR4503	040	21 Jan 2015
Agilent EMC Analyzer-SA7	E7403A	US41160167	28 May 2014
Schaffner LISN –LISN7 (Ref)	NNB42	00008	28 Jan 2015
EMCO LISN (for supporting) – LISN6	3825/2	9309-2127	31 Oct 2014

47 CFR FCC Parts 15.107(a) and 15.207 Conducted Emission Test Setup

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table.
2. The power supply for the EUT was fed through a 50Ω/50μH EUT LISN, connected to filtered mains.
3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.
4. All other supporting equipment were powered separately from another LISN.

47 CFR FCC Parts 15.107(a) and 15.207 Conducted Emission Test Method

1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. A scan was made on the NEUTRAL line over the required frequency range using an EMI test receiver.
3. High peaks, relative to the limit line, were then selected.
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.
5. Steps 2 to 4 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

47 CFR FCC Parts 15.107(a) and 15.207 Conducted Emission Results

Operating Mode	Bluetooth + Wireless Audio Streaming (Worst mode)	Temperature	24°C
Test Input Power	120V 60Hz	Relative Humidity	60%
Line Under Test	AC Mains	Atmospheric Pressure	1030mbar
EUT	Sound Bar	Tested By	Chang Wai Kit

Frequency (MHz)	Q-P Value (dBµV)	Q-P Limit (dBµV)	Q-P Margin (dB)	AV Value (dBµV)	AV Limit (dBµV)	AV Margin (dB)	Line
0.5265	38.1	56.0	17.9	37.0	46.0	9.0	Neutral
0.6574	38.8	56.0	17.2	36.6	46.0	9.4	Neutral
0.7891	37.9	56.0	18.1	34.9	46.0	11.1	Neutral
0.9207	36.1	56.0	19.9	32.3	46.0	13.7	Neutral
0.9216	34.0	56.0	22.0	30.7	46.0	15.3	Live
1.1856	38.6	56.0	17.4	33.7	46.0	12.3	Neutral

Operating Mode	Bluetooth + Wireless Audio Streaming (Worst mode)	Temperature	24°C
Test Input Power	120V 60Hz	Relative Humidity	60%
Line Under Test	AC Mains	Atmospheric Pressure	1030mbar
EUT	Woofer	Tested By	Chang Wai Kit

Frequency (MHz)	Q-P Value (dBµV)	Q-P Limit (dBµV)	Q-P Margin (dB)	AV Value (dBµV)	AV Limit (dBµV)	AV Margin (dB)	Line
0.2615	41.6	61.4	19.8	35.7	51.4	15.7	Neutral
0.5798	30.9	56.0	25.1	18.0	46.0	28.0	Live
0.6595	28.9	56.0	27.1	27.7	46.0	18.3	Neutral
1.3218	23.9	56.0	32.1	22.6	46.0	23.4	Live
1.4532	25.8	56.0	30.2	25.3	46.0	20.7	Live
1.9775	24.7	56.0	31.3	21.5	46.0	24.5	Neutral

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
4. Conducted Emissions 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, in the range 9kHz – 30MHz is ±2.2dB.

47 CFR FCC Part 15.205 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									

47 CFR FCC Parts 15.109(a) and 15.209 Radiated Emission Limits

Frequency Range (MHz)	Quasi-Peak Limit Values (dBµV/m) @ 3m
30 - 88	40.0
88 - 216	43.5
216 - 960	46.0
Above 960	54.0*
* Above 1GHz, average detector was used. A peak limit of 20dB above the average limit does apply.	

47 CFR FCC Parts 15.109(a) and 15.209 Radiated Emission Test Instrumentation

Instrument	Model	S/No	Cal Due Date
R&S Test Receiver – ESI1	ESI40	100010	09 Jul 2014
Schaffner Bilog Antenna –(30MHz-2GHz) BL3 (Ref)	CBL6112B	2549	23 Jan 2015
ETS Horn Antenna(18GHz-40GHz)(Ref)	3116	0004-2474	16 Oct 2014
TDK-RF Horn Antenna	HRN-0118	130256	08 Apr 2014
Toyo Preamplifier (26.5GHz-40GHz)	HAP26-40W	00000005	16 Oct 2014
Agilent Preamplifier(1GHz-26.5GHz) (PA18)	8449D	3008A02305	04 Oct 2014
Com-Power Preamplifier (1MHz-1GHz)	PAM-103	441056	16 Aug 2014
Micro-tronics Bandstop Filter	BRM50701-02	007	14 Jul 2014

47 CFR FCC Parts 15.109(a) and 15.209 Radiated Emission Test Setup

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m X 1.0m X 0.8m high, non-metallic table.
2. The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.
3. The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.

47 CFR FCC Parts 15.109(a) and 15.209 Radiated Emission Test Method

1. The EUT was switched on and allowed to warm up to its normal operating condition.
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.
3. The test was carried out at the selected frequency points obtained from the prescan in step 2. 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.
4. A Quasi-peak measurement was made for that frequency point if it was less than or equal to 1GHz. For frequency point that above 1GHz, both Peak and Average measurements were carried out.
5. Steps 3 and 4 were repeated for the next frequency point, until all selected frequency points were measured.
6. The frequency range covered was from 30MHz to 10th harmonics of the EUT fundamental frequency, using the 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

47 CFR FCC Parts 15.109(a), 15.205 and 15.209 Radiated Emission Results

Operating Mode	Bluetooth + Wireless Audio Streaming (Worst mode)	Temperature	24°C
Test Input Power	120V 60Hz	Relative Humidity	60%
Test Distance	3m	Atmospheric Pressure	1030mbar
		Tested By	Stephen Chng

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)	Polarisation (H/V)
56.4700	26.7	40.0	13.3	208	115	V
191.9960	30.4	43.5	13.1	334	94	H
360.0000	34.7	46.0	11.3	195	302	H
368.6670	35.1	46.0	10.9	151	36	H
589.7940	34.8	46.0	11.2	272	359	V
884.6990	39.0	46.0	7.0	143	27	V

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)
1.3354	47.7	74.0	26.3	49.2	54.0	4.8	151	36	H
4.2362	49.6	74.0	24.4	49.1	54.0	4.9	272	359	V
4.4164	49.6	74.0	24.4	49.1	54.0	4.9	195	302	H
2.6299	49.5	74.0	24.5	49.0	54.0	5.0	208	115	V
7.5864	49.5	74.0	24.5	49.0	54.0	5.0	119	1	H
5.1643	55.8	74.0	18.2	50.7	54.0	3.3	100	4	V

47 CFR FCC Parts 15.109(a), 15.205 and 15.209 Radiated Emission Results

Operating Mode	Bluetooth	Temperature	24°C
Test Input Power	120V 60Hz	Relative Humidity	60%
Test Distance	3m	Atmospheric Pressure	1030mbar
Packet Type	EDR 3Mbps (Worst)	Tested By	Calvin Diego

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
96.2620	28.3	43.5	15.2	130	170	H	78
132.1350	40.4	43.5	3.1	131	174	H	78
167.9480	33.0	43.5	10.5	196	152	H	78
182.2720	31.7	43.5	11.8	176	142	H	78
221.1980	37.7	43.5	5.8	100	210	H	78
591.8980	34.2	46.0	11.8	108	115	H	78

47 CFR FCC Parts 15.109(a), 15.205 and 15.209 Radiated Emission Results

Operating Mode	Bluetooth	Temperature	24°C
Test Input Power	120V 60Hz	Relative Humidity	60%
Test Distance	3m	Atmospheric Pressure	1030mbar
Packet Type	BDR 1Mbps	Tested By	Calvin Diego

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
1.1360	46.2	74.0	27.8	-- *See Note 2	54.0	7.8	208	115	V	0
1.5110	51.5	74.0	22.5	-- *See Note 2	54.0	2.5	334	94	V	0
1.9880	51.4	74.0	22.6	-- *See Note 2	54.0	2.6	195	302	V	0
3.5890	50.8	74.0	23.2	-- *See Note 2	54.0	3.2	151	36	H	0
4.8820	60.6	74.0	13.4	52.1	54.0	1.9	143	135	V	0
8.0180	53.6	74.0	20.4	36.7	54.0	17.3	112	129	H	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
1.0680	46.4	74.0	27.6	-- *See Note 2	54.0	7.6	272	359	V	39
1.5450	51.2	74.0	22.8	-- *See Note 2	54.0	2.8	143	27	V	39
1.9880	50.2	74.0	23.8	-- *See Note 2	54.0	3.8	302	356	V	39
3.5890	51.2	74.0	22.8	-- *See Note 2	54.0	2.8	143	27	H	39
4.8820	65.9	74.0	8.1	52.6	54.0	1.4	113	124	V	39
7.5410	51.9	74.0	22.1	38.4	54.0	15.6	100	125	H	39

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
1.1360	46.2	74.0	27.8	-- *See Note 2	54.0	7.8	208	115	V	78
1.5110	51.7	74.0	22.3	-- *See Note 2	54.0	2.3	334	94	V	78
1.9880	50.4	74.0	23.6	-- *See Note 2	54.0	3.6	195	302	V	78
3.5890	51.4	74.0	22.6	-- *See Note 2	54.0	2.6	151	36	H	78
4.9520	52.4	74.0	21.6	52.4	54.0	1.6	119	122	H	78
6.9280	53.7	74.0	20.3	39.7	54.0	14.3	106	131	V	78

47 CFR FCC Parts 15.109(a), 15.205 and 15.209 Radiated Emission Results

Operating Mode	Bluetooth	Temperature	24°C
Test Input Power	120V 60Hz	Relative Humidity	60%
Test Distance	3m	Atmospheric Pressure	1030mbar
Packet Type	EDR 2Mbps	Tested By	Calvin Diego

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
1.0340	47.0	74.0	27.0	-- *See Note 2	54.0	7.0	100	224	V	0
1.5450	51.9	74.0	22.1	-- *See Note 2	54.0	2.1	259	1	V	0
1.9880	50.2	74.0	23.8	-- *See Note 2	54.0	3.8	125	156	V	0
3.5890	51.5	74.0	22.5	-- *See Note 2	54.0	2.5	367	337	H	0
4.8042	60.3	74.0	13.7	51.4	54.0	2.6	114	131	V	0
6.3820	53.6	74.0	20.4	40.2	54.0	13.8	122	125	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
1.0000	48.5	74.0	25.5	-- *See Note 2	54.0	5.5	100	4	H	39
1.6473	52.6	74.0	21.4	-- *See Note 2	54.0	1.4	100	156	V	39
1.9880	50.3	74.0	23.7	-- *See Note 2	54.0	3.7	131	24	V	39
3.5890	51.5	74.0	22.5	-- *See Note 2	54.0	2.5	100	274	H	39
4.8840	53.4	74.0	20.6	52.6	54.0	1.4	125	129	V	39
6.9720	53.4	74.0	20.6	39.7	54.0	14.3	119	133	H	39

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
1.1360	47.4	74.0	26.6	-- *See Note 2	54.0	6.6	335	94	V	78
1.5450	51.8	74.0	22.2	-- *See Note 2	54.0	2.2	151	36	V	78
1.6170	48.3	74.0	25.7	-- *See Note 2	54.0	5.7	272	359	V	78
1.9880	49.3	74.0	24.7	-- *See Note 2	54.0	4.7	195	302	V	78
3.5890	50.3	74.0	23.7	-- *See Note 2	54.0	3.7	208	115	H	78
4.9520	49.7	74.0	24.3	-- *See Note 2	54.0	4.3	119	1	H	78

47 CFR FCC Parts 15.109(a), 15.205 and 15.209 Radiated Emission Results

Operating Mode	Bluetooth	Temperature	24°C
Test Input Power	120V 60Hz	Relative Humidity	60%
Test Distance	3m	Atmospheric Pressure	1030mbar
Packet Type	EDR 3Mbps	Tested By	Calvin Diego

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
1.0680	46.0	74.0	28.0	-- *See Note 2	54.0	8.0	151	36	V	0
1.5110	51.2	74.0	22.8	-- *See Note 2	54.0	2.8	272	359	H	0
1.9880	50.0	74.0	24.0	-- *See Note 2	54.0	4.0	143	27	V	0
3.5890	51.4	74.0	22.6	-- *See Note 2	54.0	2.6	272	359	H	0
4.7810	57.5	74.0	16.5	45.2	54.0	8.8	143	27	V	0
7.7790	53.3	74.0	20.7	38.8	54.0	15.2	120	130	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
1.1360	46.1	74.0	27.9	-- *See Note 2	54.0	7.9	131	245	V	39
1.5450	51.4	74.0	22.6	-- *See Note 2	54.0	2.6	145	164	V	39
1.9880	49.9	74.0	24.1	-- *See Note 2	54.0	4.1	288	312	V	39
3.5890	50.2	74.0	23.8	-- *See Note 2	54.0	3.8	219	333	H	39
4.8819	59.0	74.0	15.0	46.5	54.0	7.5	127	139	V	39
9.7210	56.1	74.0	17.9	38.0	54.0	16.0	125	140	V	39

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
1.5110	50.0	74.0	24.0	-- *See Note 2	54.0	4.0	131	24	V	78
1.6470	49.0	74.0	25.0	-- *See Note 2	54.0	5.0	100	274	V	78
1.9880	49.9	74.0	24.1	-- *See Note 2	54.0	4.1	125	129	V	78
3.5890	50.1	74.0	23.9	-- *See Note 2	54.0	3.9	119	133	V	78
4.9520	49.9	74.0	24.1	-- *See Note 2	54.0	4.1	146	48	H	78
6.9280	53.5	74.0	20.5	39.4	54.0	14.6	124	131	V	78

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. As the measured peak shows compliance to the average limit, as such no average measurement was required.
3. The average margin indicates the margin of the measured peak value below the average limit.
4. 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.
5. 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.
6. EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings:
   30MHz - 1GHz
   RBW: 120kHz VBW: 1MHz
   >1GHz
   RBW: 1MHz VBW: 1MHz
7. 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.
8. The channel in the table refers to the transmit channel of the EUT.
9. Radiated Emissions 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, in the range 30MHz – 25GHz is ±4.0dB.

CARRIER FREQUENCY SEPARATION TEST

47 CFR FCC Part 15.247(a)(1) Carrier Frequency Separation 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).

47 CFR FCC Part 15.247(a)(1) Carrier Frequency Separation Test Instrumentation

Instrument	Model	S/No	Cal Due Date
Agilent Spectrum Analyzer	E4440A	MY45304764	14 Nov 2014
Kikusui Regulated Power Supply	PAD 35-10L	1540254	Output Monitor

47 CFR FCC Part 15.247(a)(1) Carrier Frequency Separation Test Setup

1. The EUT and supporting equipment were set up as shown in the setup photo.
2. The power supply for the EUT was connected to a filtered mains.
3. The RF antenna connector was connected to the spectrum analyser via a low-loss coaxial cable.
4. The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were respectively set to 100kHz and 300kHz.
5. All other supporting equipment were powered separately from another filtered mains.

47 CFR FCC Part 15.247(a)(1) Carrier Frequency Separation Test Method

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. The start and stop frequencies of the spectrum analyser were set to 2.400GHz and 2.405GHz.
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.
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.
5. The steps 2 to 4 were repeated with the following start and stop frequencies settings:
   a. 2.4385GHz to 2.4435GHz
   b. 2.478GHz to 2.481GHz

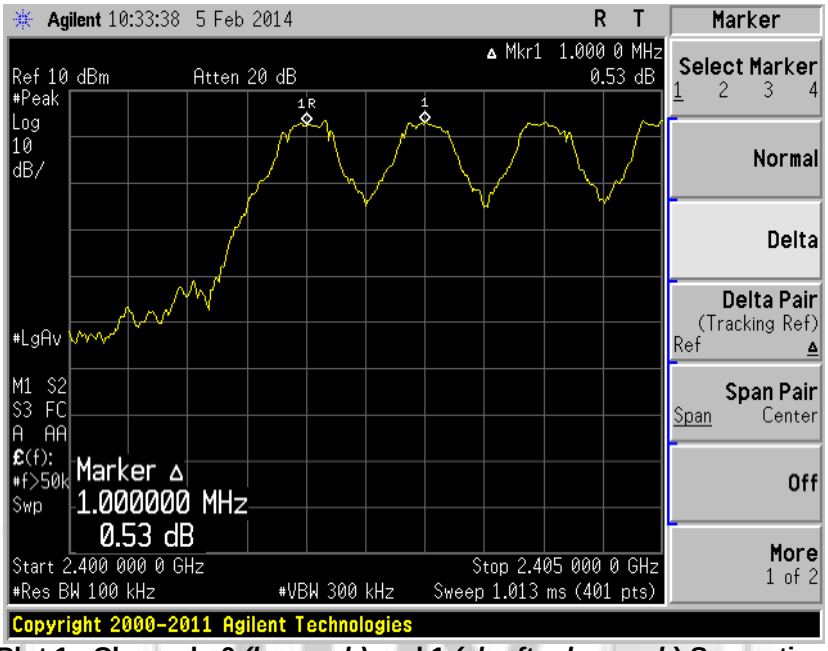
CARRIER FREQUENCY SEPARATION TEST

47 CFR FCC Part 15.247(a)(1) Carrier Frequency Separation Results

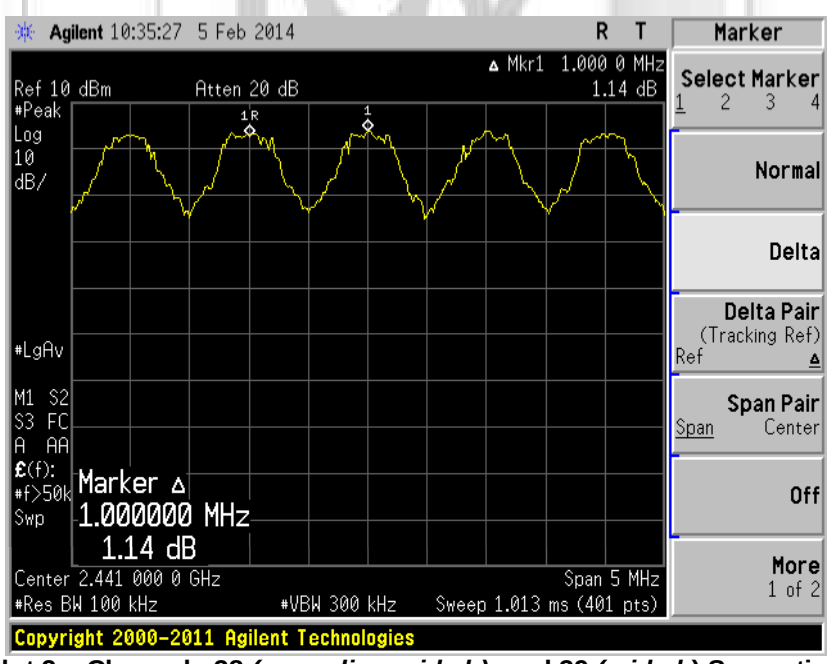
Test Input Power	120V 60Hz	Temperature	26°C
Attached Plots	1 – 4	Relative Humidity	60%
		Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

Adjacent Channels	Channel Separation (MHz)
0 and 1 (2.402GHz and 2.403GHz)	1.000
38 and 39 (2.440GHz and 2.441GHz)	1.000
39 and 40 (2.441GHz and 2.442GHz)	1.000
77 and 78 (2.479GHz and 2.480GHz)	1.000

Carrier Frequency Separation Plots

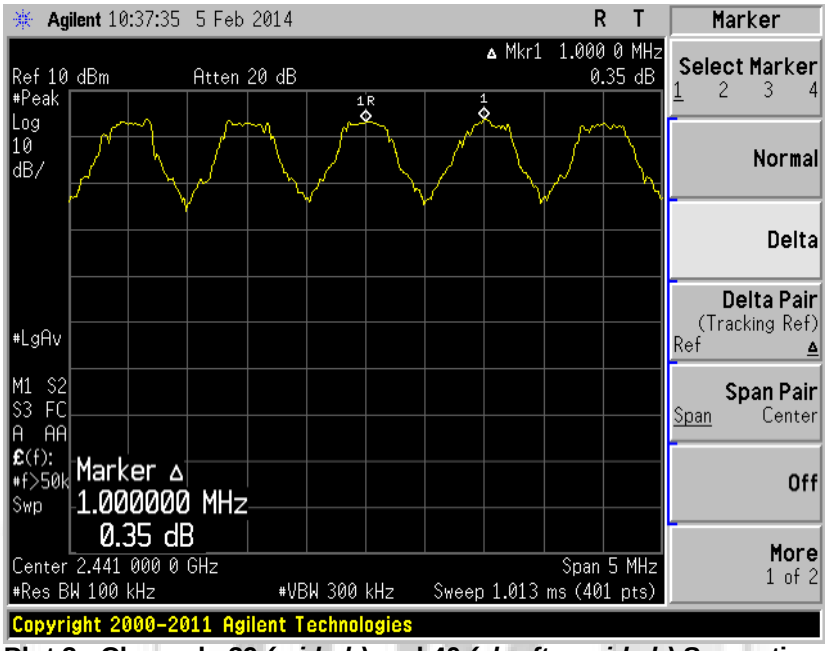


Plot 1 - Channels 0 *(lower ch)* and 1 *(ch after lower ch)* Separation

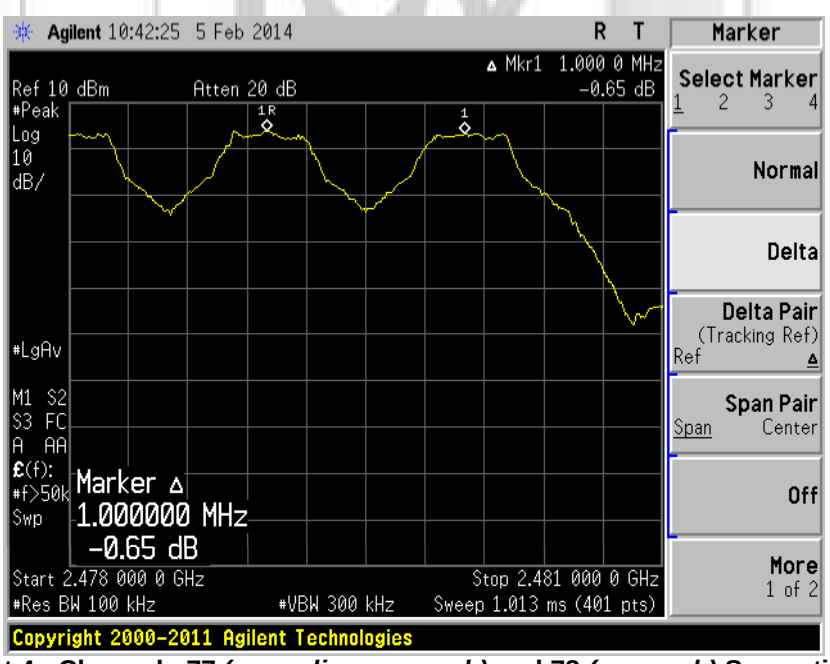


Plot 2 – Channels 38 *(preceding mid ch)* and 39 *(mid ch)* Separation

Carrier Frequency Separation Plots



Plot 3 - Channels 39 *(mid ch)* and 40 *(ch after mid ch)* Separation



Plot 4 - Channels 77 *(preceding upper ch)* and 78 *(upper ch)* Separation

SPECTRUM BANDWIDTH (20dB BANDWIDTH MEASUREMENT) TEST

47 CFR FCC Part 15.247(a)(1) Spectrum Bandwidth (20dB Bandwidth Measurement) 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.

47 CFR FCC Part 15.247(a)(1) Spectrum Bandwidth (20dB Bandwidth Measurement) Test Instrumentation

Instrument	Model	S/No	Cal Due Date
Agilent Spectrum Analyzer	E4440A	MY45304764	14 Nov 2014
Kikusui Regulated Power Supply	PAD 35-10L	1540254	Output Monitor

47 CFR FCC Part 15.247(a)(1) Spectrum Bandwidth (20dB Bandwidth Measurement) Test Setup

1. The EUT and supporting equipment were set up as shown in the setup photo.
2. The power supply for the EUT was connected to a filtered mains.
3. The RF antenna connector was connected to the spectrum analyser via a low-loss coaxial cable.
4. The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were respectively set to 10kHz and 30kHz.
5. All other supporting equipment were powered separately from another filtered mains.

47 CFR FCC Part 15.247(a)(1) Spectrum Bandwidth (20dB Bandwidth Measurement) Test Method

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 Channel 0 (2.402GHz) *(lower ch)*.
2. The center frequency of the spectrum analyser was set to the transmitting frequency with the frequency span wide enough to capture the 20dB bandwidth of the transmitting frequency.
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.
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.
5. The 20dB bandwidth of the transmitting frequency is the frequency difference between the marked lower and upper frequencies, $| f_H - f_L |$.
6. The steps 2 to 5 were repeated with the transmitting frequency was set to Channel 39 (2.441GHz) *(mid ch)* and Channel 78 (2.480GHz) *(upper ch)* respectively.

SPECTRUM BANDWIDTH (20dB BANDWIDTH MEASUREMENT) TEST

47 CFR FCC Part 15.247(a)(1) Spectrum Bandwidth (20dB Bandwidth Measurement) Results

Test Input Power	120V 60Hz	Temperature	26°C
Attached Plots	5 – 7	Relative Humidity	60%
Packet Type	BDR 1Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

Channel	Channel Frequency (GHz)	20dB Bandwidth (MHz)
0 *(lower ch)*	2.402	0.920
39 *(mid ch)*	2.441	0.918
78 *(upper ch)*	2.480	0.919

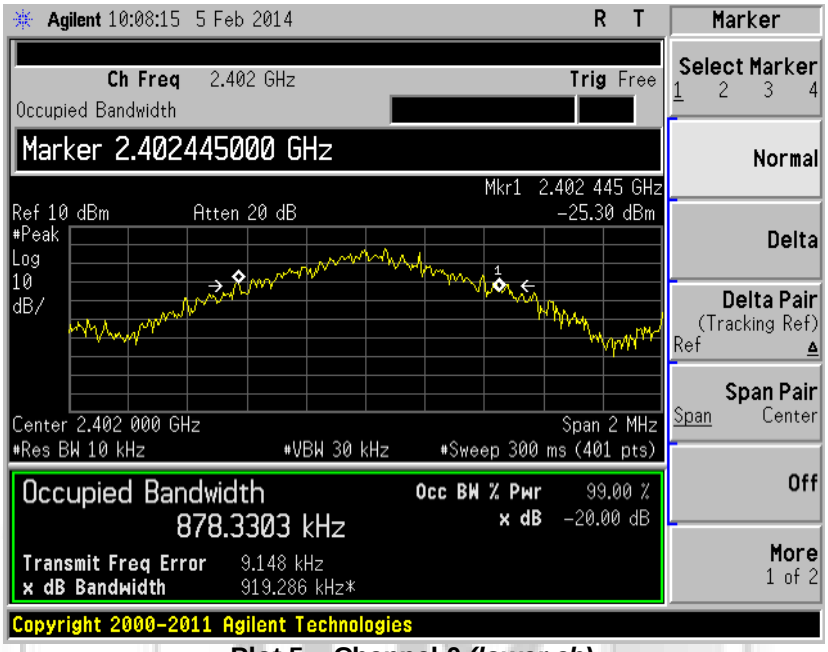
Test Input Power	120V 60Hz	Temperature	26°C
Attached Plots	8 – 10	Relative Humidity	60%
Packet Type	EDR 2Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

Channel	Channel Frequency (GHz)	20dB Bandwidth (MHz)
0 *(lower ch)*	2.402	1.261
39 *(mid ch)*	2.441	1.276
78 *(upper ch)*	2.480	1.256

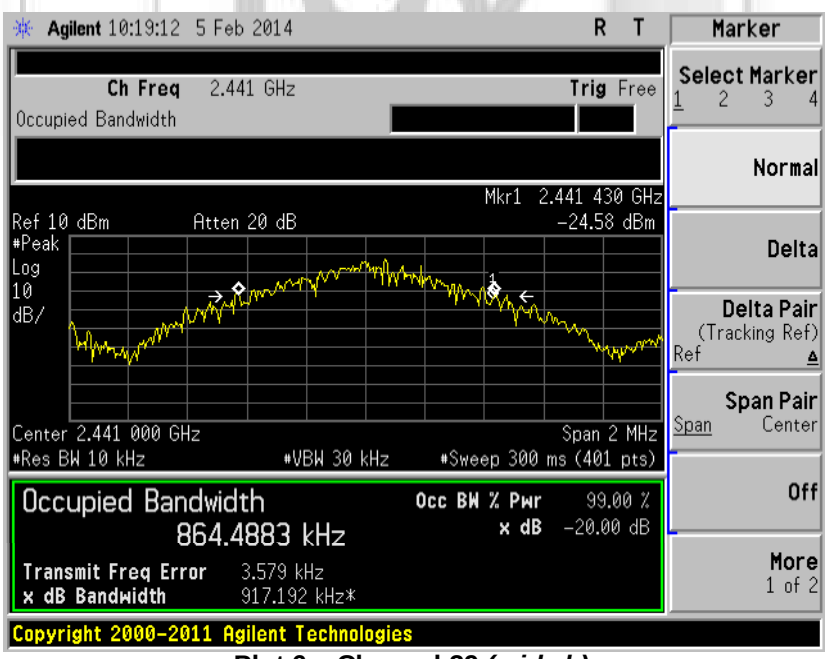
Test Input Power	120V 60Hz	Temperature	26°C
Attached Plots	11 – 13	Relative Humidity	60%
Packet Type	EDR 3Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

Channel	Channel Frequency (GHz)	20dB Bandwidth (MHz)
0 *(lower ch)*	2.402	1.315
39 *(mid ch)*	2.441	1.303
78 *(upper ch)*	2.480	1.310

Spectrum Bandwidth (20dB Bandwidth Measurement) Plots – BDR 1Mbps

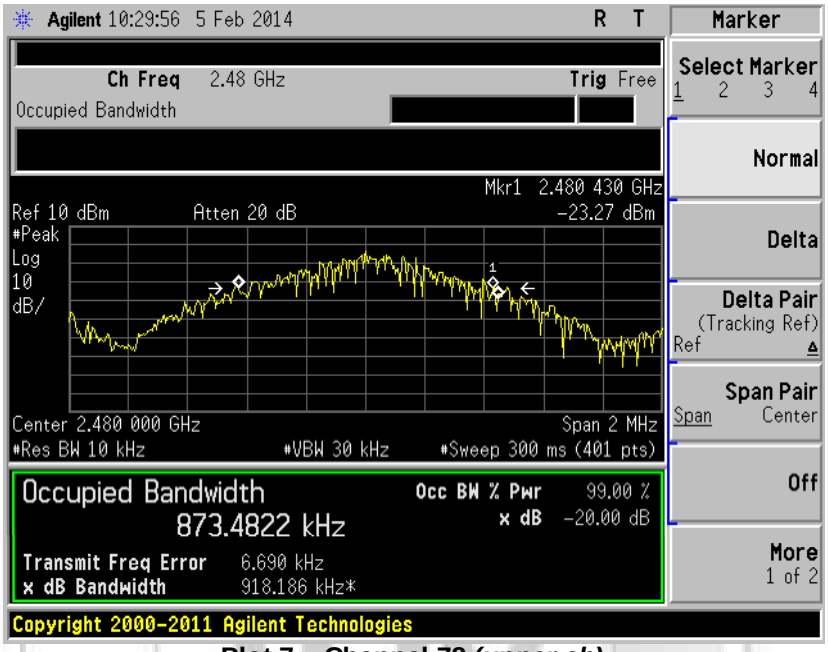


Plot 5 – Channel 0 *(lower ch)*



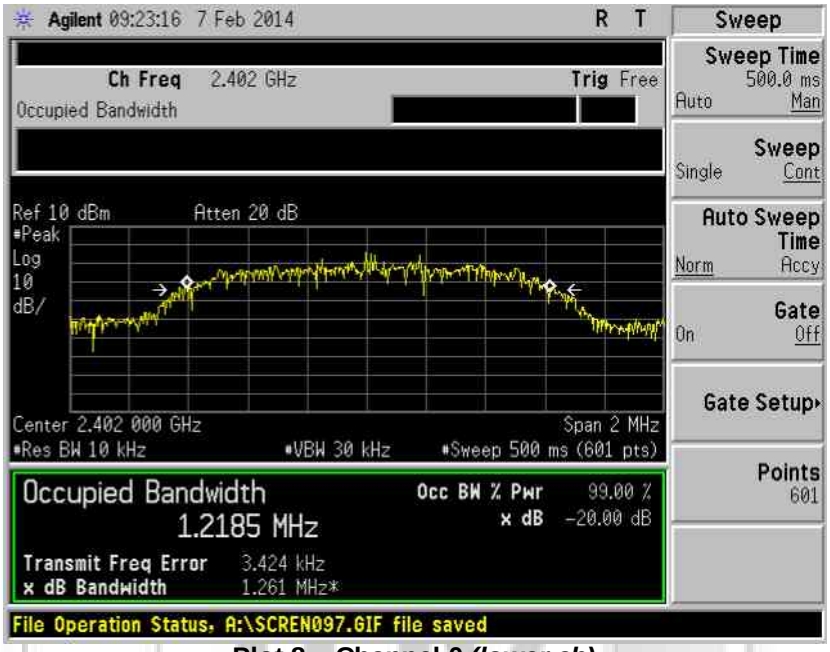
Plot 6 – Channel 39 *(mid ch)*

Spectrum Bandwidth (20dB Bandwidth Measurement) Plots – BDR 1Mbps

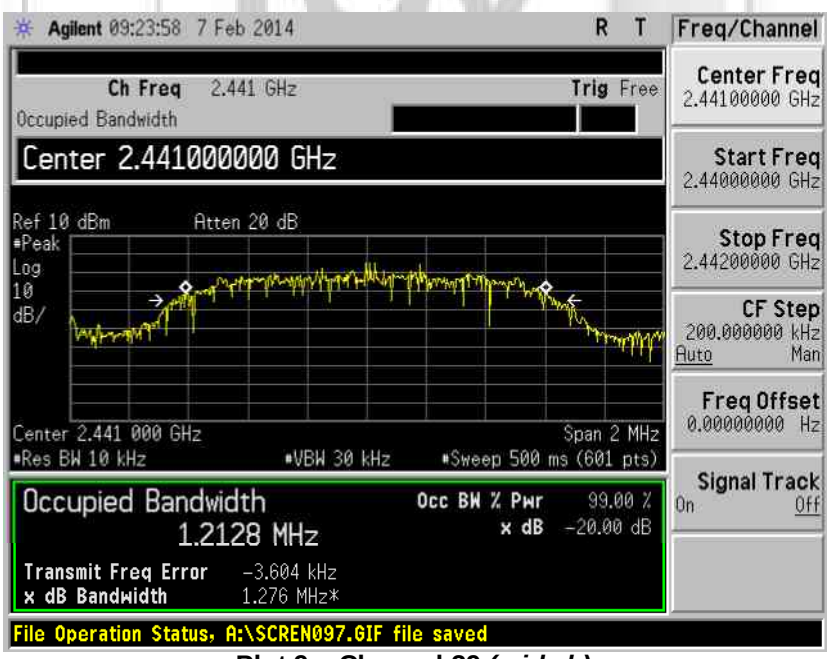


Plot 7 – Channel 78 *(upper ch)*

Spectrum Bandwidth (20dB Bandwidth Measurement) Plots – EDR 2Mbps

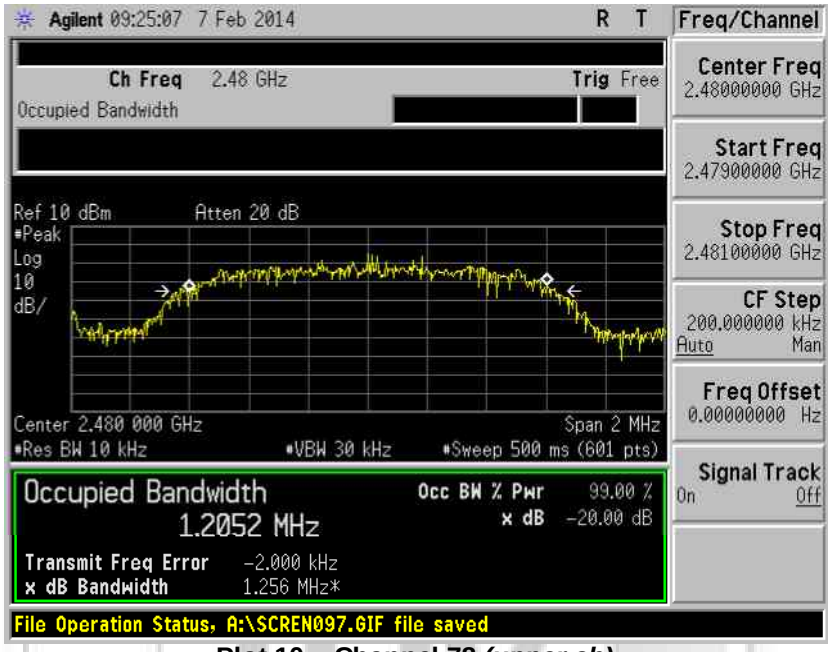


Plot 8 – Channel 0 *(lower ch)*



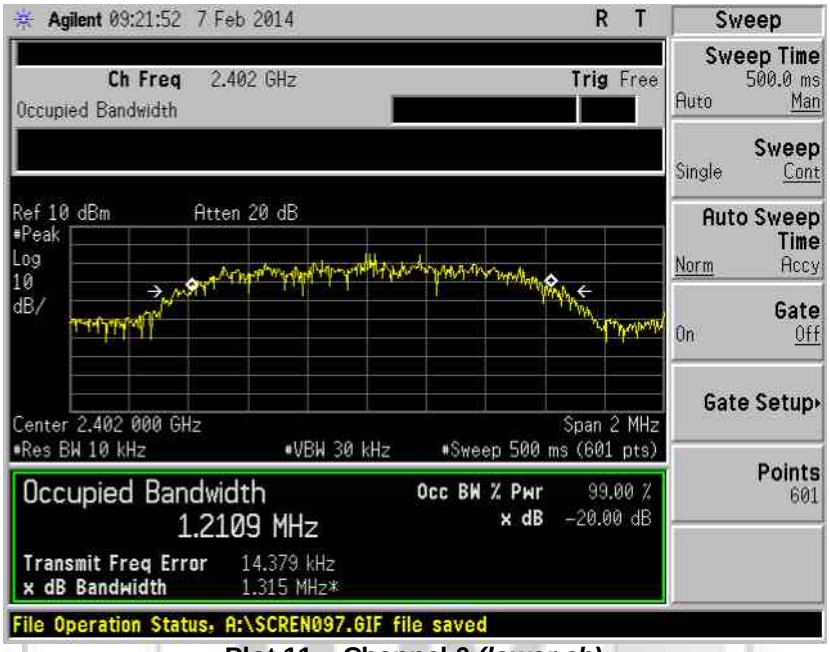
Plot 9 – Channel 39 *(mid ch)*

Spectrum Bandwidth (20dB Bandwidth Measurement) Plots – EDR 2Mbps

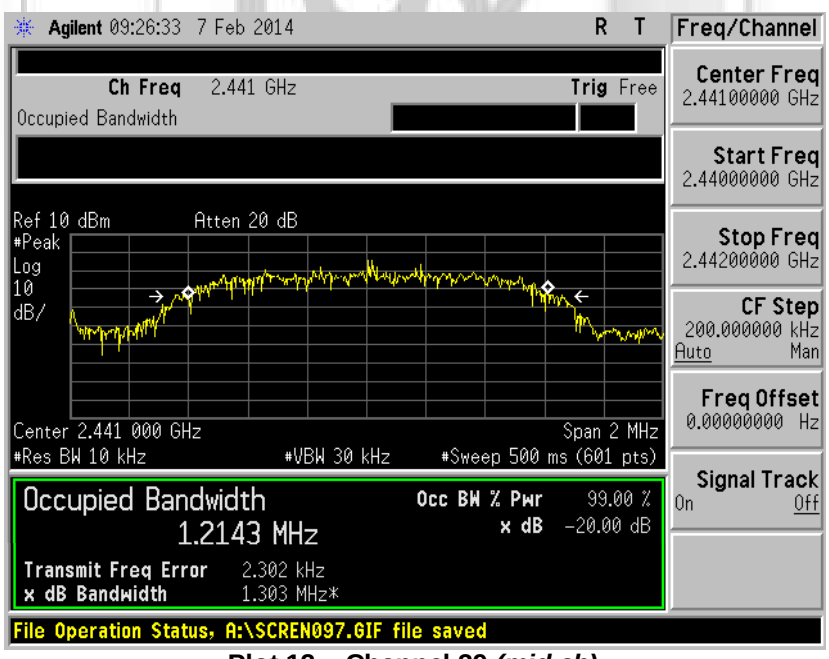


Plot 10 – Channel 78 *(upper ch)*

Spectrum Bandwidth (20dB Bandwidth Measurement) Plots – EDR 3Mbps



Plot 11 – Channel 0 *(lower ch)*



Plot 12 – Channel 39 *(mid ch)*

Spectrum Bandwidth (20dB Bandwidth Measurement) Plots – EDR 3Mbps

Plot 13 – Channel 78 *(upper ch)*

NUMBER OF HOPPING FREQUENCIES TEST

47 CFR FCC Part 15.247(a)(1)(iii) Number of Hopping Frequencies Limits

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

47 CFR FCC Part 15.247(a)(1)(iii) Number of Hopping Frequencies Test Instrumentation

Instrument	Model	S/No	Cal Due Date
Agilent Spectrum Analyzer	E4440A	MY45304764	14 Nov 2014
Kikusui Regulated Power Supply	PAD 35-10L	1540254	Output Monitor

47 CFR FCC Part 15.247(a)(1)(iii) Number of Hopping Frequencies Test Setup

1. The EUT and supporting equipment were set up as shown in the setup photo.
2. The power supply for the EUT was connected to a filtered mains.
3. The RF antenna connector was connected to the spectrum analyser via a low-loss coaxial cable.
4. The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were respectively set to 100kHz and 300kHz.
5. All other supporting equipment were powered separately from another filtered mains.

47 CFR FCC Part 15.247(a)(1)(iii) Number of Hopping Frequencies Test Method

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. The start and stop frequencies of the spectrum analyser were set to 2.39GHz and 2.42GHz.
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.
4. The numbers of transmitting frequencies were counted and recorded.
5. The steps 2 to 4 were repeated with the following start and stop frequencies settings:
   a. 2.420GHz to 2.441GHz
   b. 2.441GHz to 2.461GHz
   c. 2.461GHz to 2.4835GHz
6. The total number of hopping frequencies is the sum of the number of the hopping frequencies found for each span.

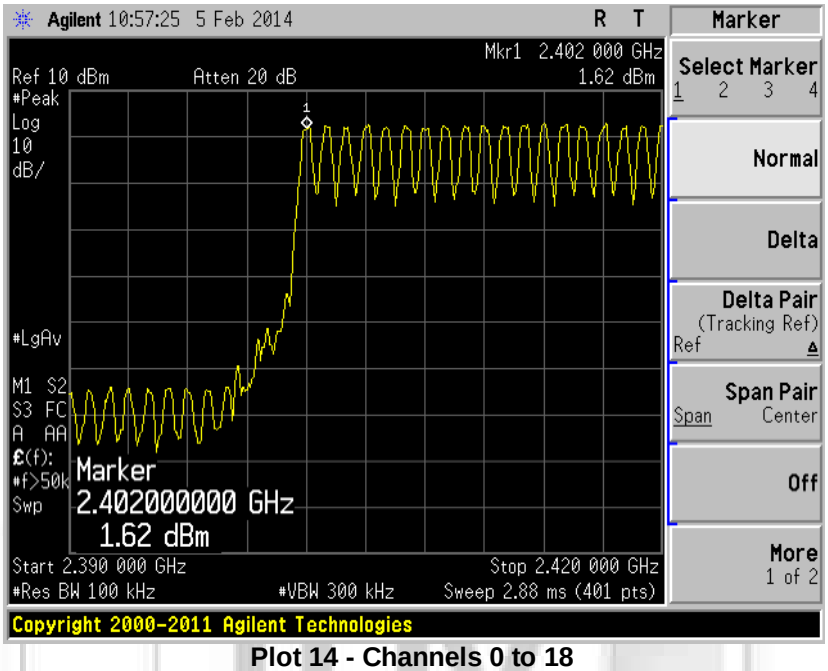
NUMBER OF HOPPING FREQUENCIES TEST

47 CFR FCC Part 15.247(a)(1)(iii) Number of Hopping Frequencies Results

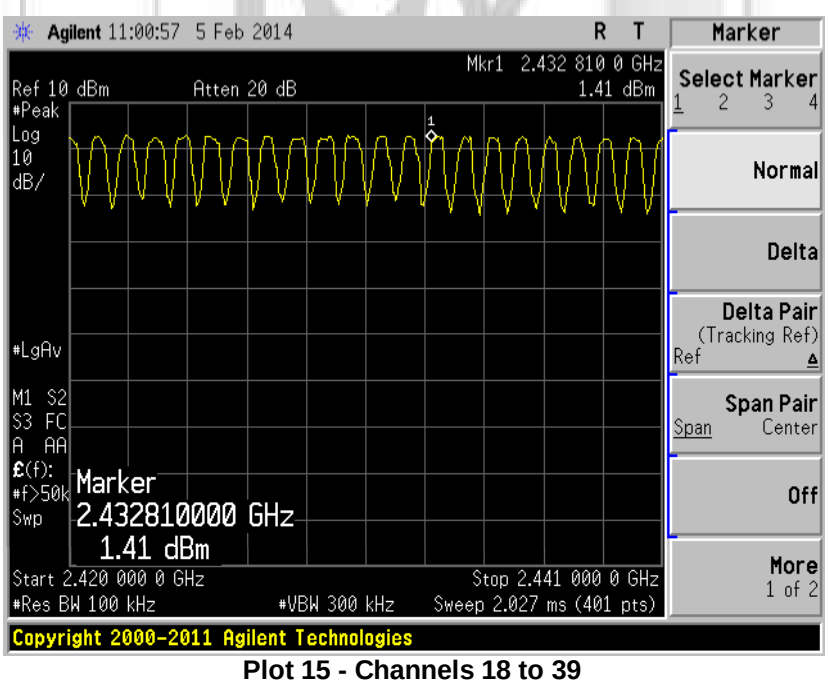
Test Input Power	120V 60Hz	Temperature	26°C
Attached Plots	14 – 17	Relative Humidity	60%
		Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

The EUT was found to have 79 hopping frequencies. Please refer to the attached plots.

Number of Hopping Frequencies Plots

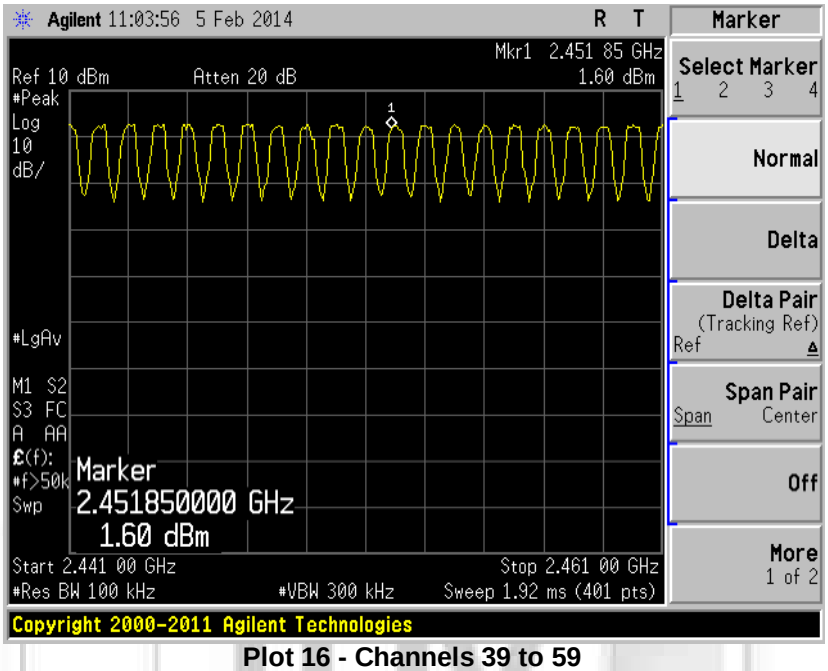


Plot 14 - Channels 0 to 18

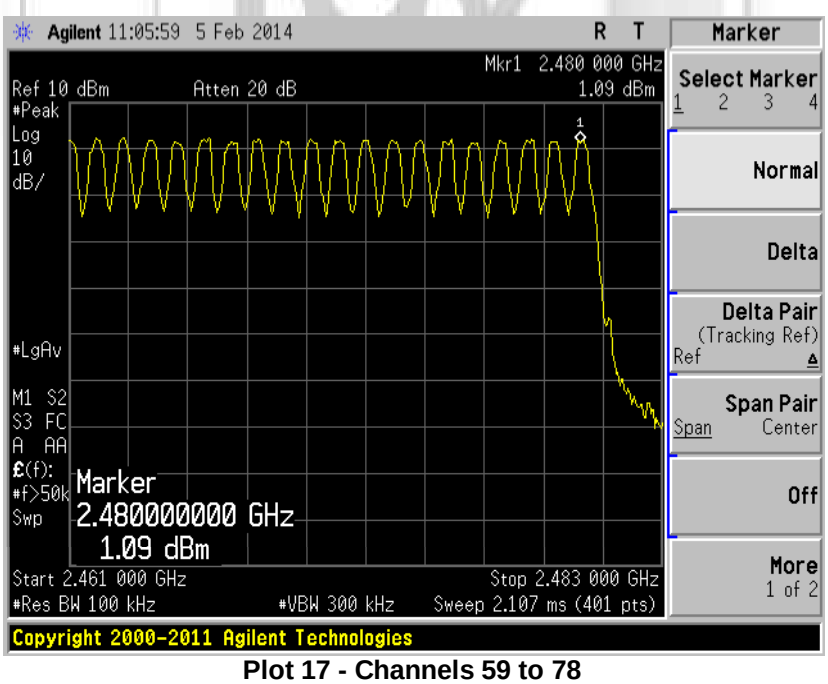


Plot 15 - Channels 18 to 39

Number of Hopping Frequencies Plots



Plot 16 - Channels 39 to 59



Plot 17 - Channels 59 to 78

47 CFR FCC Part 15.247(a)(1)(iii) Average Frequency Dwell Time 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.

47 CFR FCC Part 15.247(a)(1)(iii) Average Frequency Dwell Time Test Instrumentation

Instrument	Model	S/No	Cal Due Date
Agilent Spectrum Analyzer	E4440A	MY45304764	14 Nov 2014
Kikusui Regulated Power Supply	PAD 35-10L	1540254	Output Monitor

47 CFR FCC Part 15.247(a)(1)(iii) Average Frequency Dwell Test Setup

1. The EUT and supporting equipment were set up as shown in the setup photo.
2. The power supply for the EUT was connected to a filtered mains.
3. The RF antenna connector was connected to the spectrum analyser via a low-loss coaxial cable.
4. The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were respectively set to 1MHz and 3MHz.
5. All other supporting equipment were powered separately from another filtered mains.

47 CFR FCC Part 15.247(a)(1)(iii) Average Frequency Dwell Test Method

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. The center frequency of the spectrum analyser was set to 2.402Hz *(lower ch)* with zero frequency span (spectrum analyser acts as an oscilloscope).
3. The sweep time of the spectrum analyser was adjusted until a stable signal can be seen on the spectrum analyser.
4. The duration (dwell time) of a packet was measured using the marker-delta function of the spectrum analyser. The average dwell time of the transmitting frequency was computed based on general expression as shown below:
   Average Frequency Dwell Time = [measured time slot length x hopping rate / number of hopping channels] x [0.4 x number of hopping channels]
5. The steps 2 to 4 were repeated with the center frequency of the spectrum analyser were set to 2.441GHz *(mid ch)* and 2.480GHz *(upper ch)* respectively.

47 CFR FCC Part 15.247(a)(1)(iii) Average Frequency Dwell Time Results

Test Input Power	120V 60Hz	Temperature	26°C
Attached Plots	18 – 20	Relative Humidity	60%
Hopping Rate	1600 hops / s	Atmospheric Pressure	1030mbar
Number of Hopping Channels	79 channels	Tested By	Kyaw Soe Hein
Packet Type	BDR 1Mbps		

Channel	Channel Frequency (GHz)	Measured Time Slot Length (ms)	Average Frequency Dwell Time (s)	Average Occupancy Limit (s)
0 *(lower ch)*	2.402	1.2500	0.2000	0.4
39 *(mid ch)*	2.441	1.2500	0.2000	0.4
78 *(upper ch)*	2.480	1.2500	0.2000	0.4

Test Input Power	120V 60Hz	Temperature	26°C
Attached Plots	21 – 23	Relative Humidity	60%
Hopping Rate	533.3 hops / s	Atmospheric Pressure	1030mbar
Number of Hopping Channels	79 channels	Tested By	Kyaw Soe Hein
Packet Type	EDR 2Mbps		

Channel	Channel Frequency (GHz)	Measured Time Slot Length (ms)	Average Frequency Dwell Time (s)	Average Occupancy Limit (s)
0 *(lower ch)*	2.402	2.5000	0.1334	0.4
39 *(mid ch)*	2.441	2.5000	0.1334	0.4
78 *(upper ch)*	2.480	2.5125	0.1340	0.4

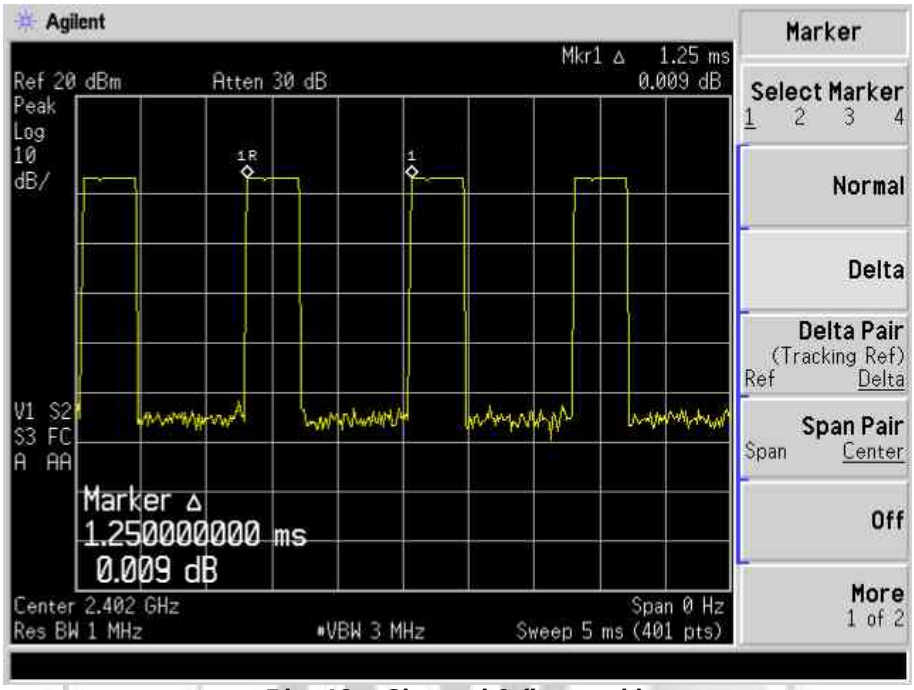
Test Input Power	120V 60Hz	Temperature	26°C
Attached Plots	24 – 26	Relative Humidity	60%
Hopping Rate	320 hops / s	Atmospheric Pressure	1030mbar
Number of Hopping Channels	79 channels	Tested By	Kyaw Soe Hein
Packet Type	EDR 3Mbps		

Channel	Channel Frequency (GHz)	Measured Time Slot Length (ms)	Average Frequency Dwell Time (s)	Average Occupancy Limit (s)
0 *(lower ch)*	2.402	3.7500	0.1200	0.4
39 *(mid ch)*	2.441	3.7500	0.1200	0.4
78 *(upper ch)*	2.480	3.7500	0.1200	0.4

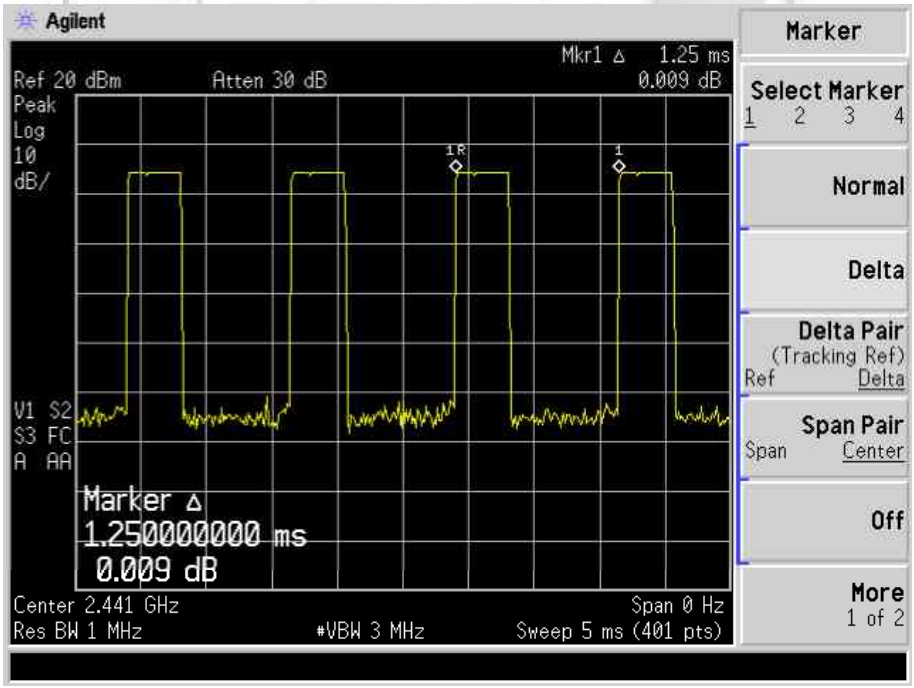
Notes

1. The EUT operates based on 1-slot transmission and 1-slot reception basis. As such, there are [1600 / (1 + 1)] transmissions per second and the time occupancy per channel is [measured time slot length / 2].
2. Average Frequency Dwell Time = [measured time slot length / 2 x hopping rate / 2 / number of hopping channels] x [0.4 x number of hopping channels]

Average Frequency Dwell Time Plots – BDR 1Mbps

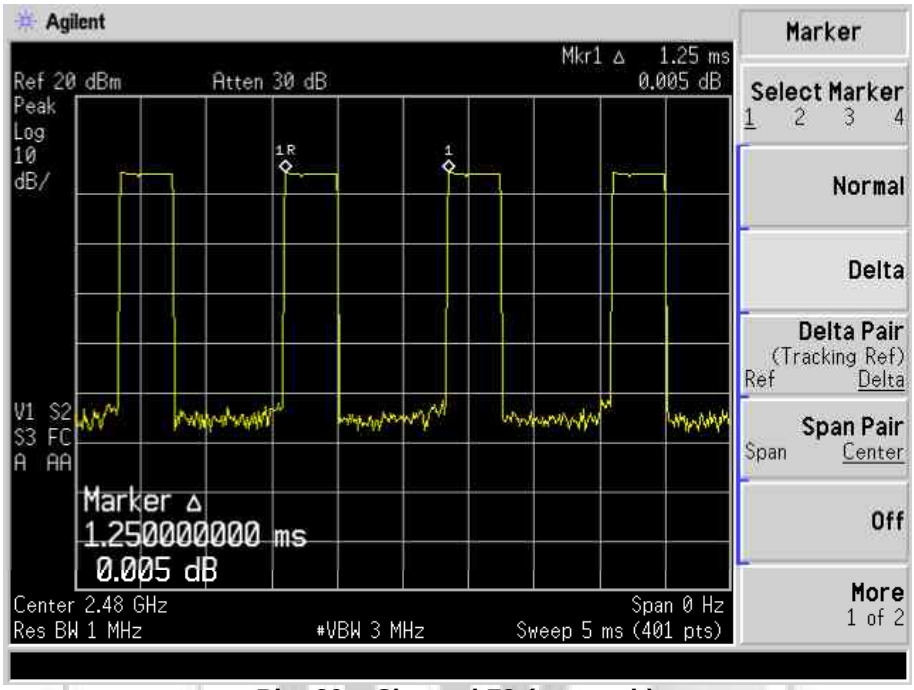


Plot 18 – Channel 0 *(lower ch)*



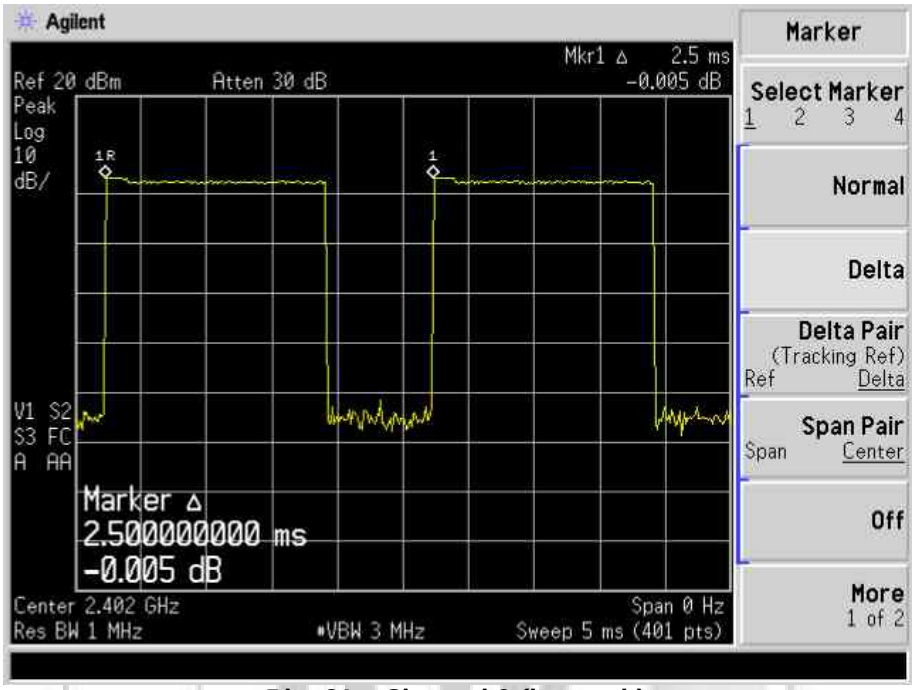
Plot 19 – Channel 39 *(mid ch)*

Average Frequency Dwell Time Plots – BDR 1Mbps

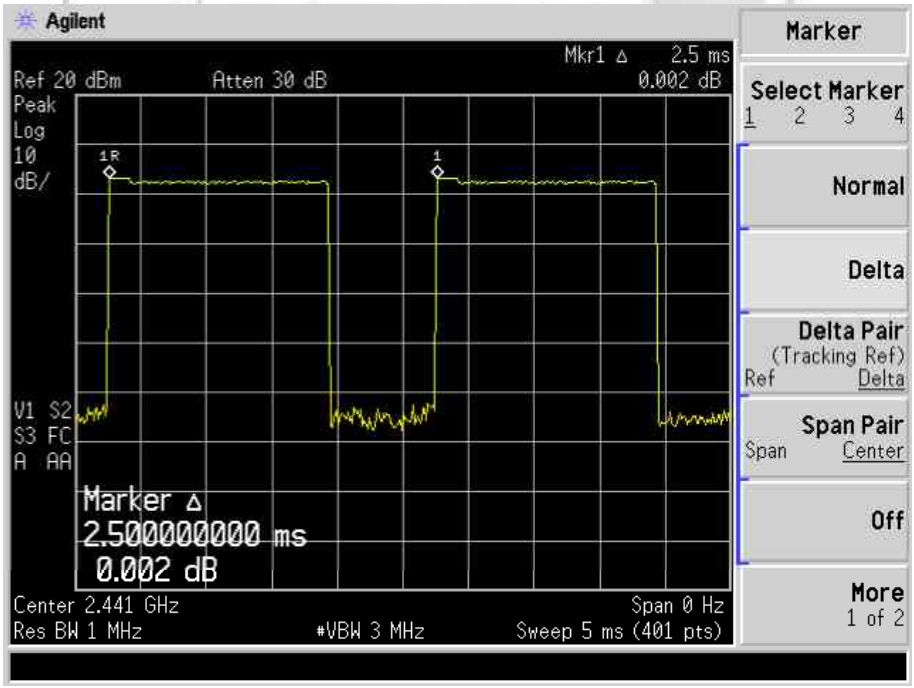


Plot 20 – Channel 78 *(upper ch)*

Average Frequency Dwell Time Plots – EDR 2Mbps

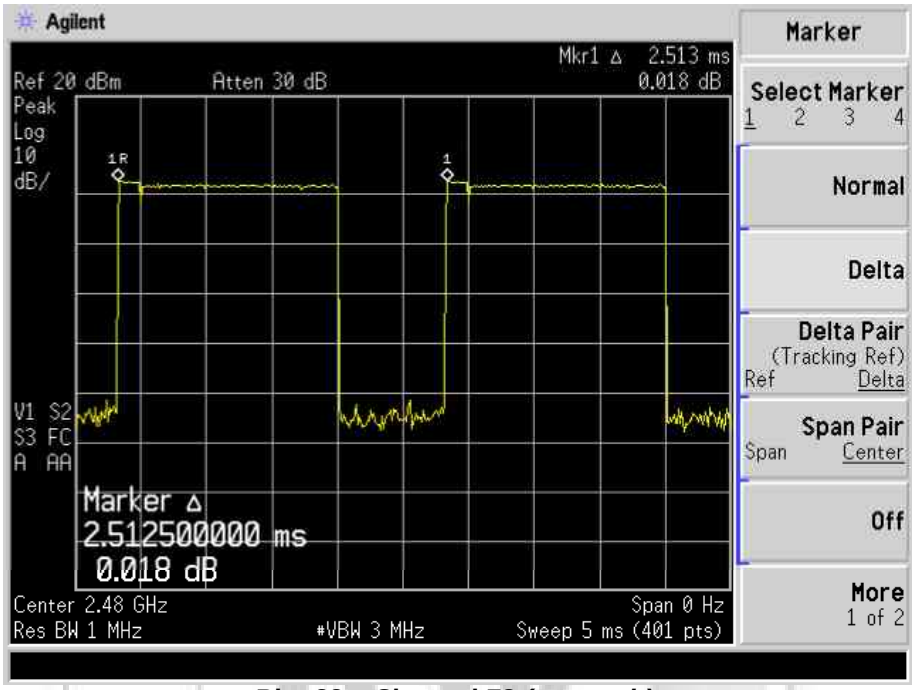


Plot 21 – Channel 0 *(lower ch)*



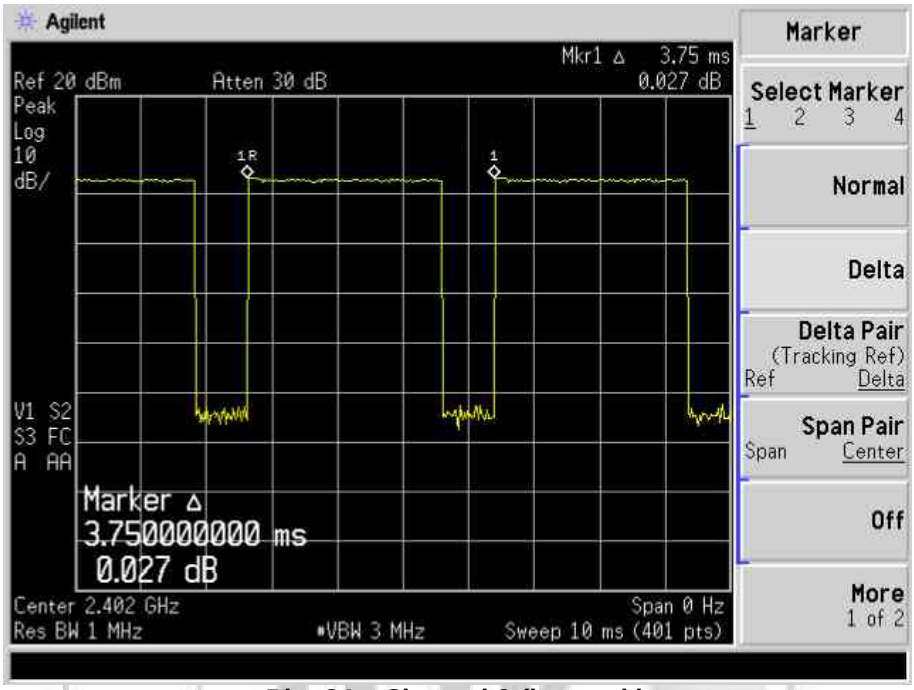
Plot 22 – Channel 39 *(mid ch)*

Average Frequency Dwell Time Plots – EDR 2Mbps

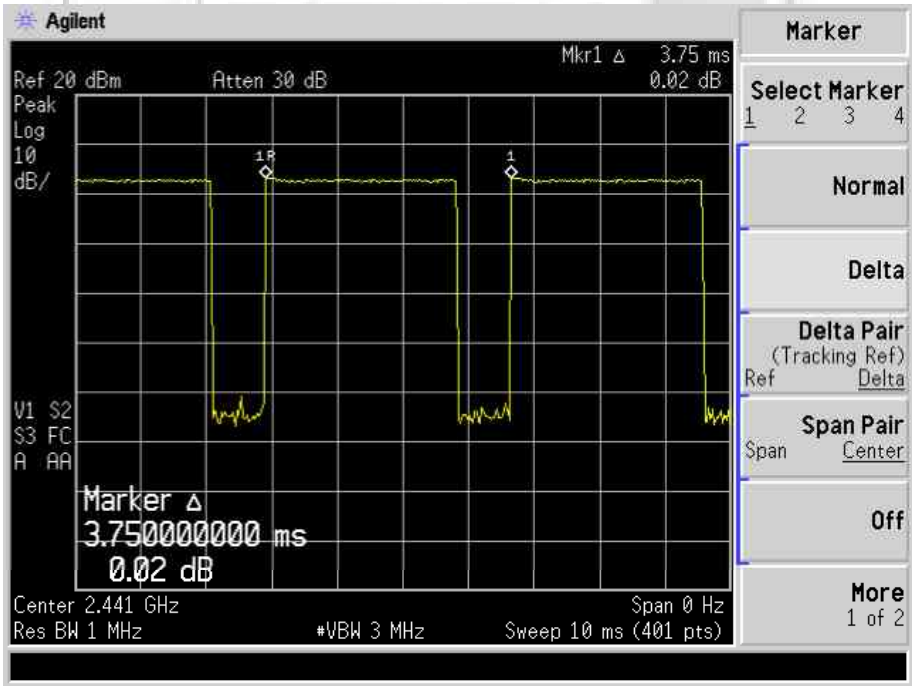


Plot 23 – Channel 78 *(upper ch)*

Average Frequency Dwell Time Plots – EDR 3Mbps

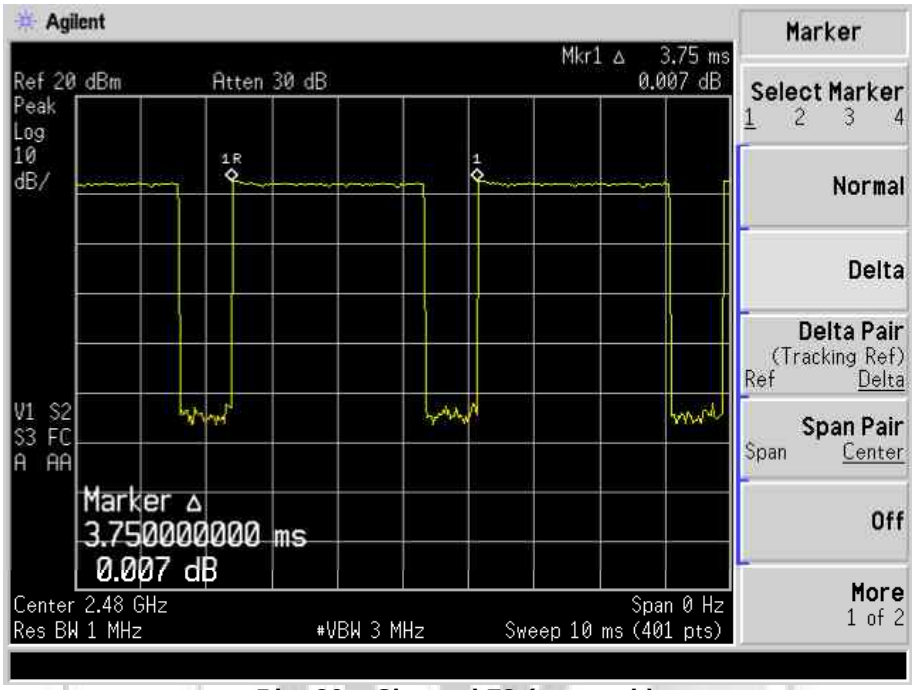


Plot 24 – Channel 0 *(lower ch)*



Plot 25 – Channel 39 *(mid ch)*

Average Frequency Dwell Time Plots – EDR 3Mbps



Plot 26 – Channel 78 *(upper ch)*

47 CFR FCC Part 15.247(b)(1) Maximum Peak Power 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).

47 CFR FCC Part 15.247(b)(1) Maximum Peak Power Test Instrumentation

Instrument	Model	S/No	Cal Due Date
Boonton RF Power Meter	4532	72901	13 Dec 2014
Boonton Power Sensor	56218-S/1	32097	13 Dec 2014

47 CFR FCC Part 15.247(b)(1) Maximum Peak Power Test Setup

1. The EUT and supporting equipment were set up as shown in the setup photo.
2. The power supply for the EUT was connected to a filtered mains.
3. The RF antenna connector was connected to the RF Power Meter via a low-loss coaxial cable.
4. All other supporting equipment were powered separately from another filtered mains.

47 CFR FCC Part 15.247(b)(1) Maximum Peak Power Test Method

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 Channel 0 (2.402GHz) *(lower ch)*.
2. The maximum peak power of the transmitting frequency was detected and recorded.
3. The Equivalent Isotropic Radiated Power (EIRP) of the EUT was computed by adding its antenna gain to the measured maximum peak power.
4. The steps 2 to 3 were repeated with the transmitting frequency was set to Channel 39 (2.441GHz) *(mid ch)* and Channel 78 (2.480GHz) *(upper ch)* respectively.

47 CFR FCC Part 15.247(b)(1) Maximum Peak Power Results

Test Input Power	120V 60Hz	Temperature	24°C
Antenna Gain	2.0dBi	Relative Humidity	60%
Packet Type	BDR 1Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

Channel	Channel Frequency (GHz)	Maximum Peak Power (W)	Maximum EIRP (W)	Limit (W)
0 *(lower ch)*	2.402	0.0015	0.0045	1.0
39 *(mid ch)*	2.441	0.0015	0.0046	1.0
78 *(upper ch)*	2.480	0.0015	0.0046	1.0

Test Input Power	120V 60Hz	Temperature	24°C
Antenna Gain	2.0dBi	Relative Humidity	60%
Packet Type	EDR 2Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

Channel	Channel Frequency (GHz)	Maximum Peak Power (W)	Maximum EIRP (W)	Limit (W)
0 *(lower ch)*	2.402	0.0010	0.0032	1.0
39 *(mid ch)*	2.441	0.0011	0.0032	1.0
78 *(upper ch)*	2.480	0.0011	0.0033	1.0

Test Input Power	120V 60Hz	Temperature	24°C
Antenna Gain	2.0dBi	Relative Humidity	60%
Packet Type	EDR 3Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

Channel	Channel Frequency (GHz)	Maximum Peak Power (W)	Maximum EIRP (W)	Limit (W)
0 *(lower ch)*	2.402	0.0010	0.0032	1.0
39 *(mid ch)*	2.441	0.0011	0.0032	1.0
78 *(upper ch)*	2.480	0.0011	0.0033	1.0

Notes

1. Nil.

47 CFR FCC Part 15.247(d) RF Conducted Spurious Emissions 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.

47 CFR FCC Part 15.247(d) RF Conducted Spurious Test Instrumentation

Instrument	Model	S/No	Cal Due Date
Agilent Spectrum Analyzer	E4440A	MY45304764	14 Nov 2014

47 CFR FCC Part 15.247(d) RF Conducted Spurious Emissions Test Setup

1. The EUT and supporting equipment were set up as shown in the setup photo.
2. The power supply for the EUT was connected to a filtered mains.
3. The RF antenna connector was connected to the spectrum analyser via a low-loss coaxial cable.
4. The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were respectively set to 100kHz and 300kHz.
5. All other supporting equipment were powered separately from another filtered mains.

47 CFR FCC Part 15.247(d) RF Conducted Spurious Emissions Test Method

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 Channel 0 (2.402GHz) *(lower ch)*.
2. The start and stop frequencies of the spectrum analyser were set to 30MHz and 10GHz.
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.
4. The steps 2 to 3 were repeated with frequency span was set from 10GHz to 25GHz.
5. The steps 2 to 4 were repeated with the transmitting frequency was set to Channel 39 (2.441GHz) *(mid ch)* and Channel 78 (2.480GHz) *(upper ch)* respectively.

47 CFR FCC Part 15.247(d) RF Conducted Spurious Emissions Results

Test Input Power	120V 60Hz	Temperature	24°C
Attached Plots	27 – 32	Relative Humidity	60%
Packet Type	BDR 1Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

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

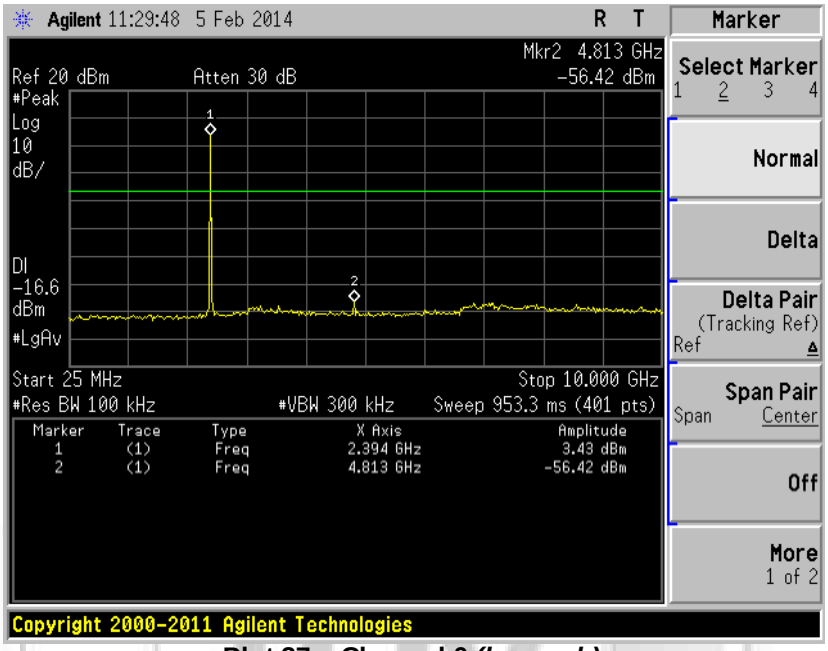
Test Input Power	120V 60Hz	Temperature	24°C
Attached Plots	33 – 38	Relative Humidity	60%
Packet Type	EDR 2Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

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

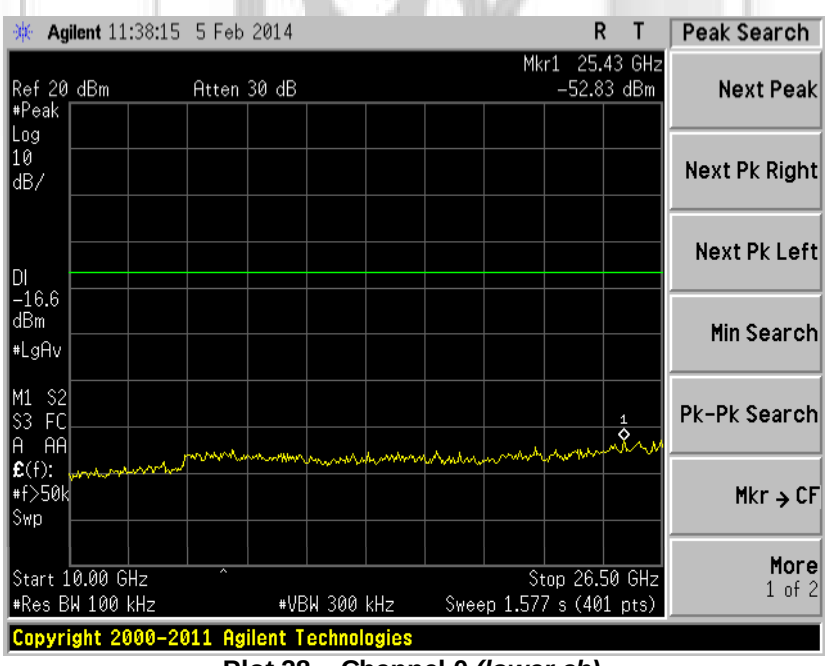
Test Input Power	120V 60Hz	Temperature	24°C
Attached Plots	39 – 44	Relative Humidity	60%
Packet Type	EDR 3Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

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

RF Conducted Spurious Emissions Plots – BDR 1Mbps

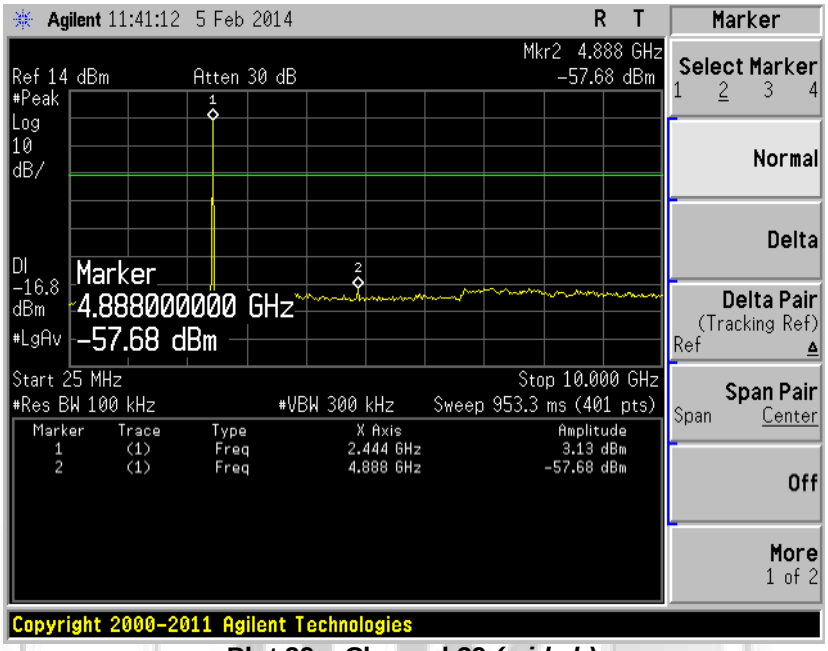


Plot 27 – Channel 0 *(lower ch)*

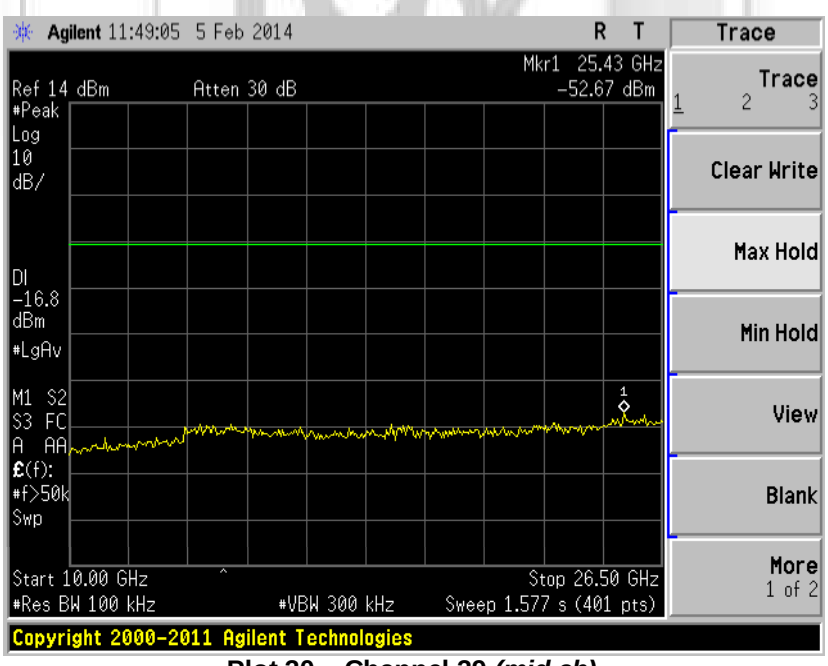


Plot 28 – Channel 0 *(lower ch)*

RF Conducted Spurious Emissions Plots – BDR 1Mbps

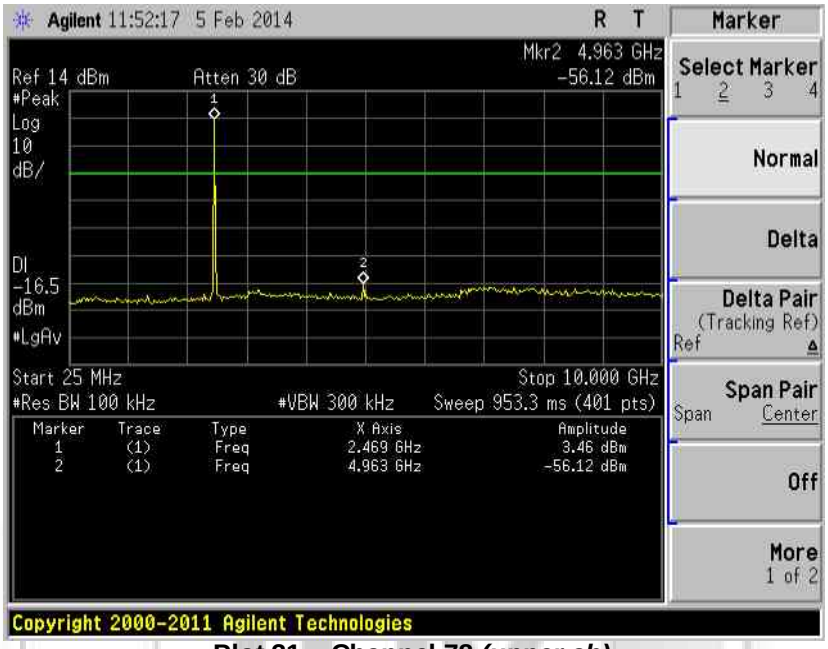


Plot 29 – Channel 39 *(mid ch)*

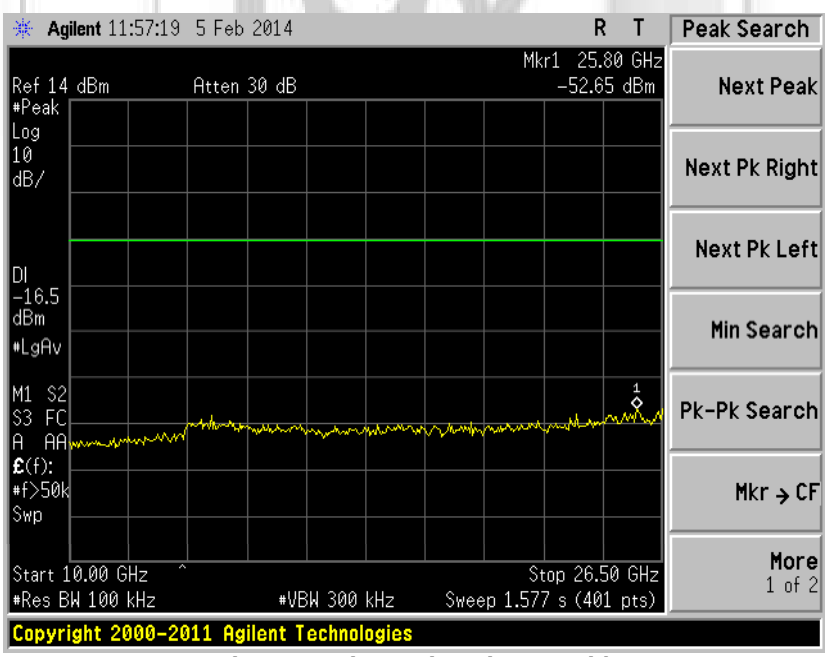


Plot 30 – Channel 39 *(mid ch)*

RF Conducted Spurious Emissions Plots – BDR 1Mbps

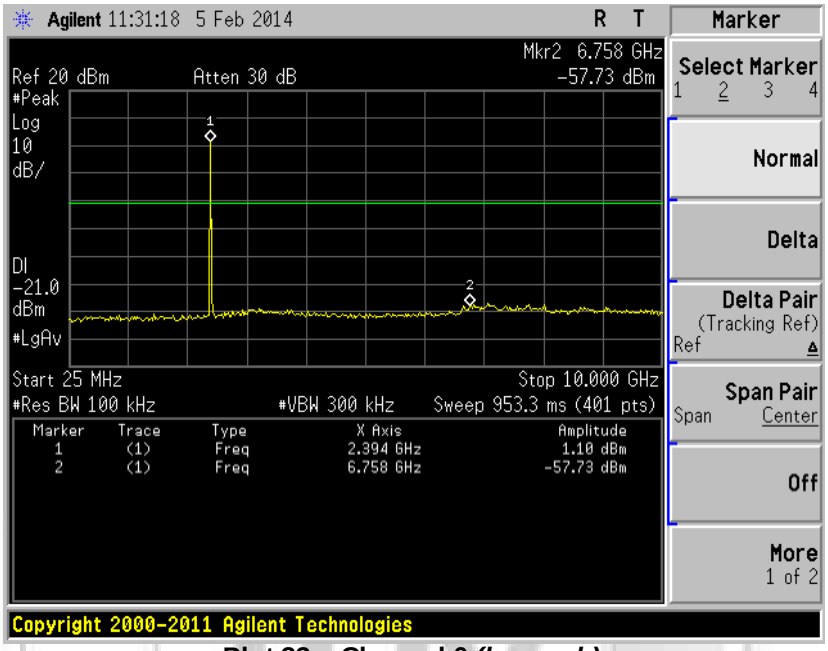


Plot 31 – Channel 78 *(upper ch)*

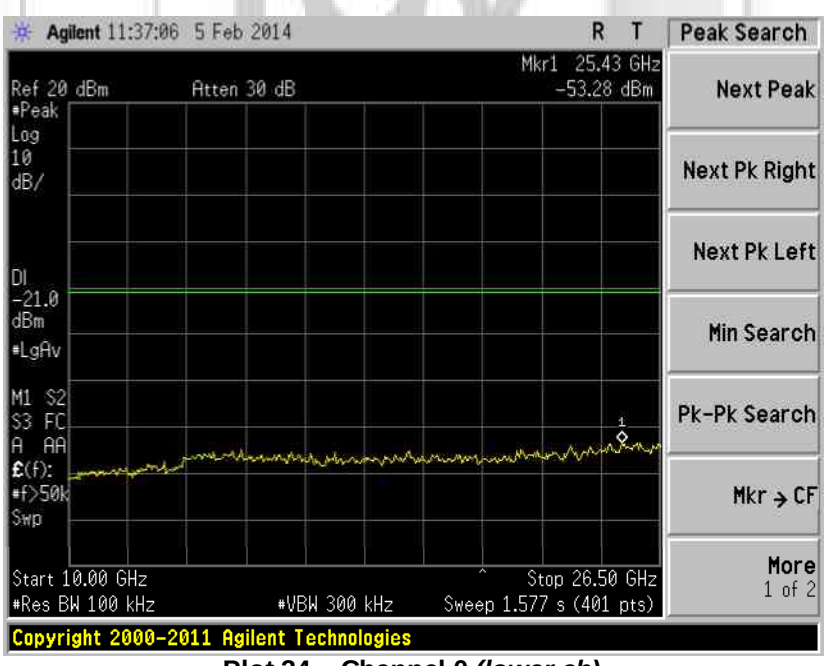


Plot 32 – Channel 78 *(upper ch)*

RF Conducted Spurious Emissions Plots – EDR 2Mbps

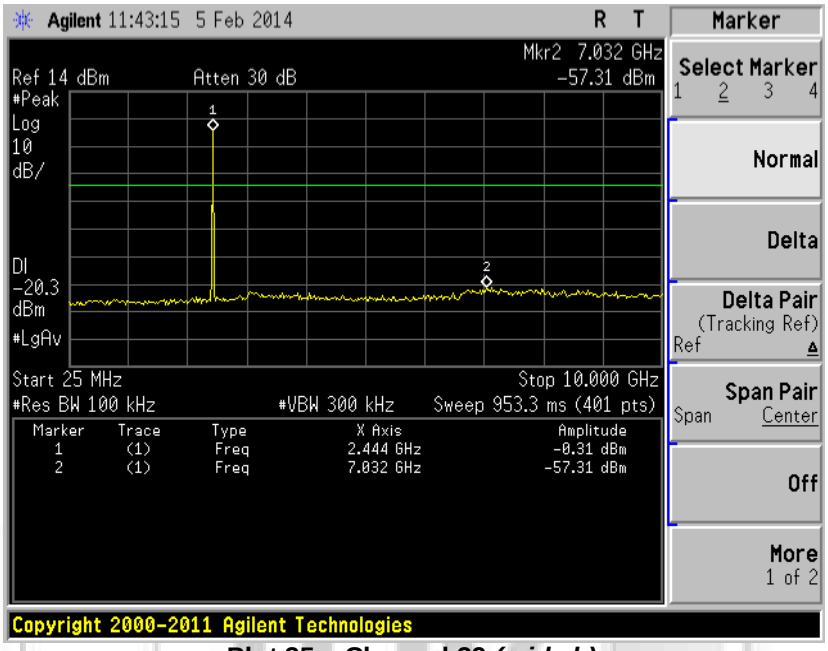


Plot 33 – Channel 0 *(lower ch)*

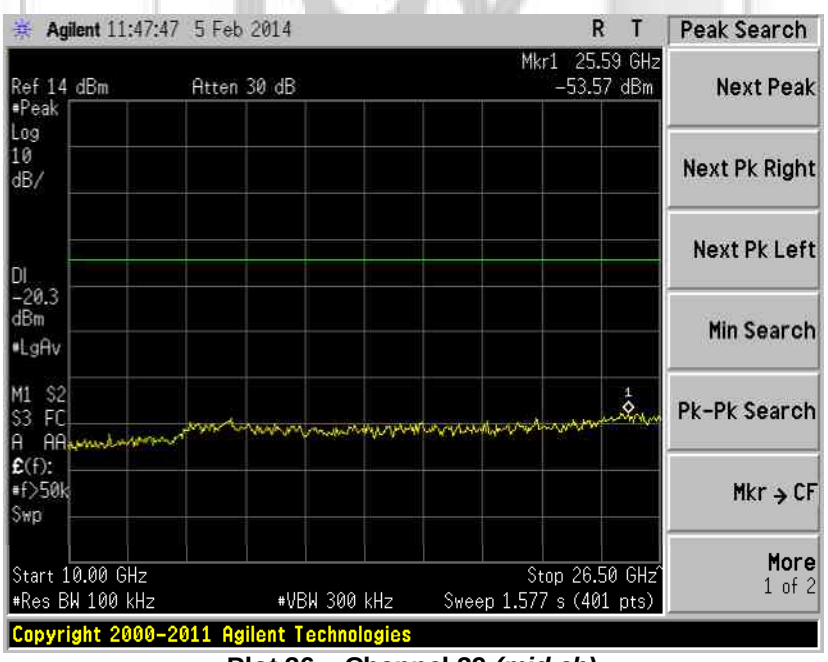


Plot 34 – Channel 0 *(lower ch)*

RF Conducted Spurious Emissions Plots – EDR 2Mbps

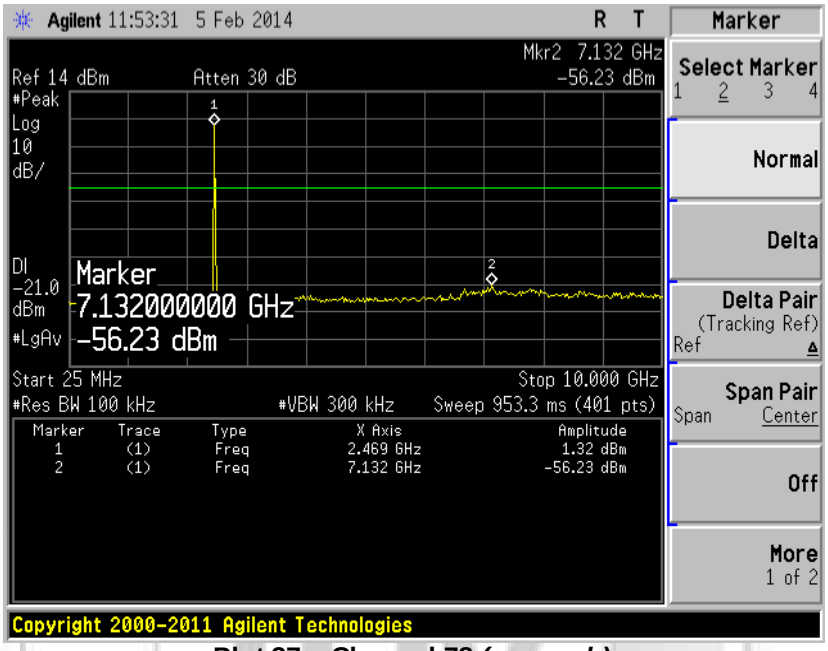


Plot 35 – Channel 39 *(mid ch)*

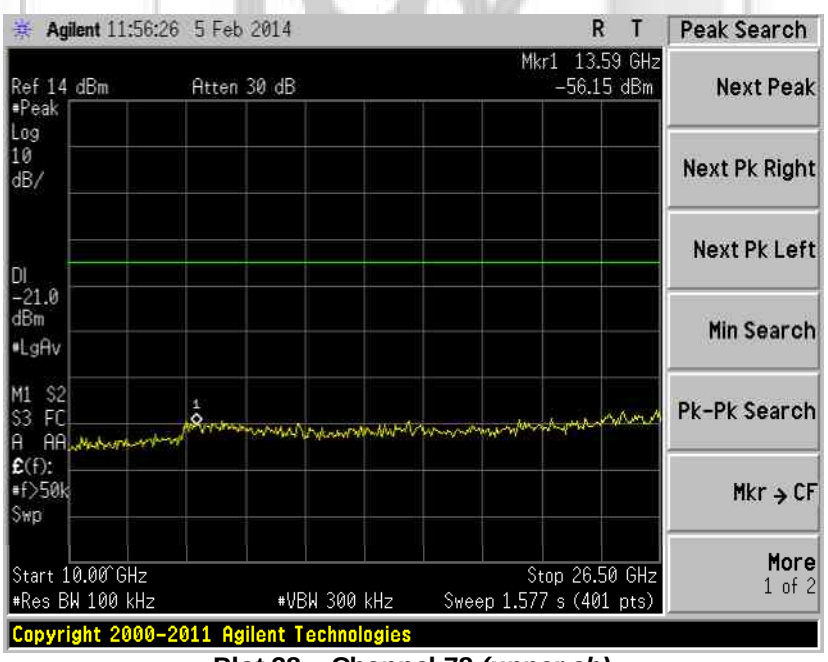


Plot 36 – Channel 39 *(mid ch)*

RF Conducted Spurious Emissions Plots – EDR 2Mbps

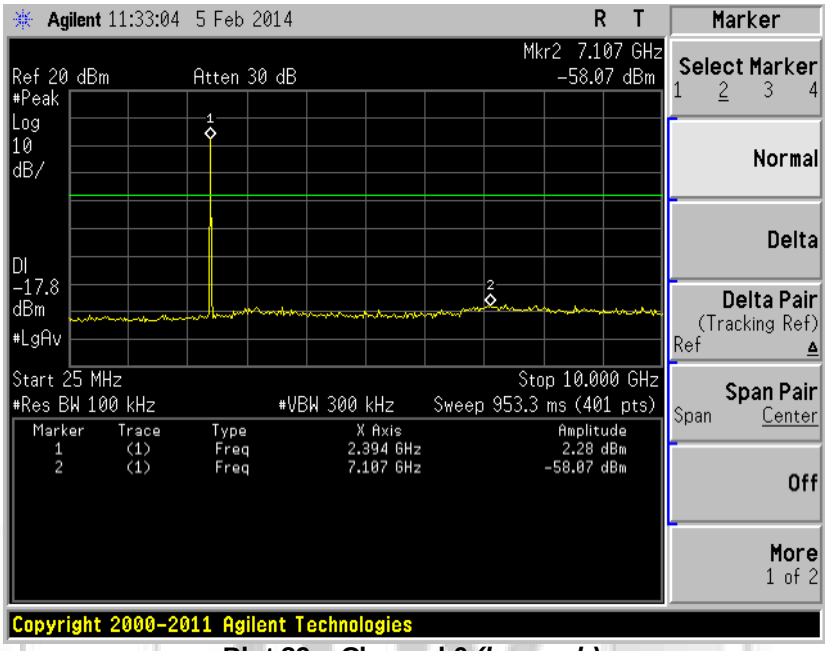


Plot 37 – Channel 78 *(upper ch)*

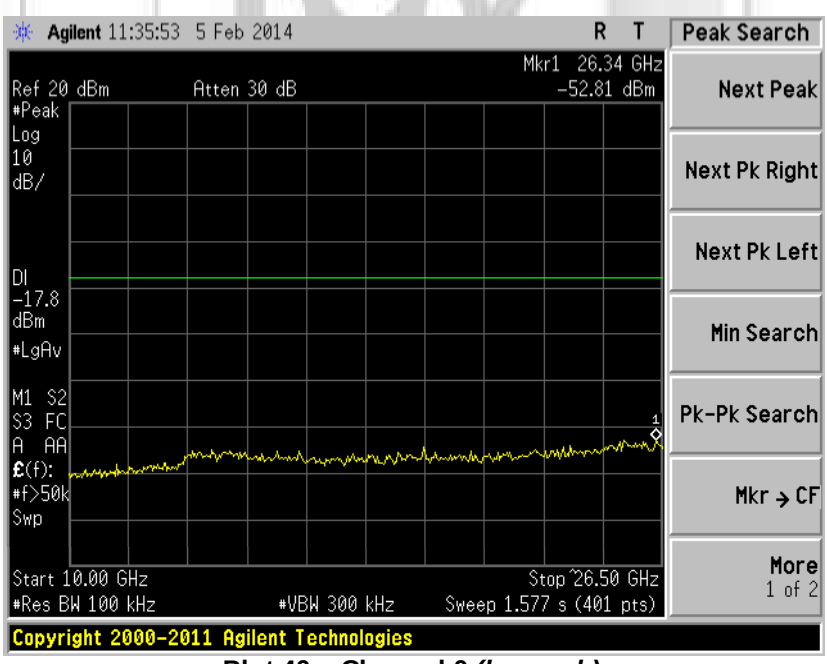


Plot 38 – Channel 78 *(upper ch)*

RF Conducted Spurious Emissions Plots – EDR 3Mbps

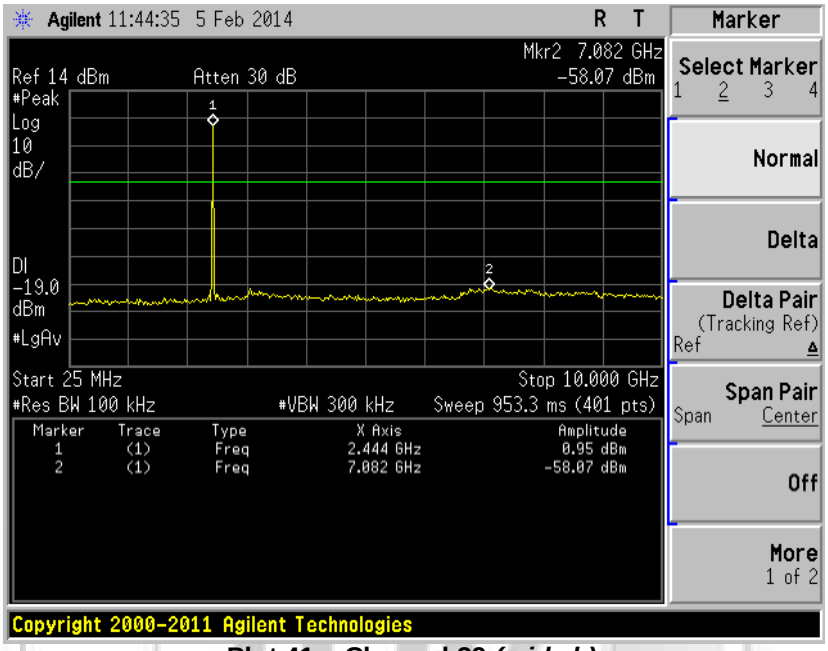


Plot 39 – Channel 0 *(lower ch)*

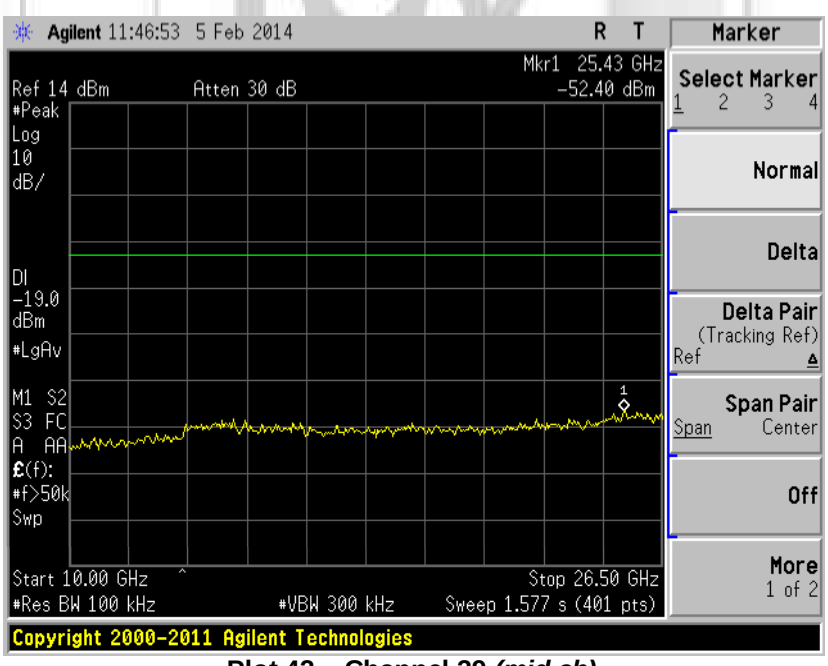


Plot 40 – Channel 0 *(lower ch)*

RF Conducted Spurious Emissions Plots – EDR 3Mbps

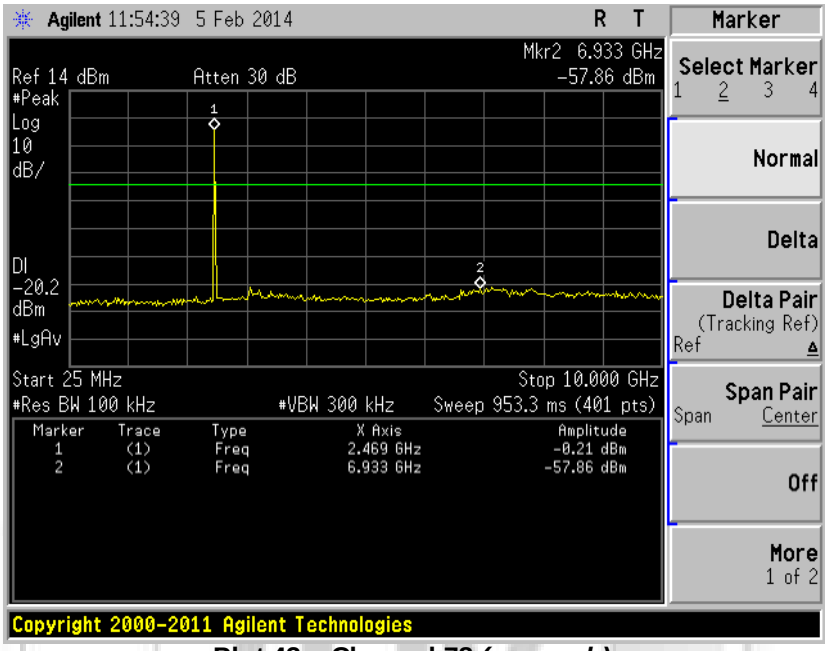


Plot 41 – Channel 39 *(mid ch)*

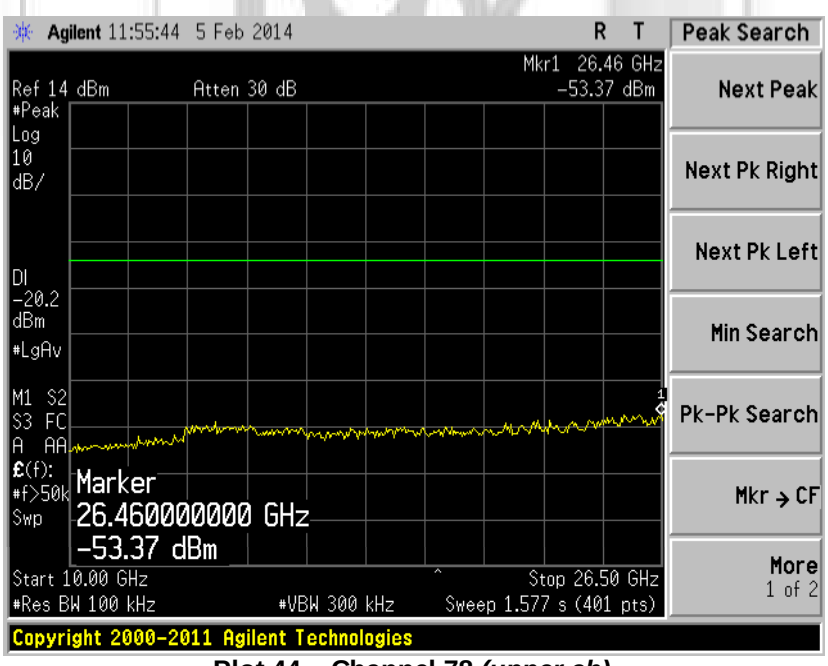


Plot 42 – Channel 39 *(mid ch)*

RF Conducted Spurious Emissions Plots – EDR 3Mbps



Plot 43 – Channel 78 *(upper ch)*



Plot 44 – Channel 78 *(upper ch)*

47 CFR FCC Part 15.247(d) Band Edge Compliance (Conducted) 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.

47 CFR FCC Part 15.247(d) Band Edge Compliance (Conducted) Test Instrumentation

Instrument	Model	S/No	Cal Due Date
Agilent Spectrum Analyzer	E4440A	MY45304764	14 Nov 2014

47 CFR FCC Part 15.247(d) Band Edge Compliance (Conducted) Test Setup

1. The EUT and supporting equipment were set up as shown in the setup photo.
2. The power supply for the EUT was connected to a filtered mains.
3. The RF antenna connector was connected to the spectrum analyser via a low-loss coaxial cable.
4. The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were respectively set to 100kHz and 300kHz.
5. All other supporting equipment were powered separately from another filtered mains.

47 CFR FCC Part 15.247(d) Band Edge Compliance (Conducted) Test Method

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. 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.
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.
4. The steps 2 to 3 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.

47 CFR FCC Part 15.247(d) Band Edge Compliance (Conducted) Results

Test Input Power	120V 60Hz	Temperature	24°C
Attached Plots	45 – 46	Relative Humidity	60%
Packet Type	BDR 1Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

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

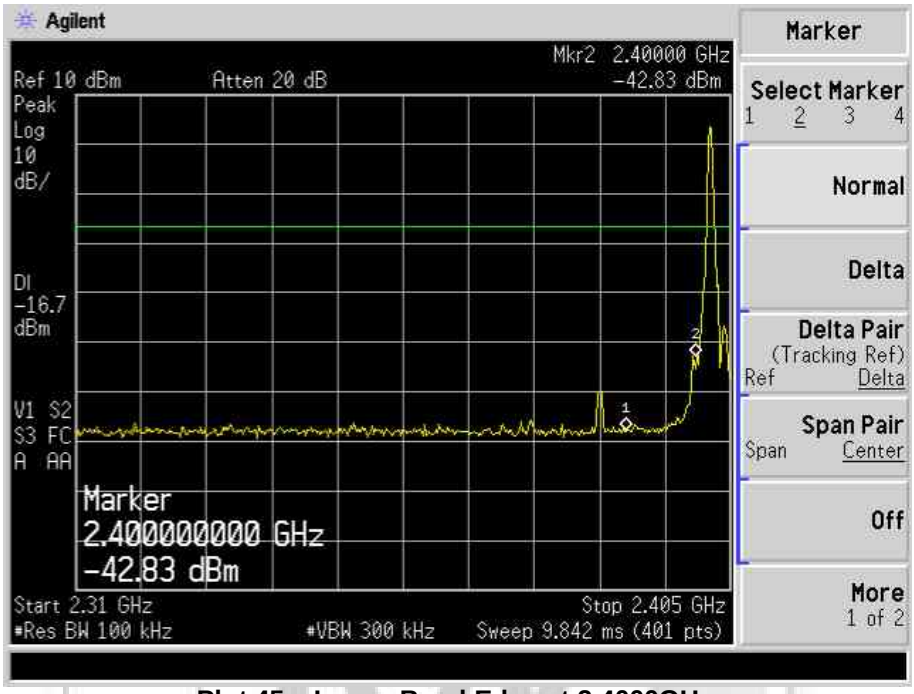
Test Input Power	120V 60Hz	Temperature	24°C
Attached Plots	47 – 48	Relative Humidity	60%
Packet Type	EDR 2Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

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

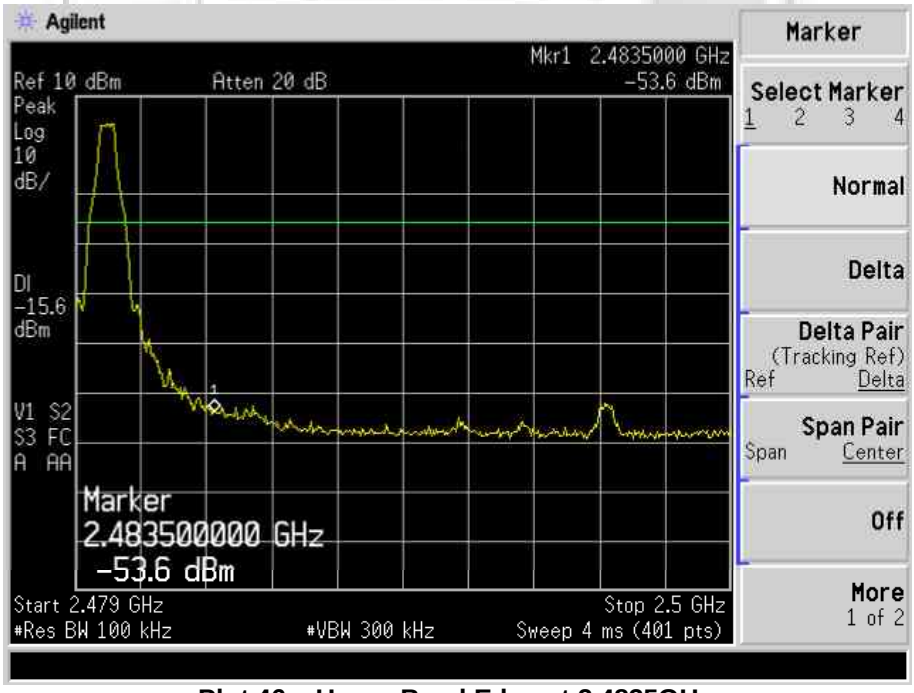
Test Input Power	120V 60Hz	Temperature	24°C
Attached Plots	49 – 50	Relative Humidity	60%
Packet Type	EDR 3Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

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

Band Edge Compliance (Conducted) Plots – BDR 1Mbps

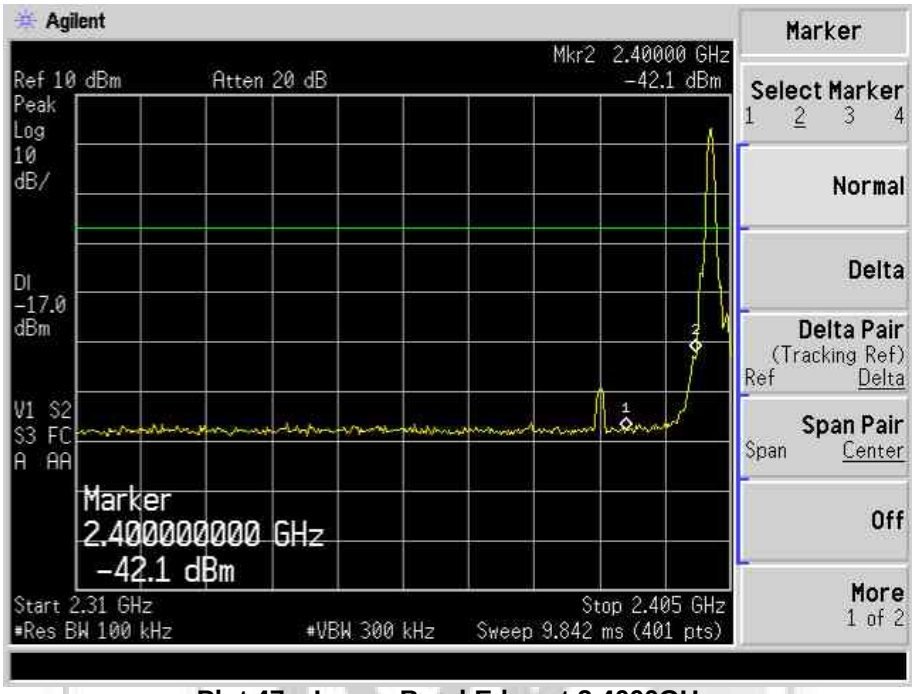


Plot 45 – Lower Band Edge at 2.4000GHz

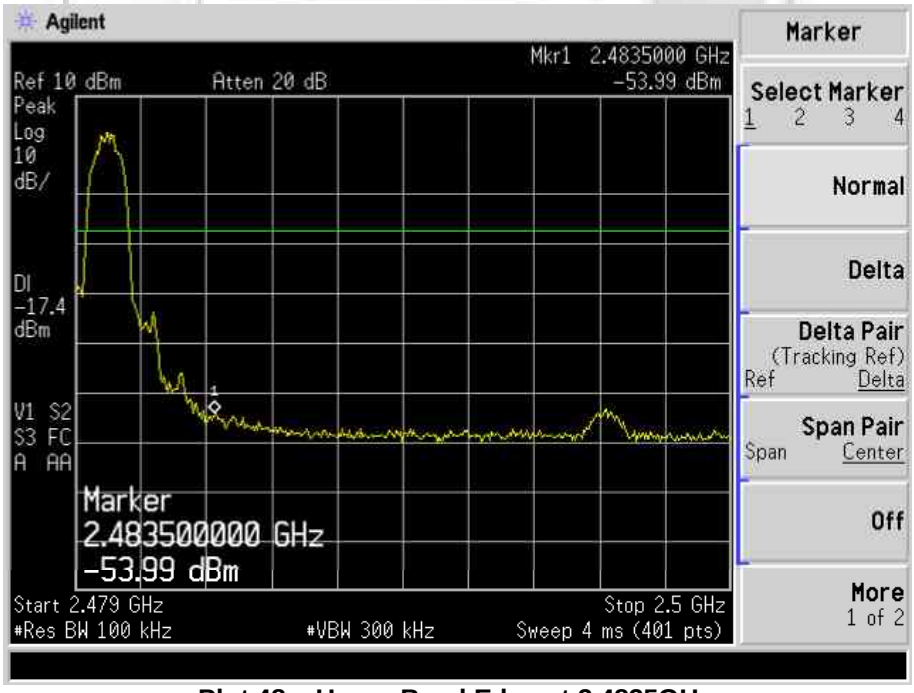


Plot 46 – Upper Band Edge at 2.4835GHz

Band Edge Compliance (Conducted) Plots – EDR 2Mbps

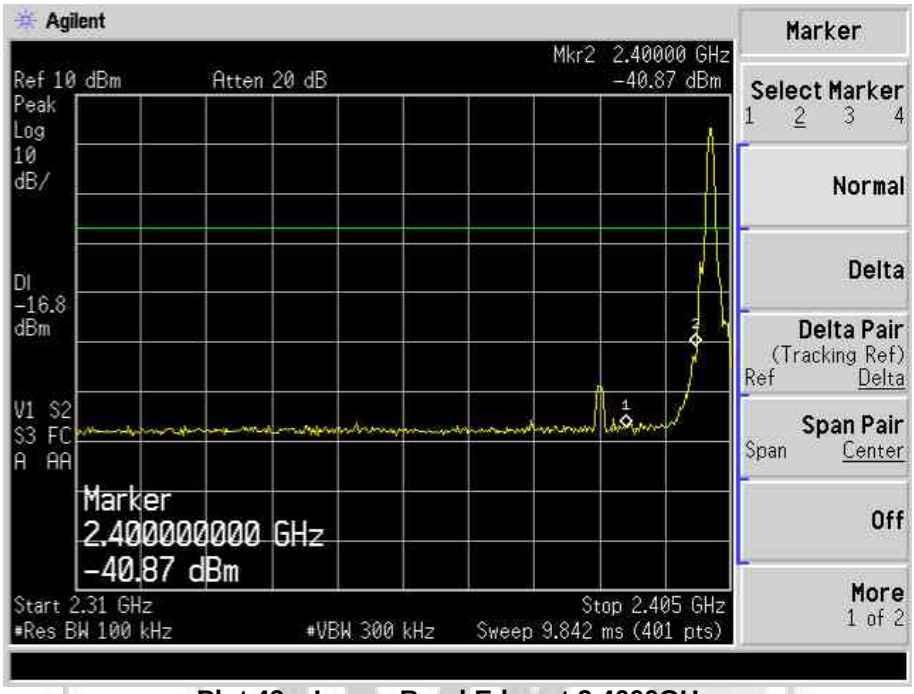


Plot 47 – Lower Band Edge at 2.4000GHz

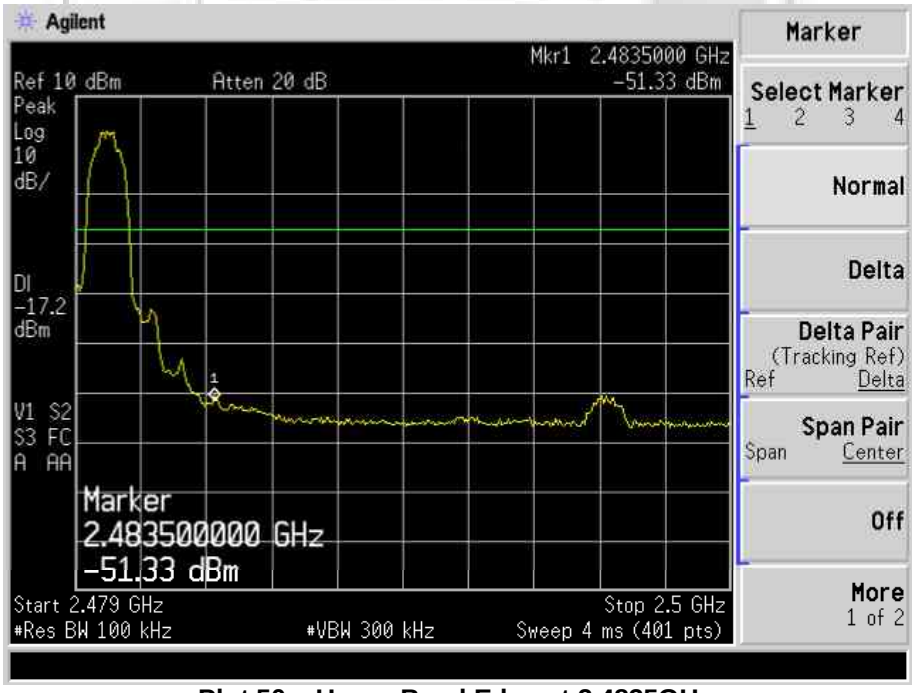


Plot 48 – Upper Band Edge at 2.4835GHz

Band Edge Compliance (Conducted) Plots – EDR 3Mbps



Plot 49 – Lower Band Edge at 2.4000GHz



Plot 50 – Upper Band Edge at 2.4835GHz

47 CFR FCC Part 15.247(d) Band Edge Compliance (Radiated) 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. In addition, radiated emissions which fall in the restricted bands shall comply to the radiated emission limits specified in 15.209.

47 CFR FCC Part 15.247(d) Band Edge Compliance (Radiated) Test Instrumentation

Instrument	Model	S/No	Cal Due Date
R&S Test Receiver – ESI1	ESI40	100010	09 Jul 2014
TDK-RF Horn Antenna	HRN-0118	130256	08 Apr 2014
Agilent Preamplifier(1GHz-26.5GHz) (PA18)	8449D	3008A02305	04 Oct 2014

47 CFR FCC Part 15.247(d) Band Edge Compliance (Radiated) Test Setup

1. The EUT and supporting equipment were set up as shown in the setup photo.
2. The power supply for the EUT was connected to a filtered mains.
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 = VBW = 1MHz
   b. Average Plot
      RBW = 1MHz, VBW = 10Hz
4. All other supporting equipment were powered separately from another filtered mains.

47 CFR FCC Part 15.247(d) Band Edge Compliance (Radiated) Test Method

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. 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.
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.
4. The steps 2 to 3 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.

47 CFR FCC Part 15.247(d) Band Edge Compliance (Radiated) Results

Test Input Power	120V 60Hz	Temperature	24°C
Attached Plots	51 – 56	Relative Humidity	60%
Packet Type	BDR 1Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

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

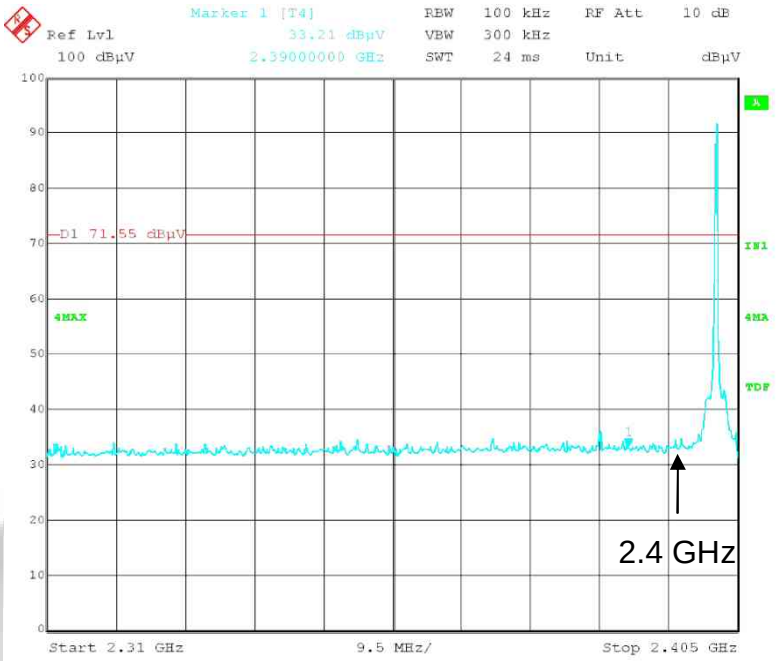
Test Input Power	120V 60Hz	Temperature	24°C
Attached Plots	57 – 62	Relative Humidity	60%
		Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

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

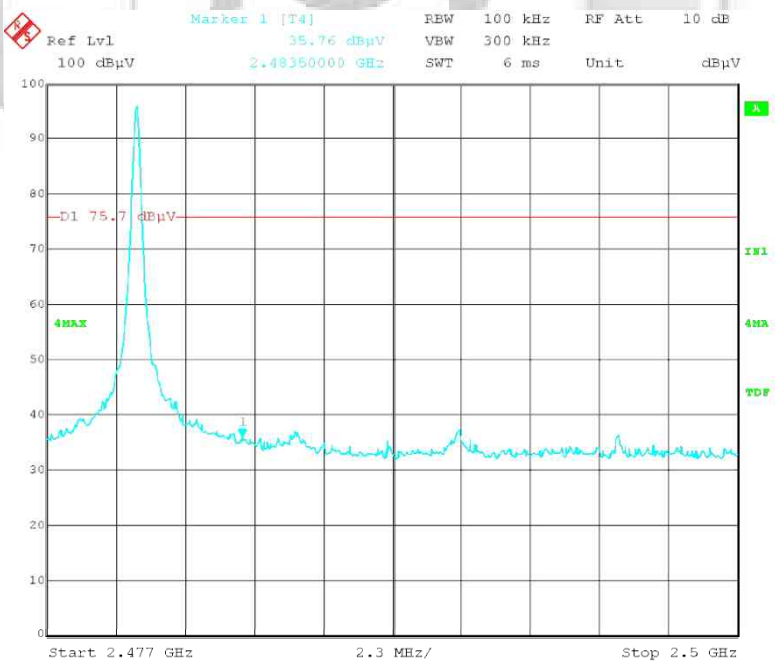
Test Input Power	120V 60Hz	Temperature	24°C
Attached Plots	63 – 68	Relative Humidity	60%
Packet Type	BDR 1Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

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

Band Edge Compliance (Radiated) Plots (20dB Delta from Carrier at Band Edge) – BDR 1Mbps

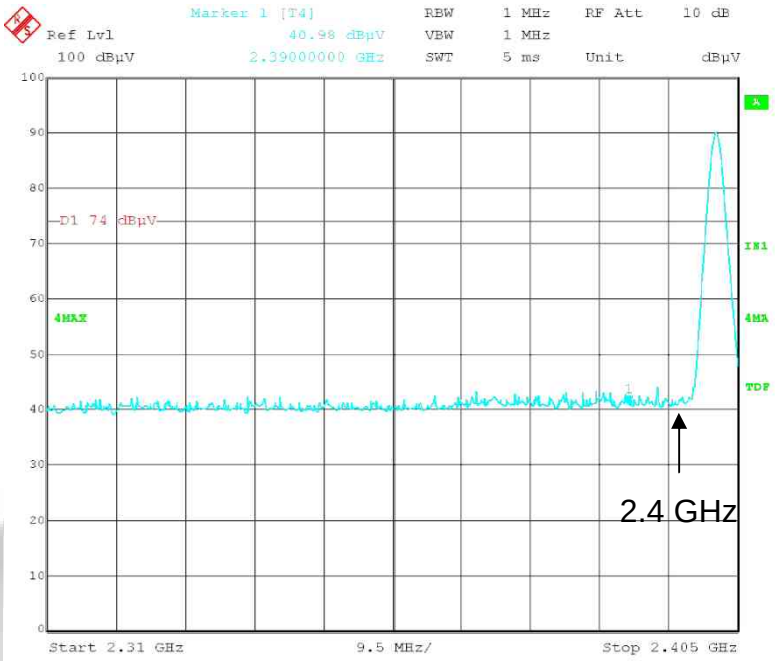


Plot 51 – Lower Band Edge at 2.4000GHz

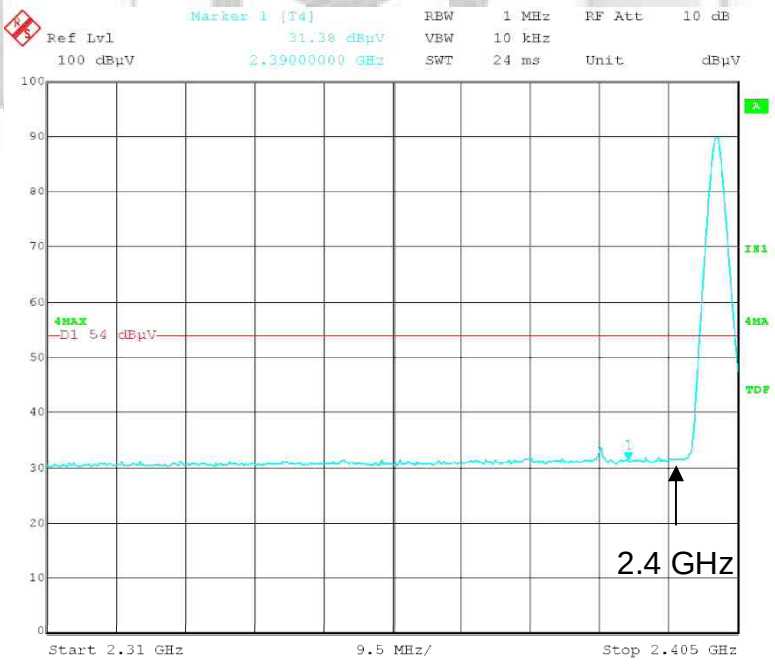


Plot 52 – Upper Band Edge at 2.4835GHz

Band Edge Compliance (Radiated) Plots (Restricted Band) – BDR 1Mbps

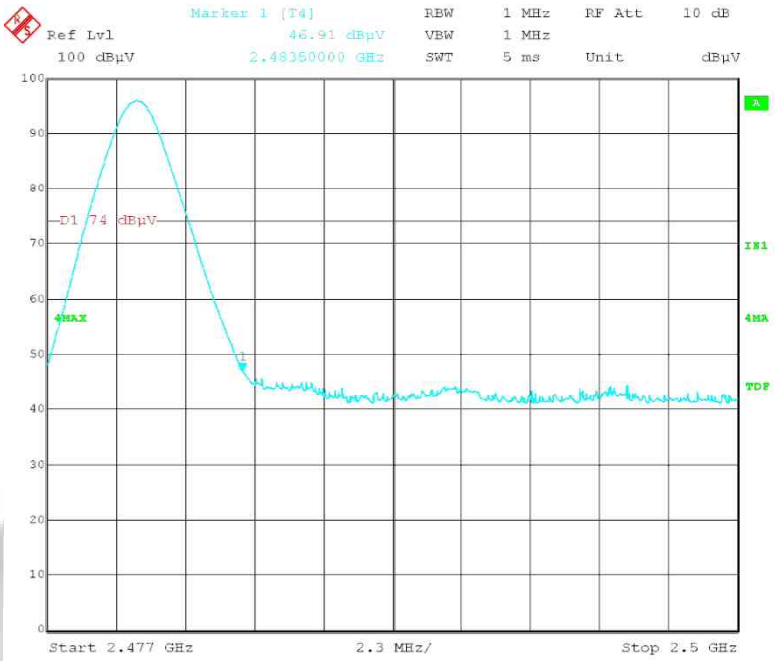


Plot 53 – Peak Plot at Lower Band Edge at 2.4000GHz

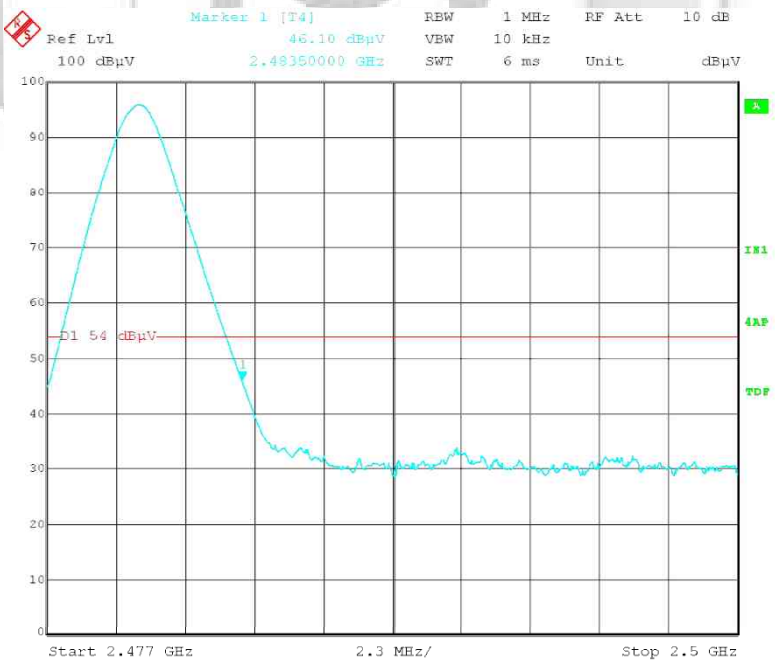


Plot 54 – Average Plot at Lower Band Edge at 2.4000GHz

Band Edge Compliance (Radiated) Plots (Restricted Band) – BDR 1Mbps



Plot 55 – Peak Plot at Upper Band Edge at 2.4835GHz



Plot 56 – Average Plot at Upper Band Edge at 2.4835GHz

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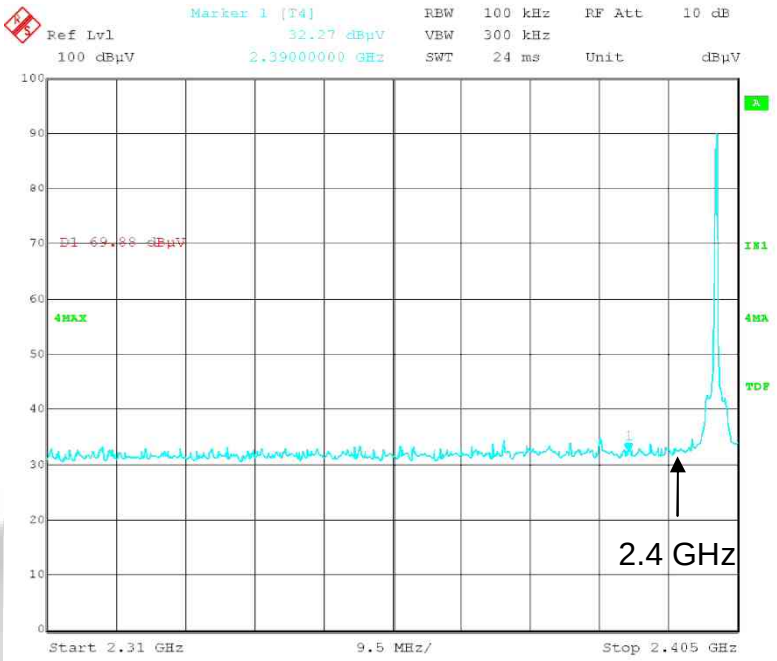
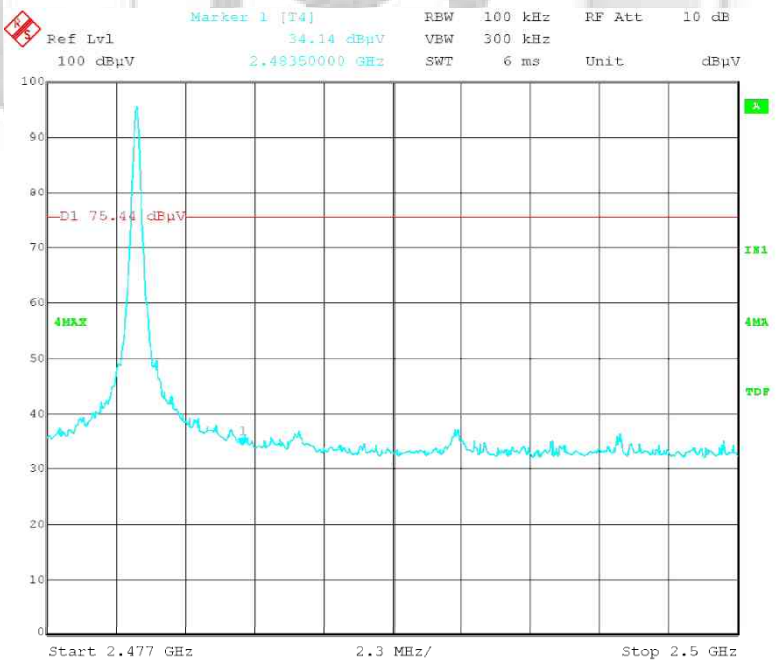
Band Edge Compliance (Radiated) Plots (20dB Delta from Carrier at Band Edge) – EDR 2Mbps

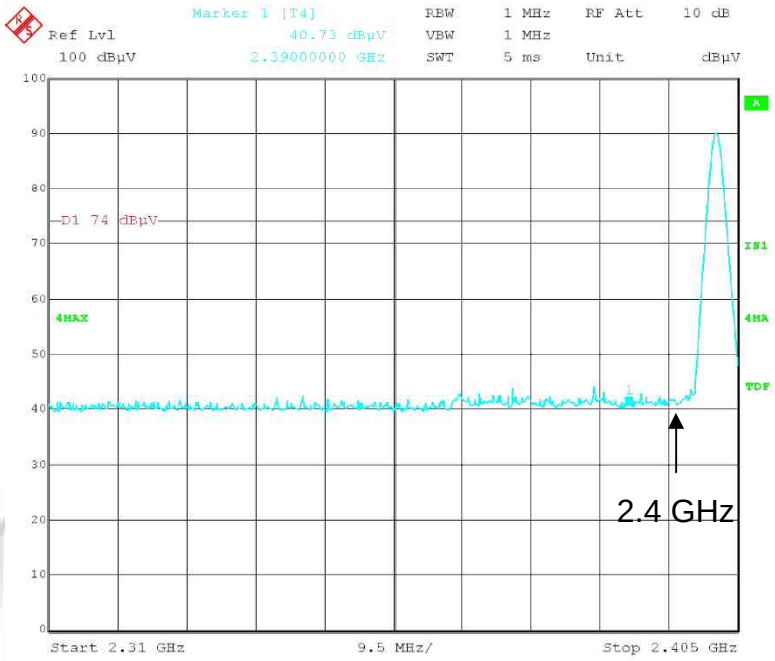


Plot 57 – Lower Band Edge at 2.4000GHz

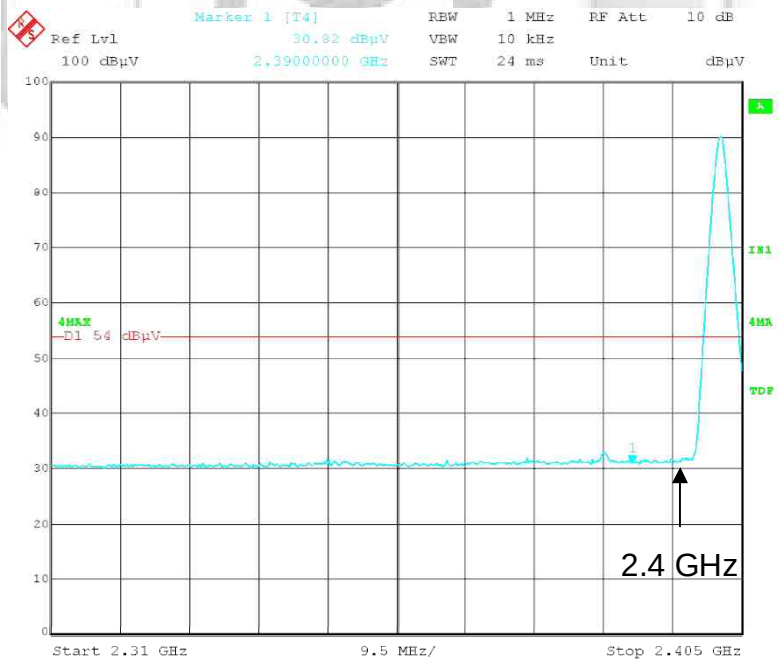


Plot 58 – Upper Band Edge at 2.4835GHz

Band Edge Compliance (Radiated) Plots (Restricted Band) – EDR 2Mbps

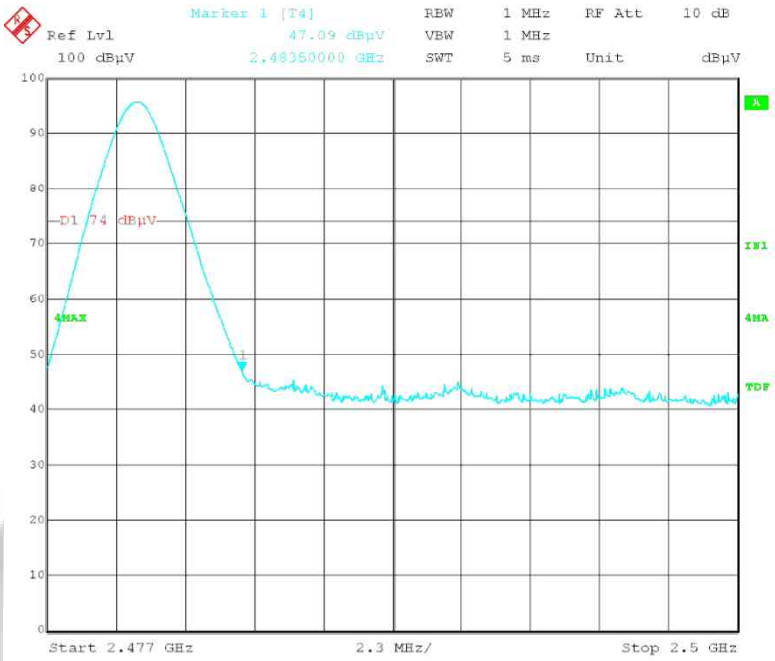


Plot 59 – Peak Plot at Lower Band Edge at 2.4000GHz

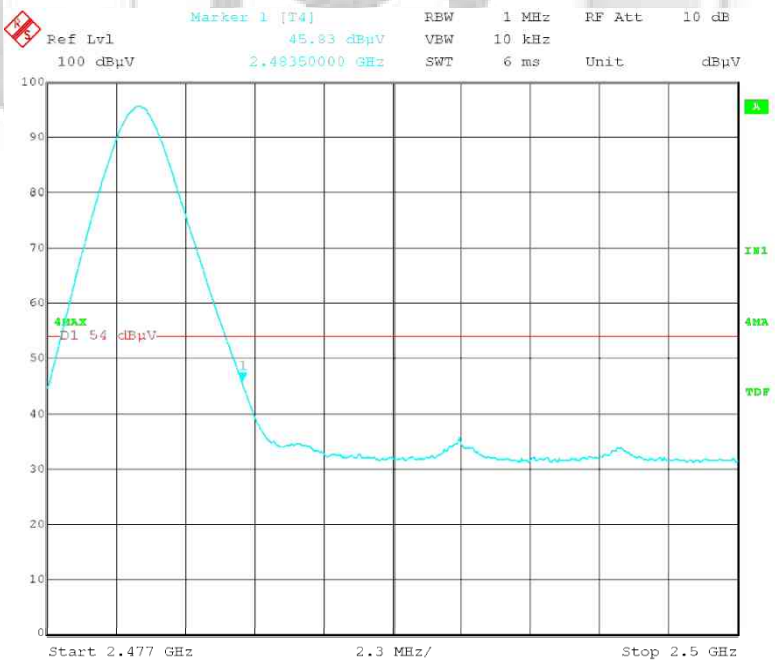


Plot 60 – Average Plot at Lower Band Edge at 2.4000GHz

Band Edge Compliance (Radiated) Plots (Restricted Band) – EDR 2Mbps

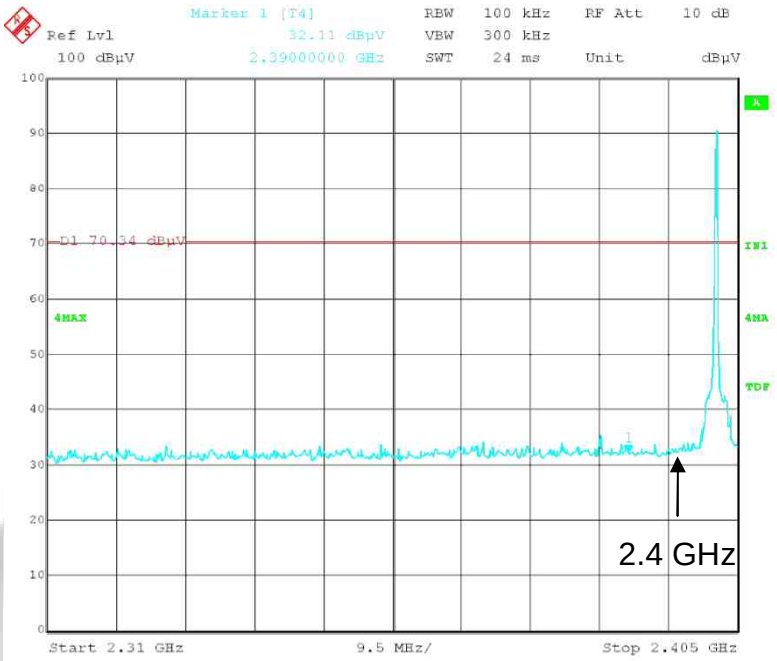


Plot 61 – Peak Plot at Upper Band Edge at 2.4835GHz

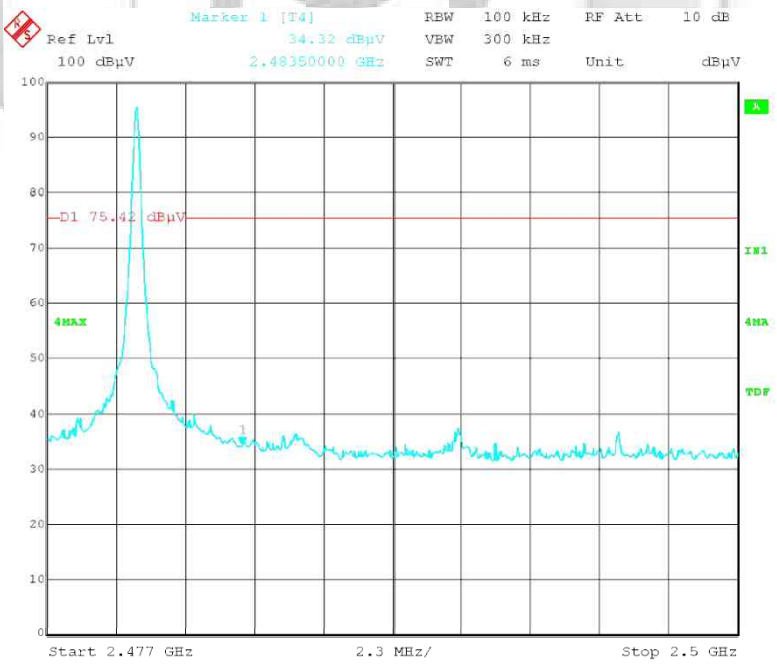


Plot 62 – Average Plot at Upper Band Edge at 2.4835GHz

Band Edge Compliance (Radiated) Plots (20dB Delta from Carrier at Band Edge) – EDR 3Mbps

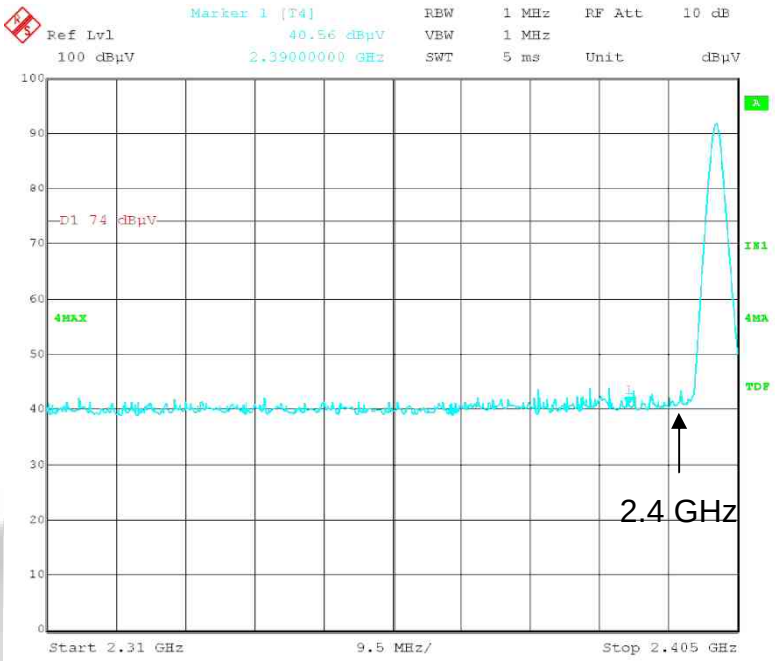


Plot 63 – Lower Band Edge at 2.4000GHz

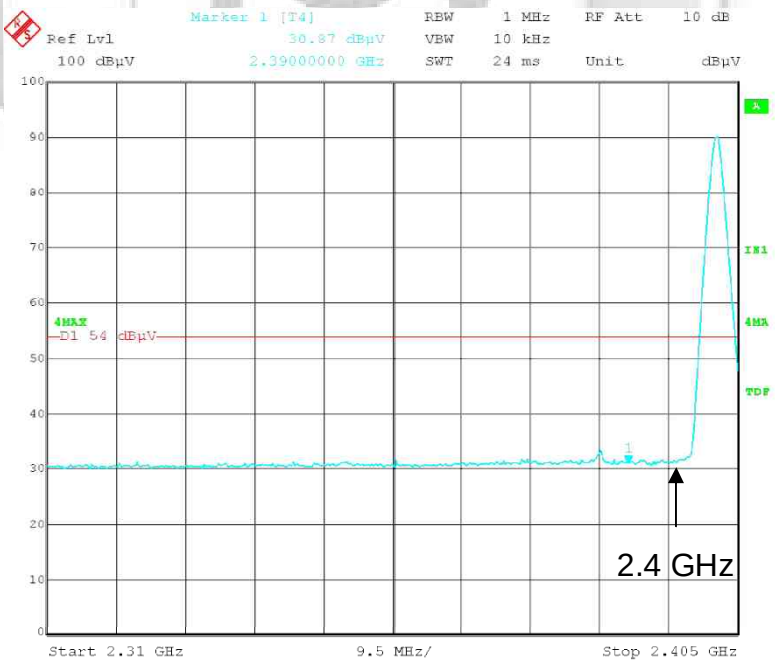


Plot 64 – Upper Band Edge at 2.4835GHz

Band Edge Compliance (Radiated) Plots (Restricted Band) – EDR 3Mbps

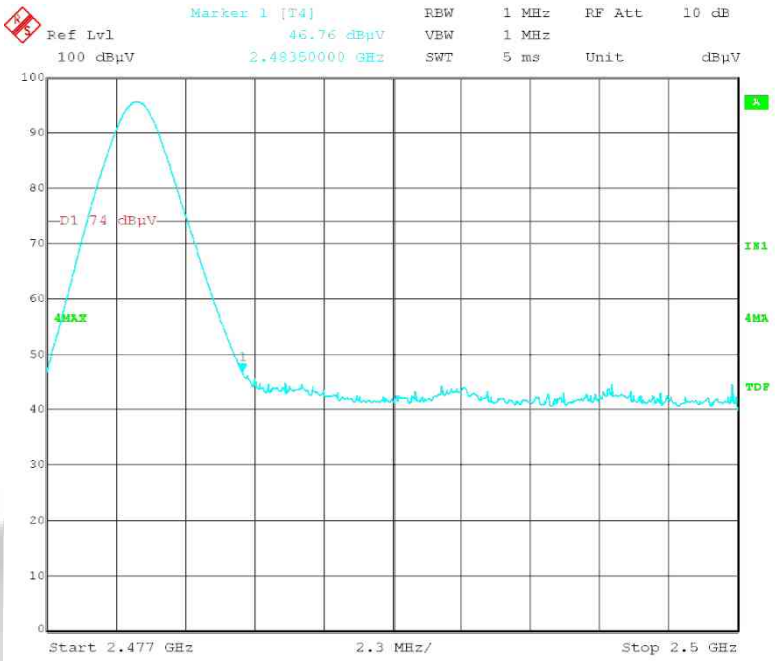


Plot 65 – Peak Plot at Lower Band Edge at 2.4000GHz

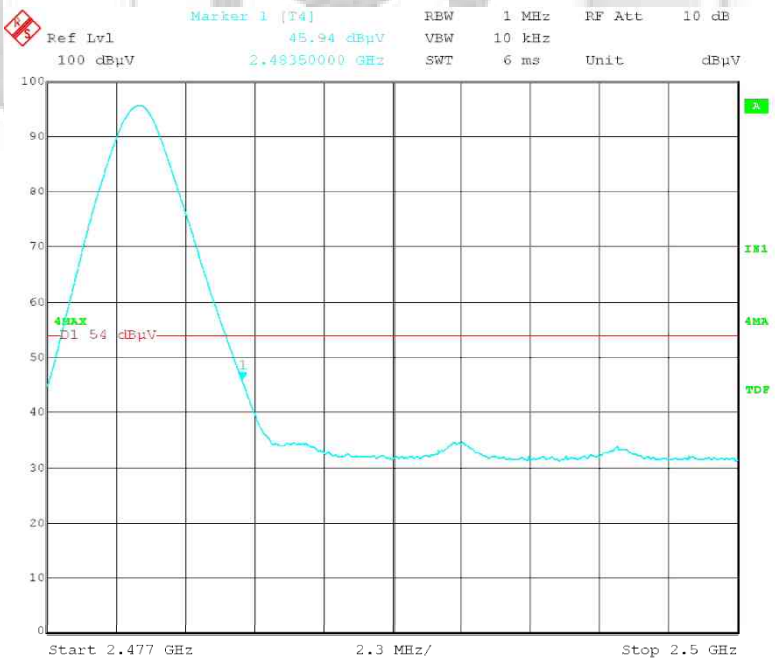


Plot 66 – Average Plot at Lower Band Edge at 2.4000GHz

Band Edge Compliance (Radiated) Plots (Restricted Band) – EDR 3Mbps



Plot 67 – Peak Plot at Upper Band Edge at 2.4835GHz



Plot 68 – Average Plot at Upper Band Edge at 2.4835GHz

47 CFR FCC Part 15.247(e) Peak Power Spectral Density Limits

The EUT shows compliance to the requirements of this section, which states the peak power spectral density conducted from the intentional radiator (EUT) to the antenna shall not be greater than 8dBm (6.3mW) in any 3kHz band during any time interval of continuous transmission.

47 CFR FCC Part 15.247(e) Peak Power Spectral Density Test Instrumentation

Instrument	Model	S/No	Cal Due Date
Agilent Spectrum Analyzer	E4440A	MY45304764	14 Nov 2014

47 CFR FCC Part 15.247(e) Peak Power Spectral Density Test Setup

1. The EUT and supporting equipment were set up as shown in the setup photo.
2. The power supply for the EUT was connected to a filtered mains.
3. The RF antenna connector was connected to the spectrum via a low-loss coaxial cable.
4. The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were respectively set to 3kHz and 10kHz.
5. All other supporting equipment were powered separately from another filtered mains.

47 CFR FCC Part 15.247(e) Peak Power Spectral Density Test Method

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 Channel 0 (2.402GHz) *(lower ch)*.
2. The sweep time of the spectrum analyser was set to the value of the ratio of the frequency span divided by the RBW.
3. The peak power density of the transmitting frequency was detected and recorded.
4. The step 3 was repeated with the transmitting frequency was set to Channel 39 (2.441GHz) *(mid ch)* and Channel 78 (2.480GHz) *(upper ch)* respectively.

47 CFR FCC Part 15.247(e) Peak Power Spectral Density Results

Test Input Power	120V 60Hz	Temperature	24°C
Attached Plots	69 – 71	Relative Humidity	60%
Packet Type	BDR 1Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

Channel	Channel Frequency (GHz)	Peak Power Spectral Density (mW)	Limit (mW)
0 *(lower ch)*	2.402	0.234	6.3
39 *(mid ch)*	2.441	0.244	6.3
78 *(upper ch)*	2.480	0.244	6.3

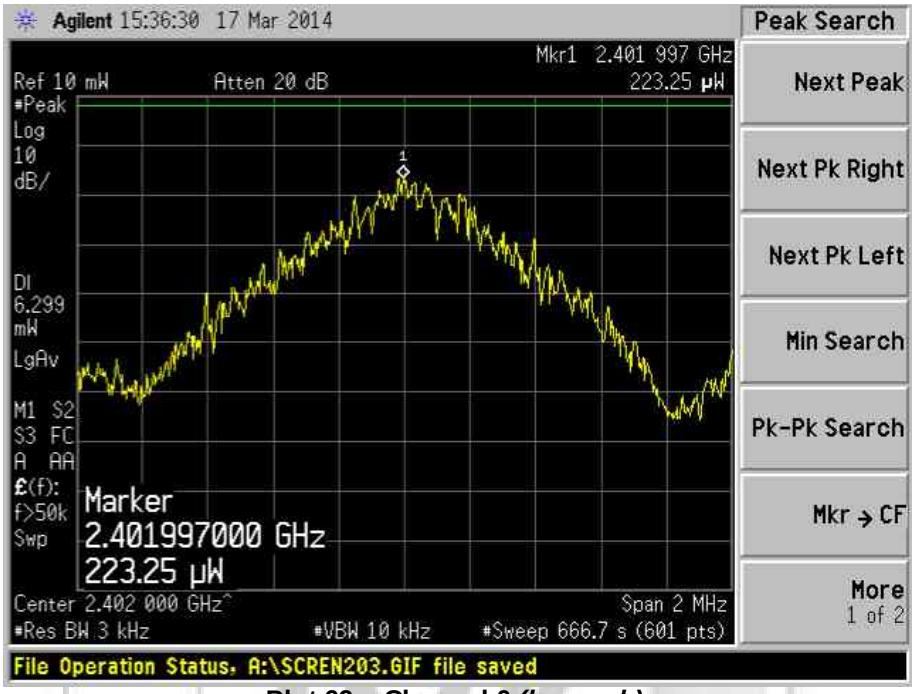
Test Input Power	120V 60Hz	Temperature	24°C
Attached Plots	72 – 74	Relative Humidity	60%
Packet Type	EDR 2Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

Channel	Channel Frequency (GHz)	Peak Power Spectral Density (mW)	Limit (mW)
0 *(lower ch)*	2.402	0.158	6.3
39 *(mid ch)*	2.441	0.188	6.3
78 *(upper ch)*	2.480	0.167	6.3

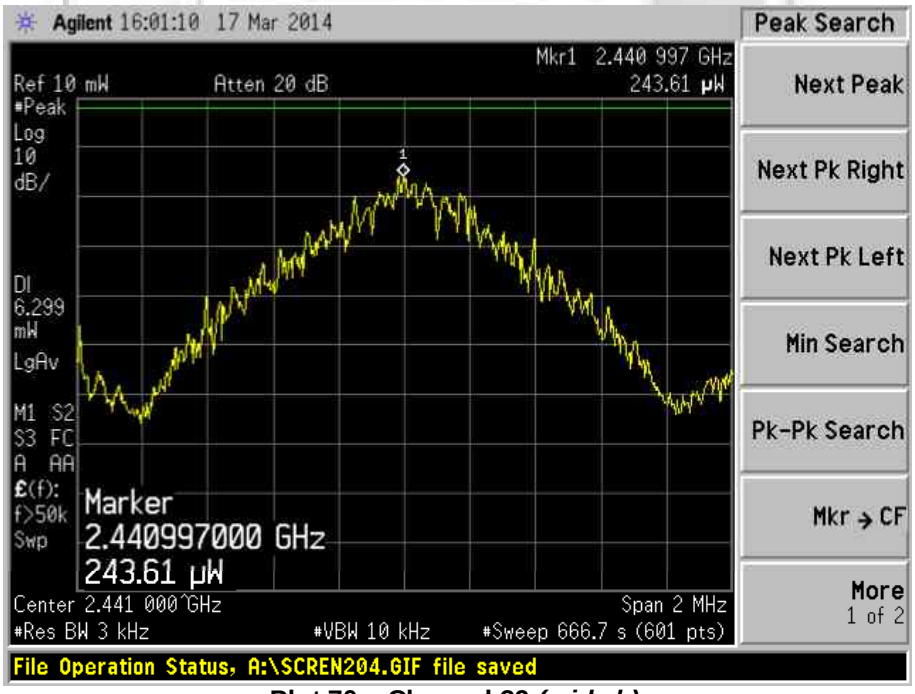
Test Input Power	120V 60Hz	Temperature	24°C
Attached Plots	75 – 77	Relative Humidity	60%
Packet Type	EDR 3Mbps	Atmospheric Pressure	1030mbar
		Tested By	Kyaw Soe Hein

Channel	Channel Frequency (GHz)	Peak Power Spectral Density (mW)	Limit (mW)
0 *(lower ch)*	2.402	0.151	6.3
39 *(mid ch)*	2.441	0.160	6.3
78 *(upper ch)*	2.480	0.133	6.3

Peak Power Spectral Density Plots – BDR 1Mbps

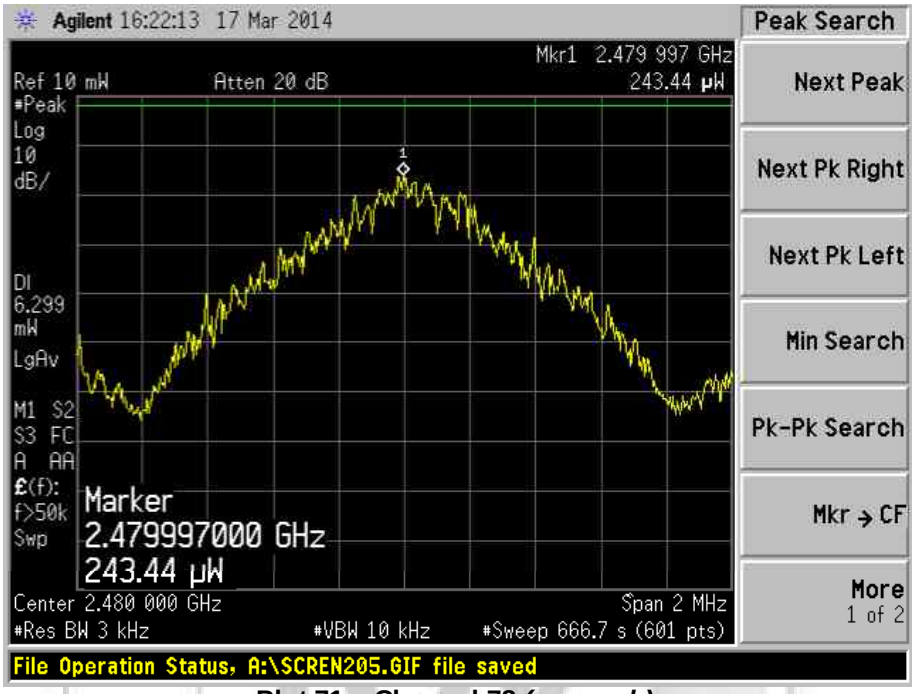


Plot 69 – Channel 0 *(lower ch)*



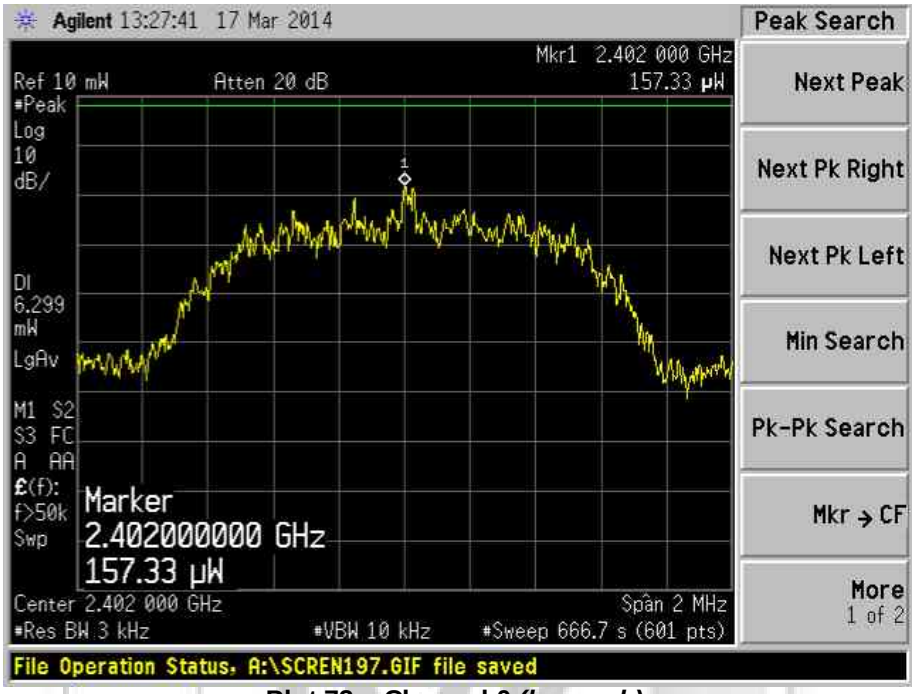
Plot 70 – Channel 39 *(mid ch)*

Peak Power Spectral Density Plots – BDR 1Mbps

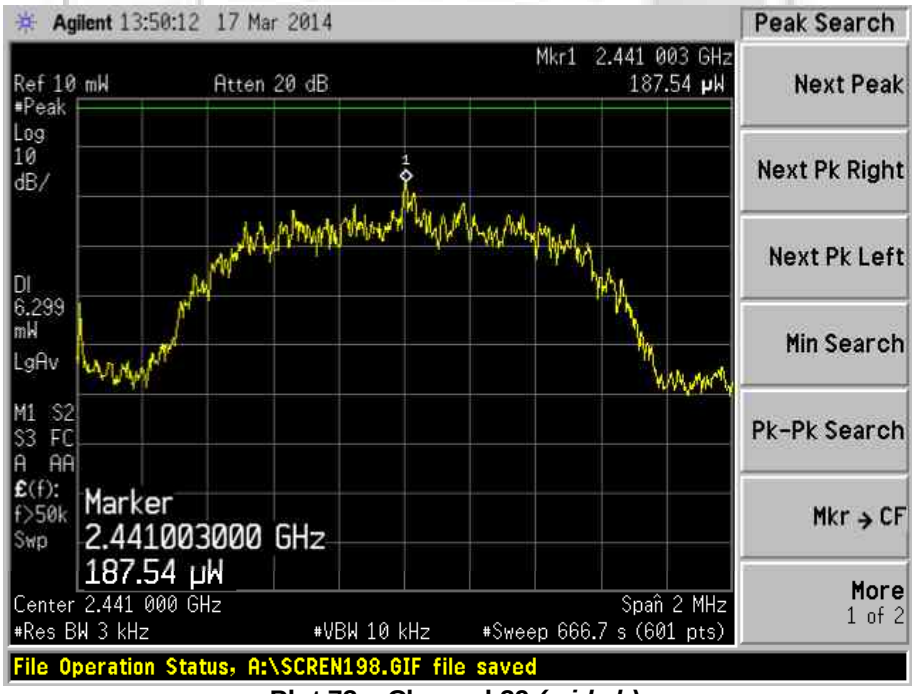


Plot 71 – Channel 78 *(upper ch)*

Peak Power Spectral Density Plots – EDR 2Mbps

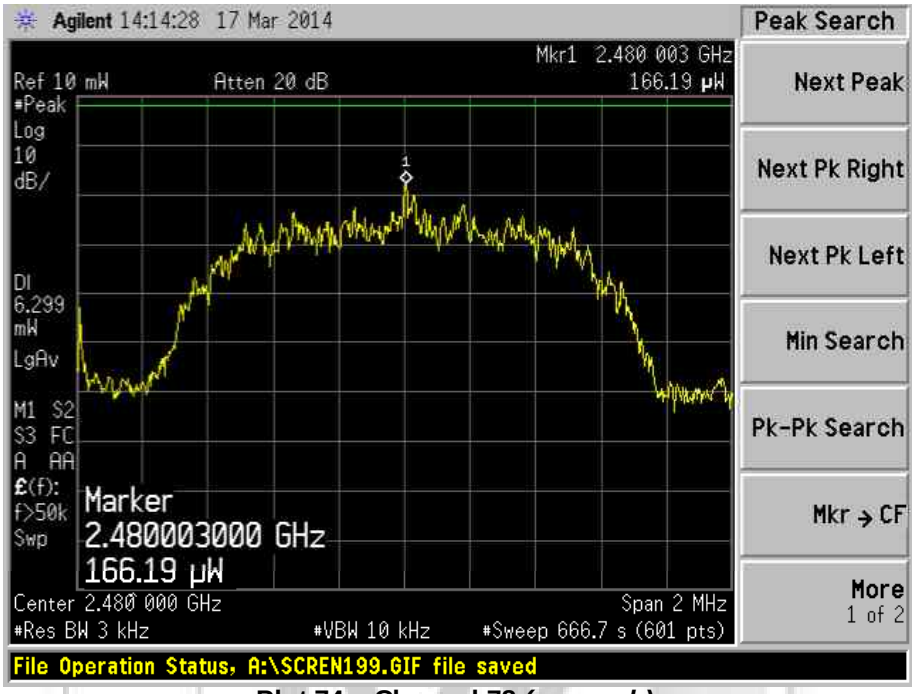


Plot 72 – Channel 0 *(lower ch)*



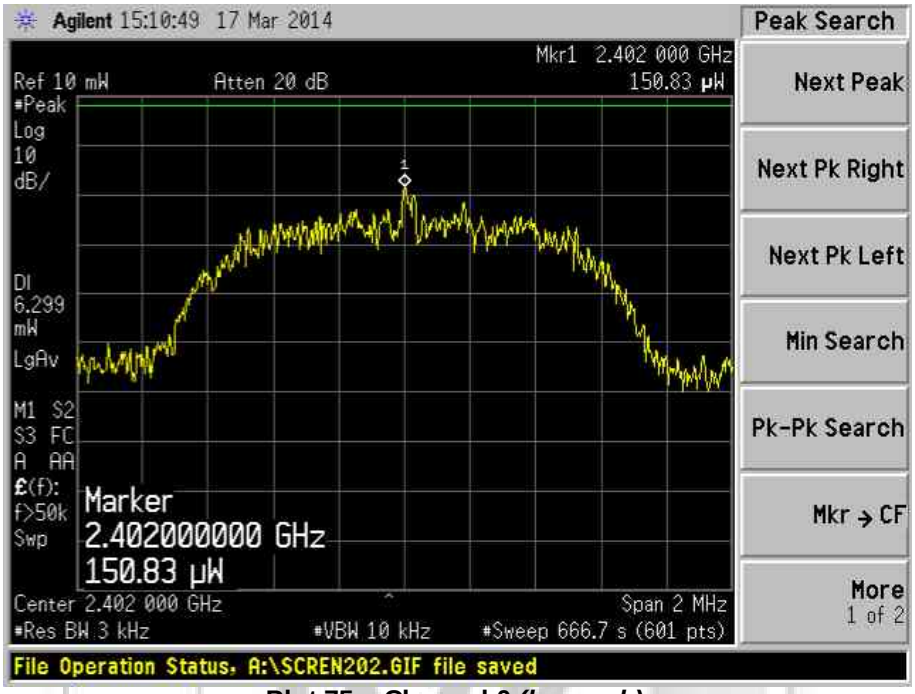
Plot 73 – Channel 39 *(mid ch)*

Peak Power Spectral Density Plots – EDR 2Mbps

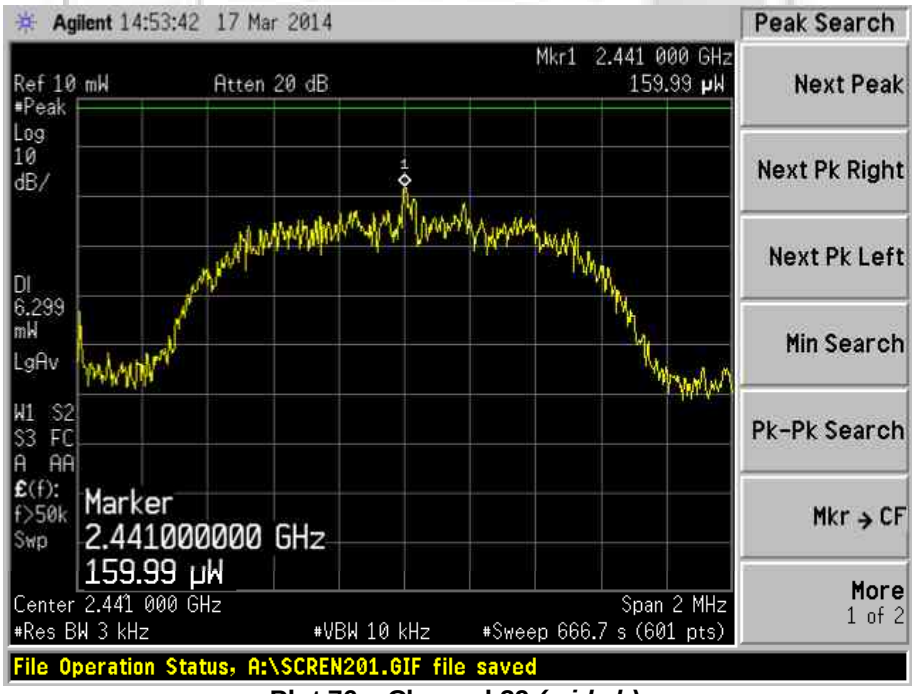


Plot 74 – Channel 78 *(upper ch)*

Peak Power Spectral Density Plots – EDR 3Mbps

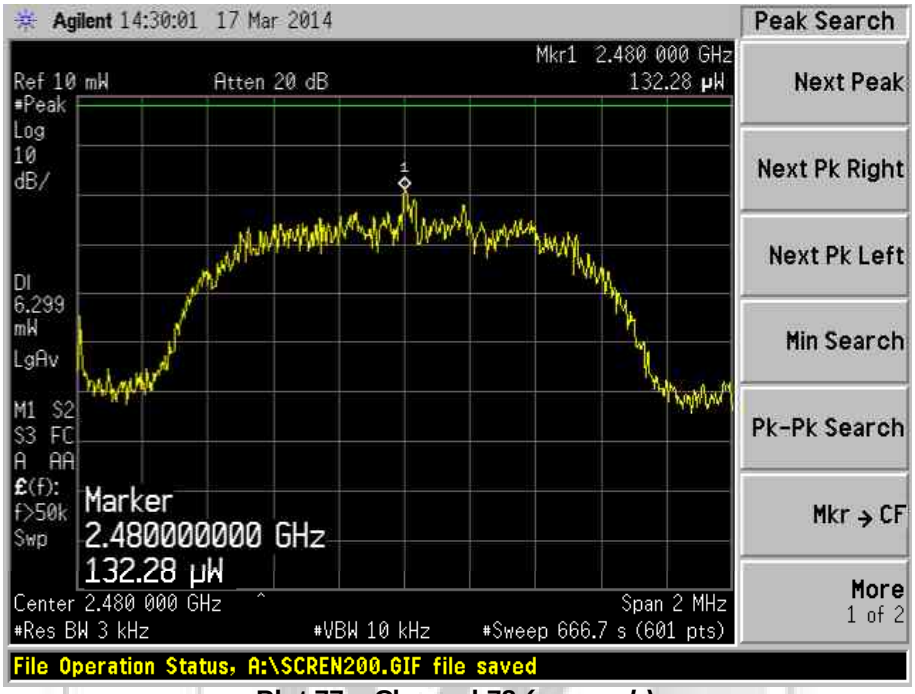


Plot 75 – Channel 0 *(lower ch)*



Plot 76 – Channel 39 *(mid ch)*

Peak Power Spectral Density Plots – EDR 3Mbps



Plot 77 – Channel 78 *(upper ch)*

47 CFR FCC Part 1.1310 Maximum Permissible Exposure (MPE) Limits

The EUT shows compliance to the requirements of this section, which states the MPE limits for general population / uncontrolled exposure are as shown below:

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				

47 CFR FCC Part 1.1310 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 = 0.0015W *(maximum peak measured from Maximum Peak Power)*
d = Test distance at 0.2m
G = Numerical isotropic gain, 1.59 (2.0dBi)

Substituting the relevant parameters into the formula:

$S = [(30GP) / 377d^2]$
$= 0.0047\ W/m^2$
$= 0.0005\ mW/cm^2$

∴ The power density of the EUT at 20cm distance is $0.0005 mW/cm^2$ based on the above computation and found to be lower than the power density limit of $1.0 mW/cm^2$.

Please note that this Report is issued under the following terms :

1. This report applies to the sample of the specific product/equipment given at the time of its testing/calibration. The results are not used to indicate or imply that they are applicable to other similar items. In addition, such results must not be used to indicate or imply that TÜV SÜD PSB approves, recommends or endorses the manufacturer, supplier or user of such product/equipment, or that TÜV SÜD PSB in any way "guarantees" the later performance of the product/equipment. Unless otherwise stated in this report, no tests were conducted to determine long term effects of using the specific product/equipment.

2. The sample/s mentioned in this report is/are submitted/supplied/manufactured by the Client. TÜV SÜD PSB therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture, consignment or any information supplied.

3. Nothing in this report shall be interpreted to mean that TÜV SÜD PSB has verified or ascertained any endorsement or marks from any other testing authority or bodies that may be found on that sample.

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5. Unless otherwise stated, the tests were carried out in TÜV SÜD PSB Pte Ltd, No.1 Science Park Drive Singapore 118221.

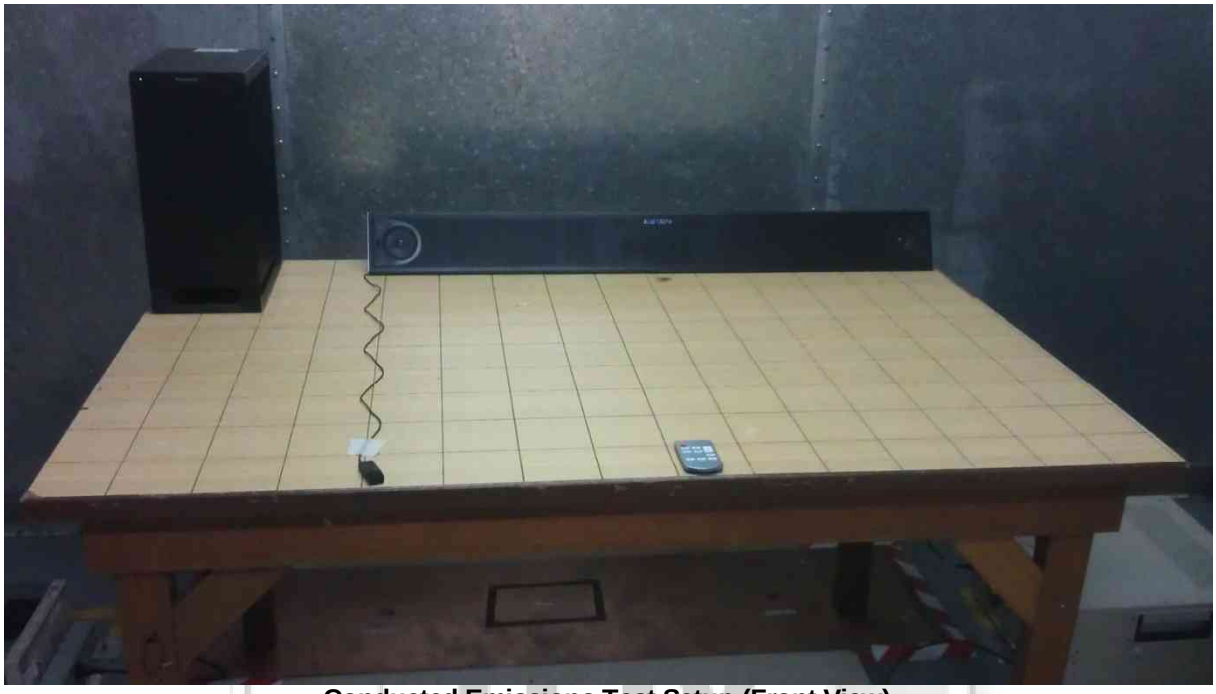
July 2011

ANNEX A

TEST SETUP / EUT PHOTOGRAPHS / DIAGRAMS

ANNEX A TEST SETUP / EUT PHOTOGRAPHS / DIAGRAMS

TEST SETUP (MAIN UNIT)

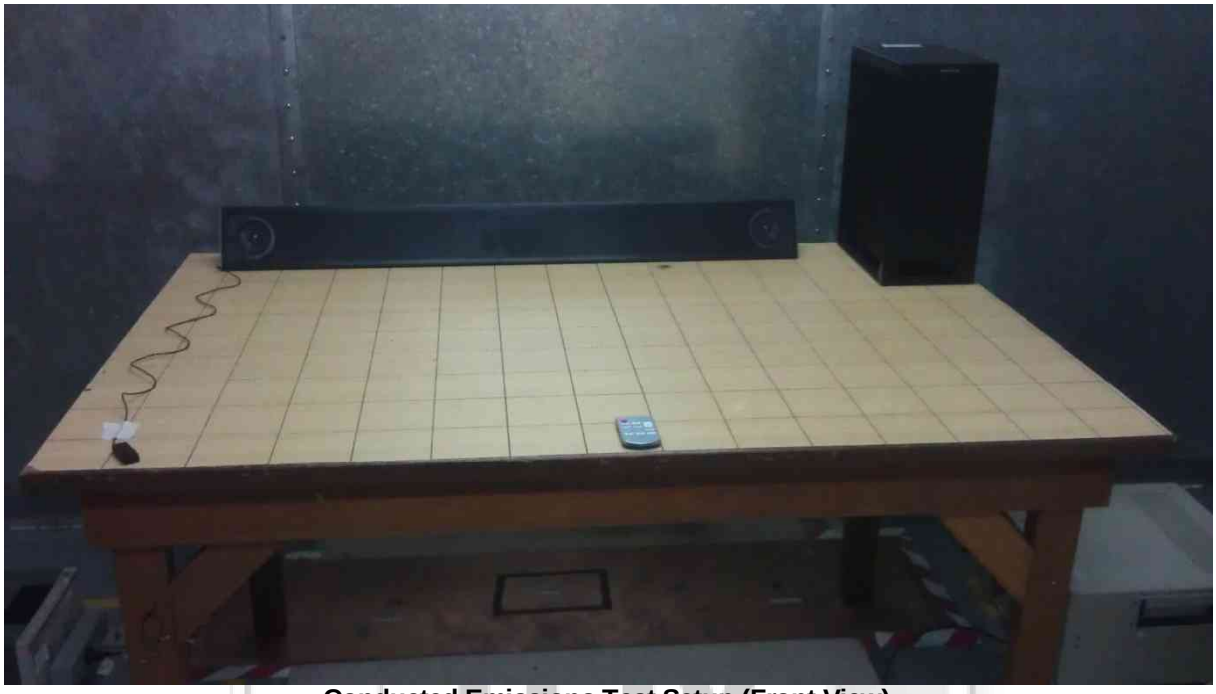


Conducted Emissions Test Setup (Front View)

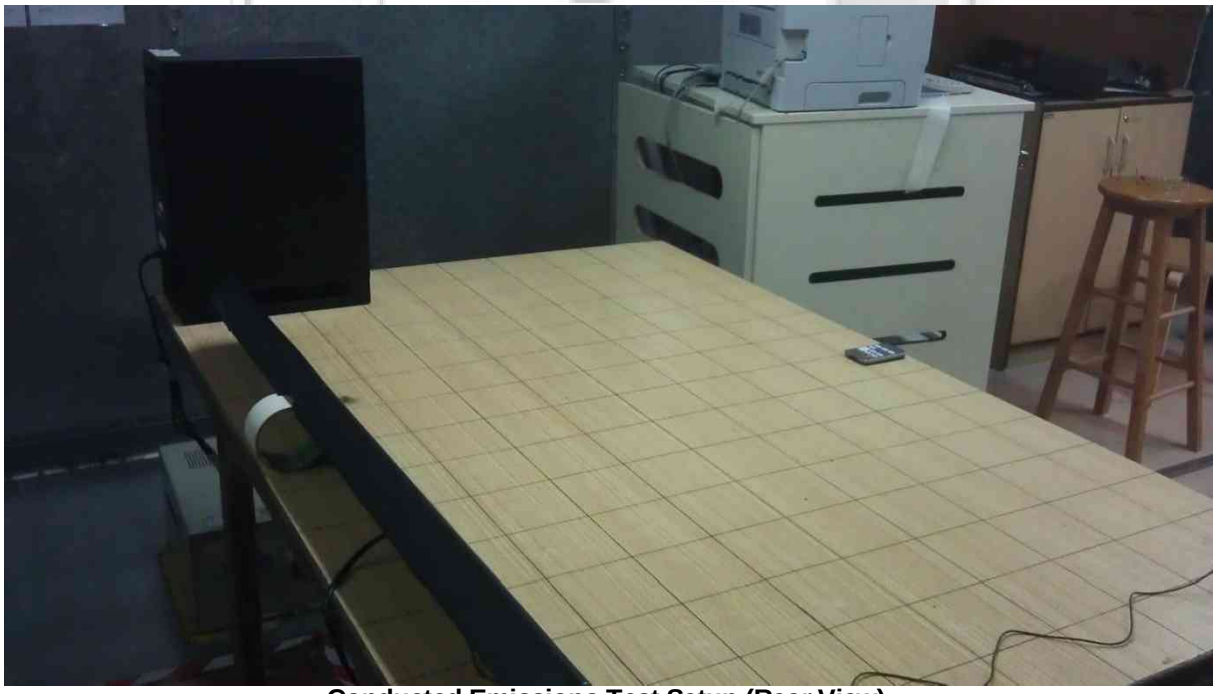
Conducted Emissions Test Setup (Rear View)

ANNEX A TEST SETUP / EUT PHOTOGRAPHS / DIAGRAMS

TEST SETUP (SUB-WOOFER)



Conducted Emissions Test Setup (Front View)



Conducted Emissions Test Setup (Rear View)

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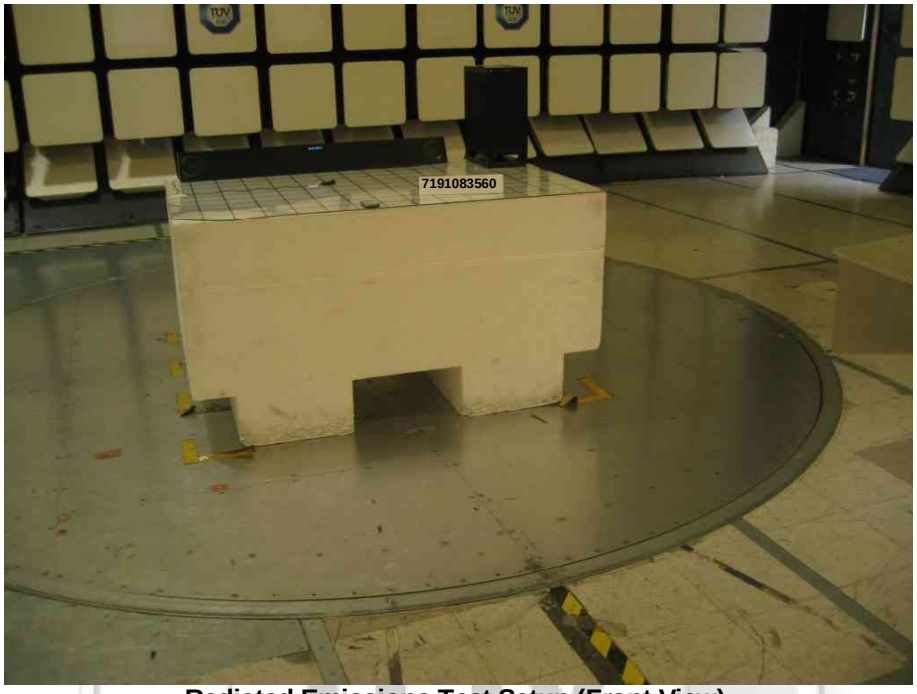
ANNEX A TEST SETUP / EUT PHOTOGRAPHS / DIAGRAMS

TEST SETUP



Radiated Emissions Test Setup (Front View)

Radiated Emissions Test Setup (Rear View)

ANNEX A TEST SETUP / EUT PHOTOGRAPHS / DIAGRAMS

TEST SETUP

Carrier Frequency Separation Test Setup

Spectrum Bandwidth (20dB Bandwidth Measurement) Test Setup

ANNEX A TEST SETUP / EUT PHOTOGRAPHS / DIAGRAMS

TEST SETUP

Number of Hopping Frequencies Test Setup

Average Frequency Dwell Time Test Setup

ANNEX A TEST SETUP / EUT PHOTOGRAPHS / DIAGRAMS

TEST SETUP

Maximum Peak Power Test Setup

RF Conducted Spurious Emissions Test Setup

ANNEX A TEST SETUP / EUT PHOTOGRAPHS / DIAGRAMS

TEST SETUP

Band Edge Compliance (Conducted) Test Setup

Band Edge Compliance (Radiated) Test Setup

ANNEX A TEST SETUP / EUT PHOTOGRAPHS / DIAGRAMS

TEST SETUP

Peak Power Spectral Density Test Setup

ANNEX A EUT PHOTOGRAPHS / DIAGRAMS

EUT PHOTOGRAPHS – ENTIRE SETUP

Front View

Rear View

ANNEX A EUT PHOTOGRAPHS / DIAGRAMS

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880

Front View

Rear View

EUT PHOTOGRAPHS – SUB-WOOFER, SB-HWA880

Front View

Rear View

ANNEX A EUT PHOTOGRAPHS / DIAGRAMS

EUT PHOTOGRAPHS – IR BOOSTER

Front View

Rear View

ANNEX A EUT PHOTOGRAPHS / DIAGRAMS

EUT PHOTOGRAPHS – REMOTE CONTROL

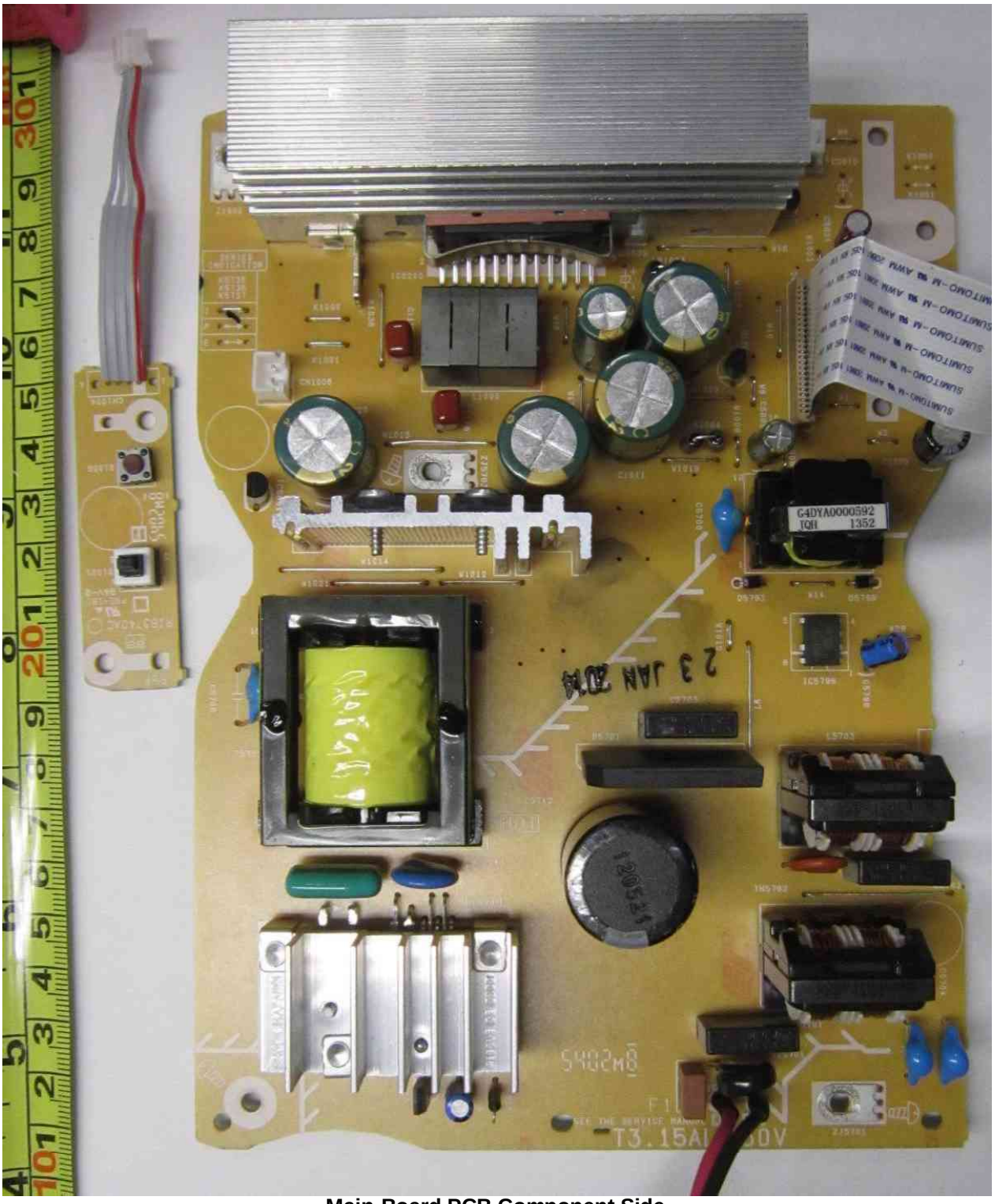
Front View

Rear View

EUT PHOTOGRAPHS – SUB-WOOFER, SB-HWA880

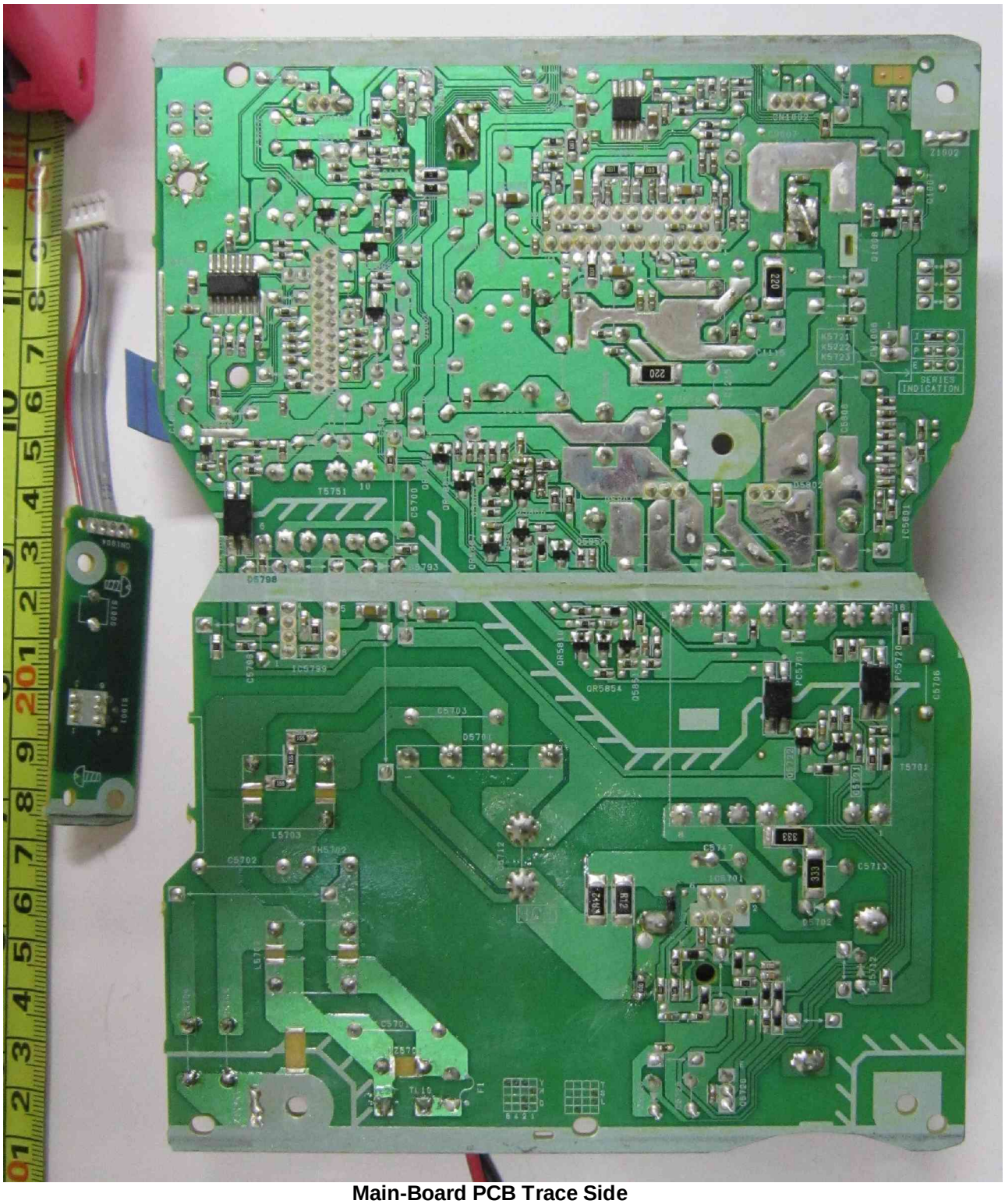
Internal View

EUT PHOTOGRAPHS – SUB-WOOFER, SB-HWA880



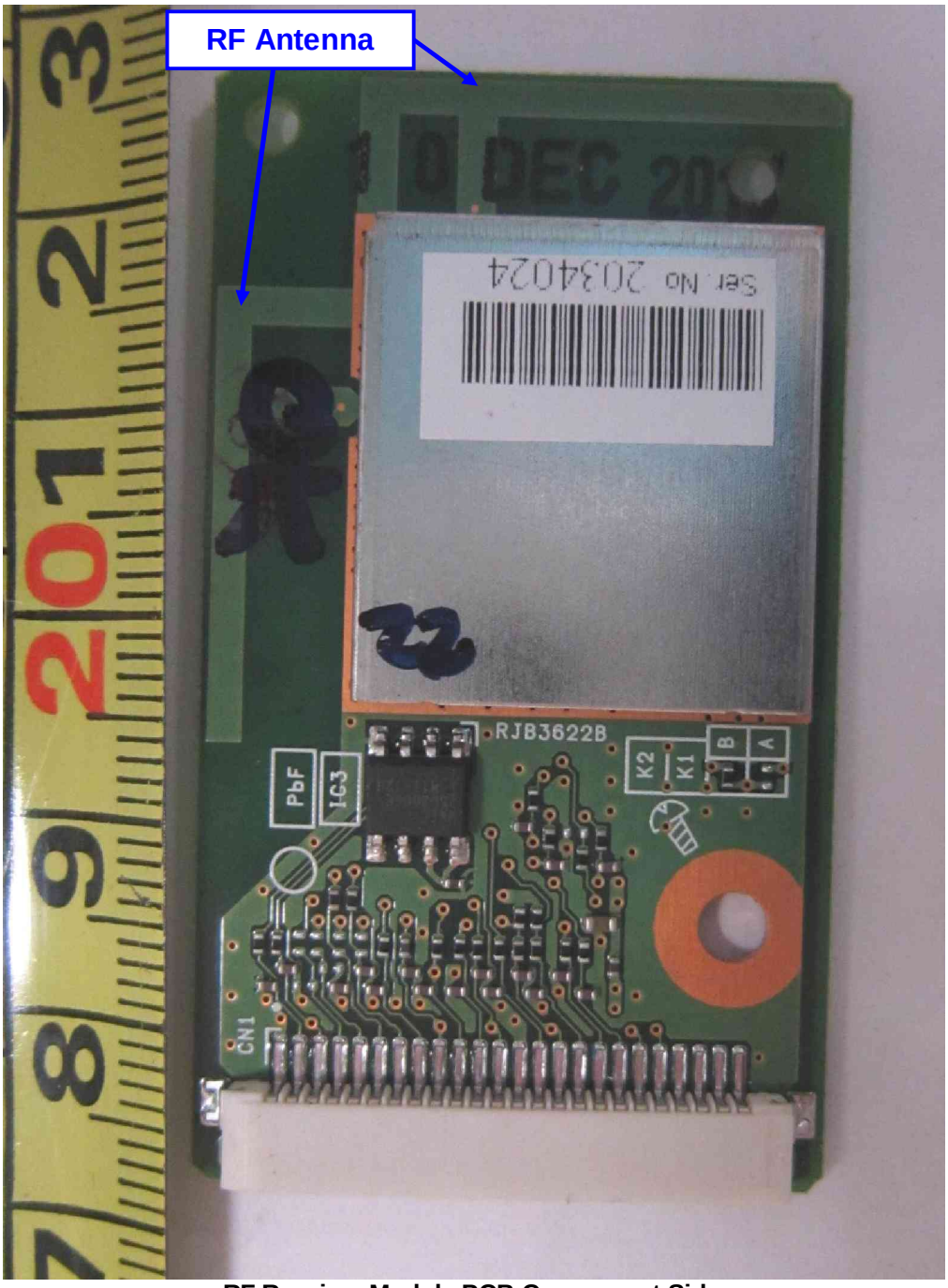
Main-Board PCB Component Side

EUT PHOTOGRAPHS – SUB-WOOFER, SB-HWA880



Main-Board PCB Trace Side

EUT PHOTOGRAPHS – SUB-WOOFER, SB-HWA880

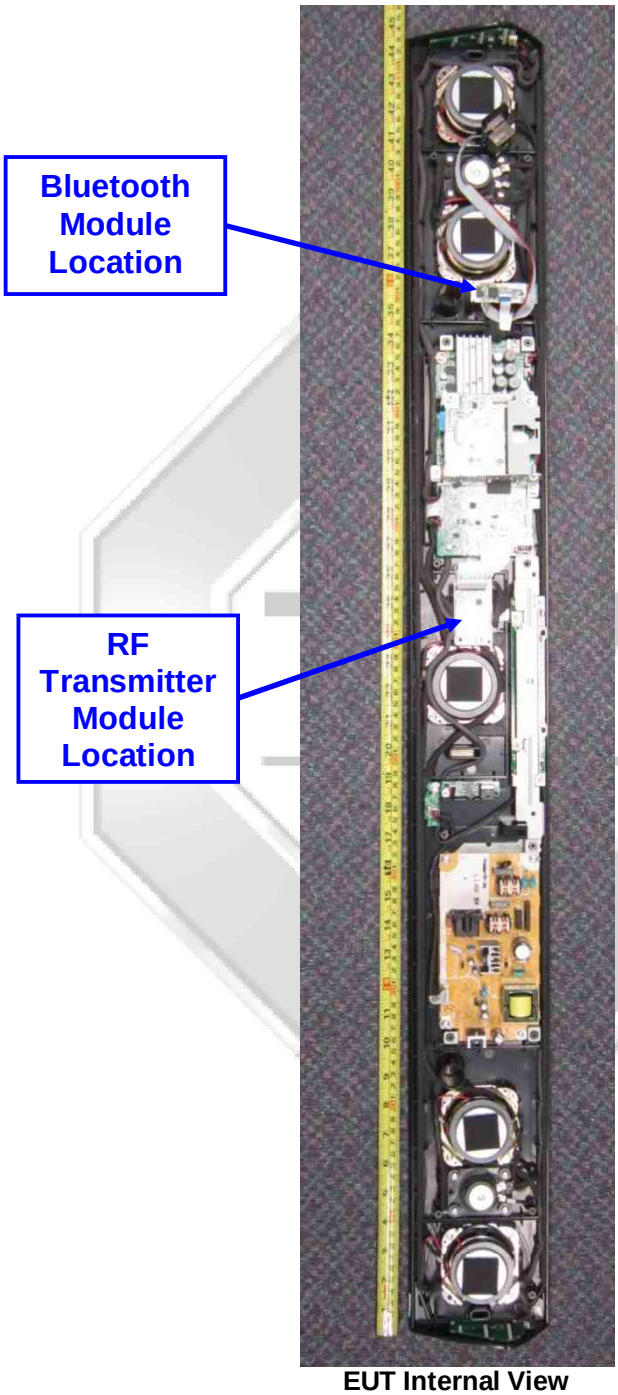


RF Receiver Module PCB Component Side

EUT PHOTOGRAPHS – SUB-WOOFER, SB-HWA880

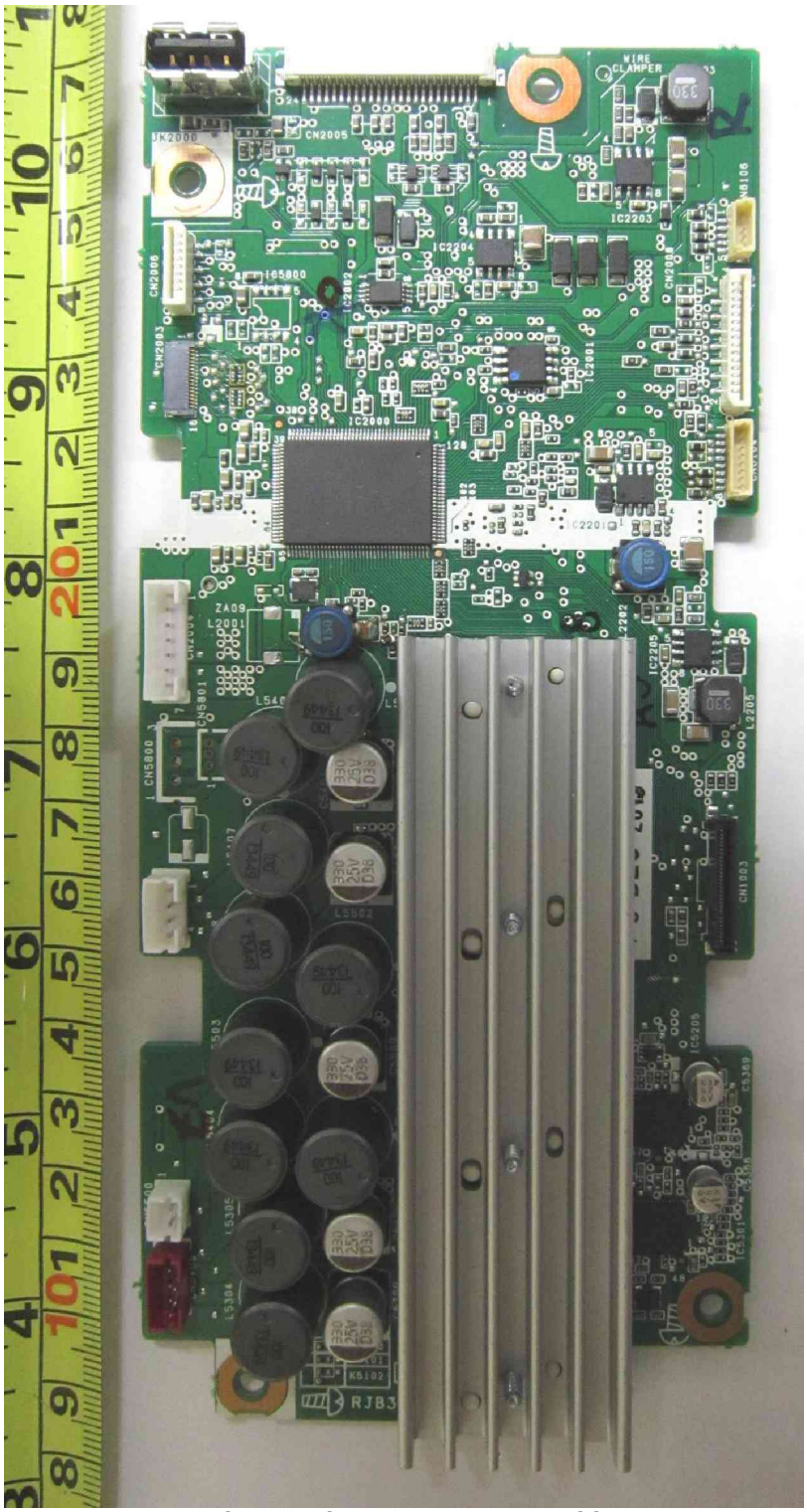
RF Receiver Module PCB Trace Side

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880



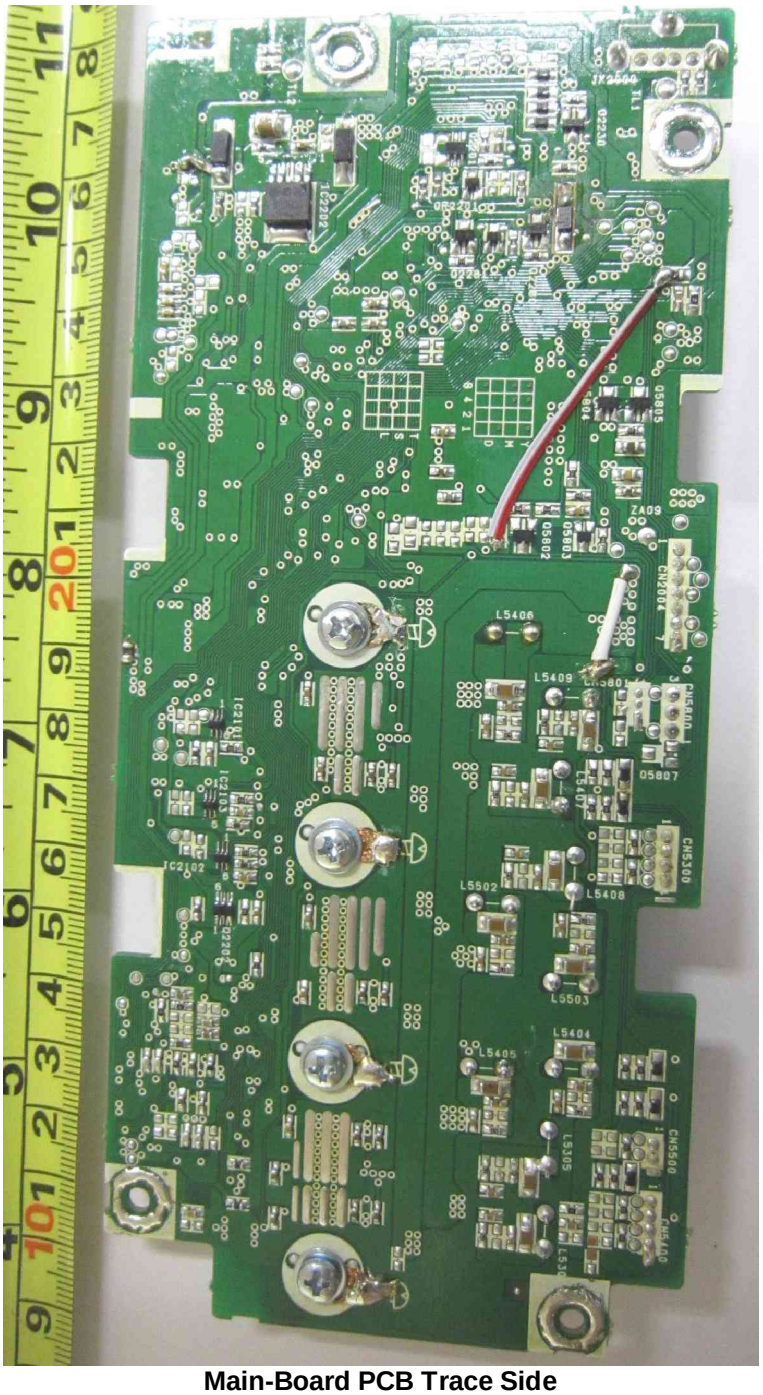
EUT Internal View

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880



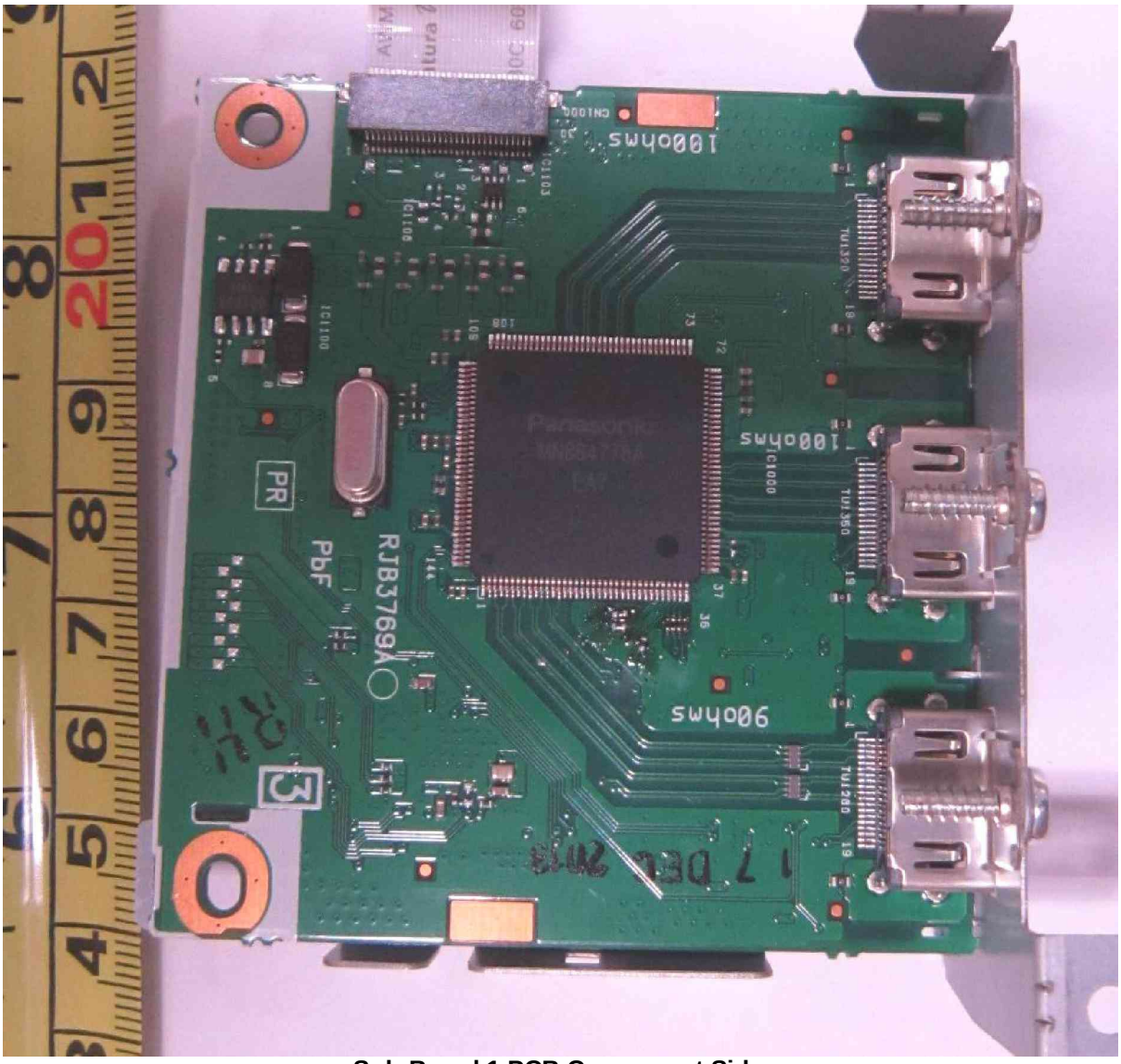
Main-Board PCB Component Side

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880



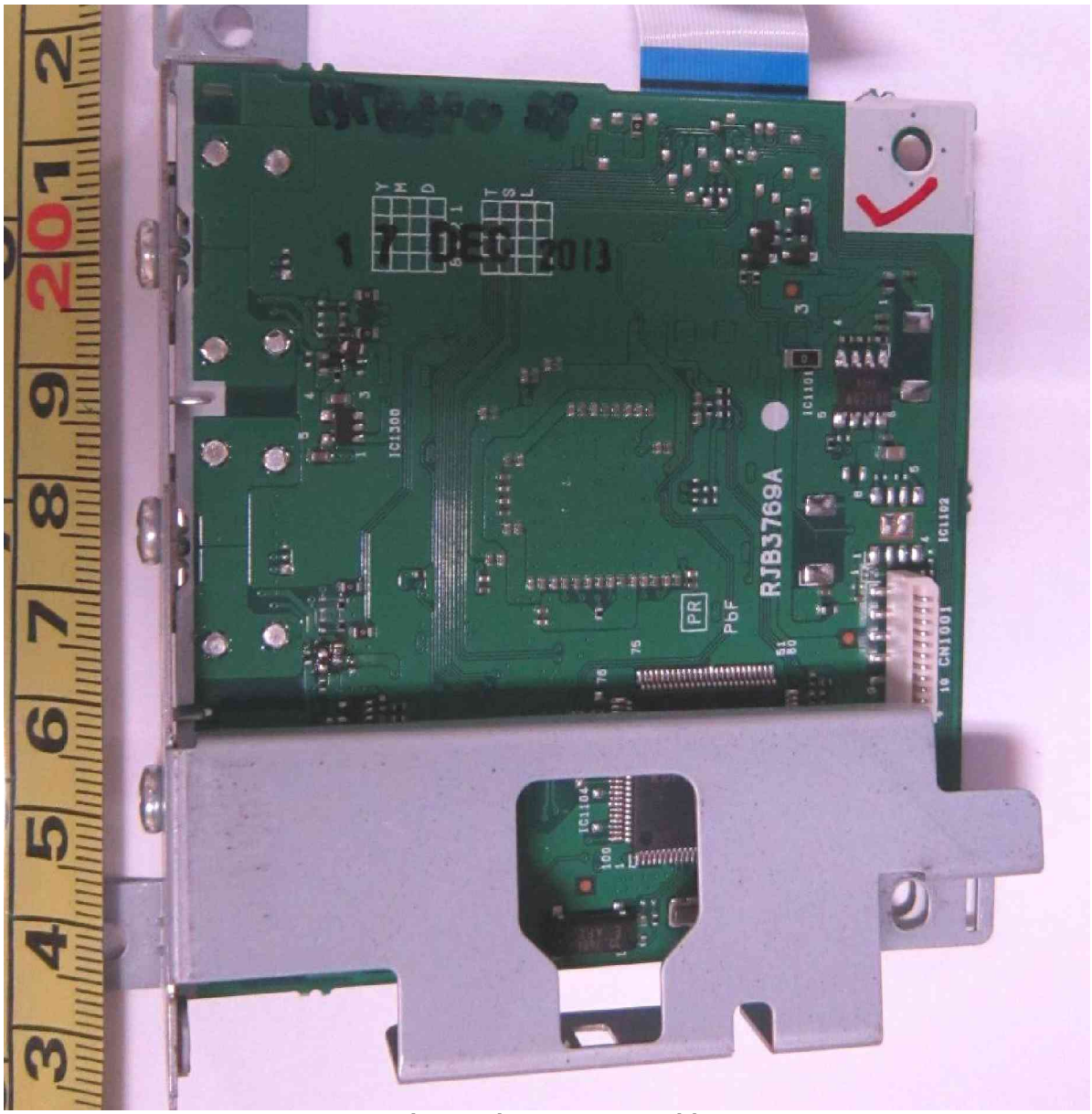
Main-Board PCB Trace Side

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880



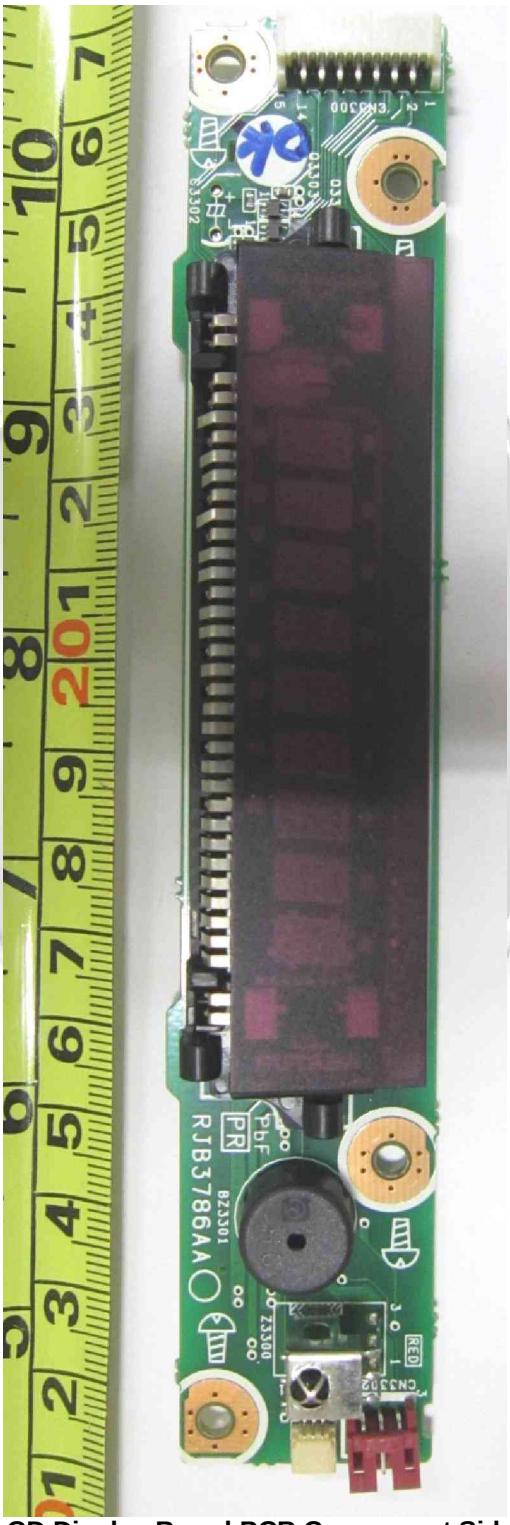
Sub-Board 1 PCB Component Side

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880



Sub-Board 1 PCB Trace Side

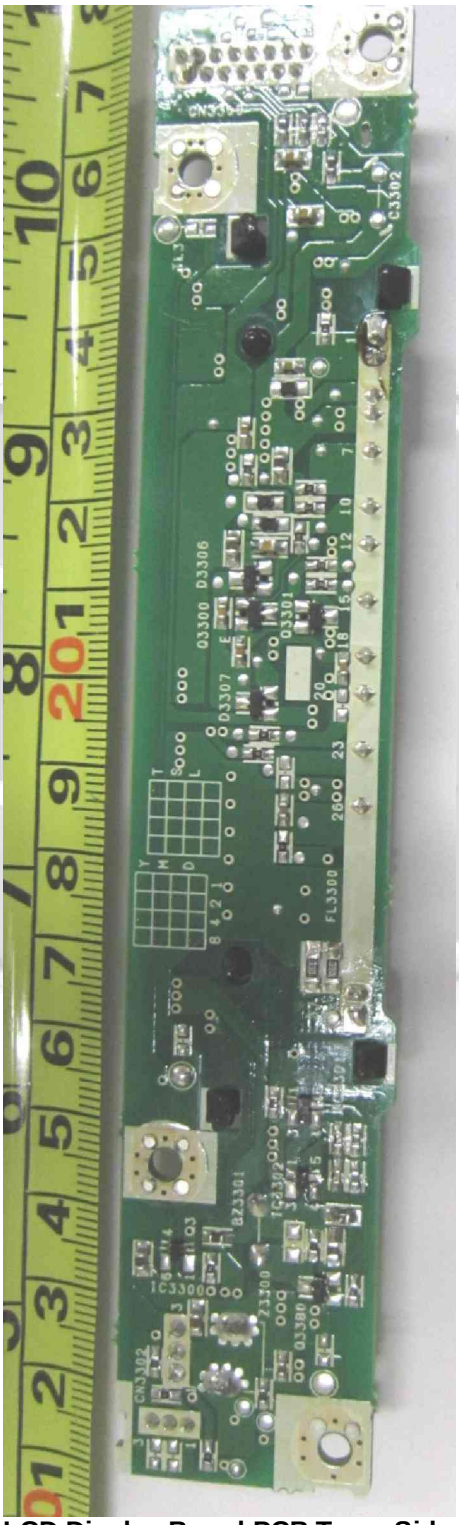
EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880



LCD Display Board PCB Component Side

PSB Singapore

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880

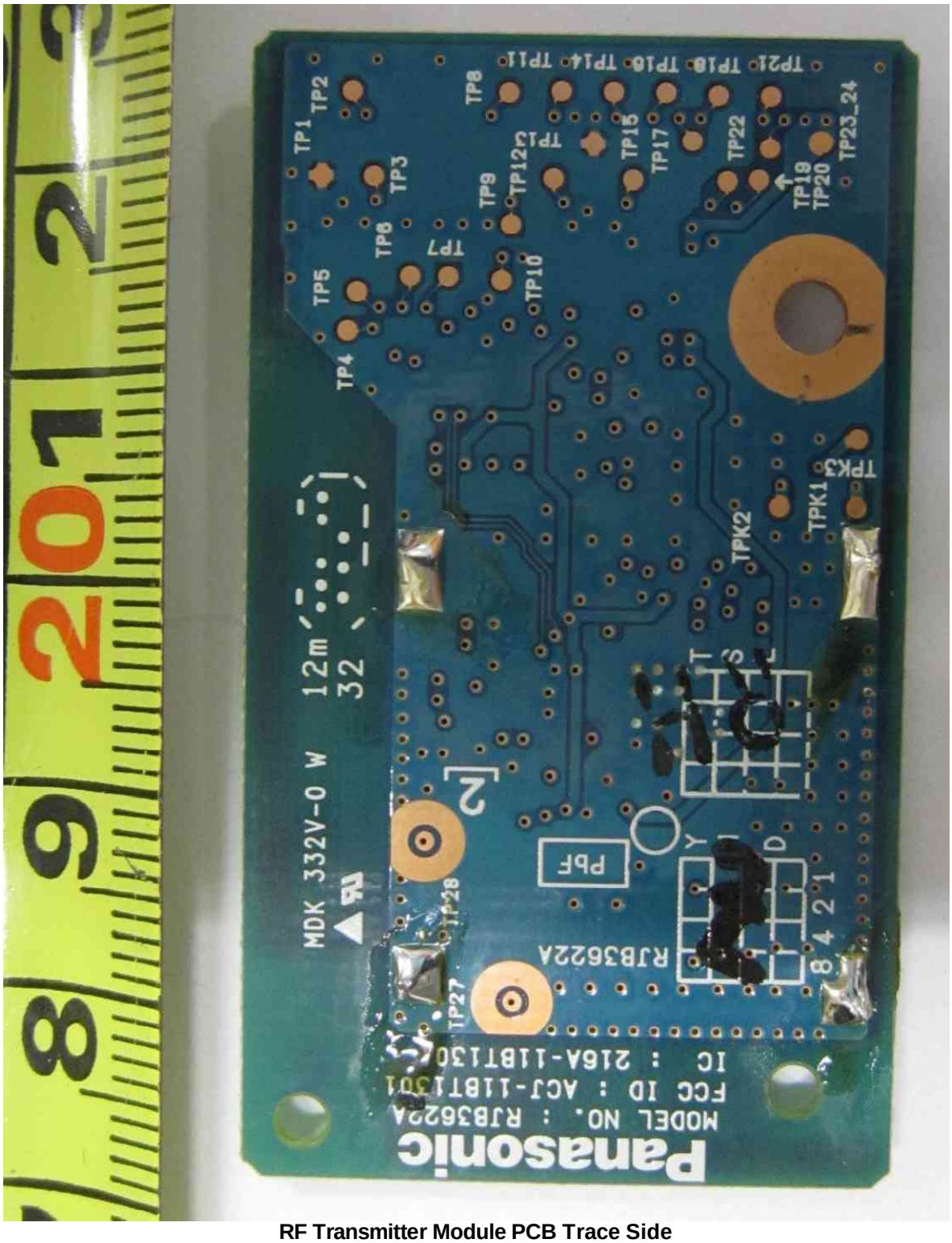


LCD Display Board PCB Trace Side

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880

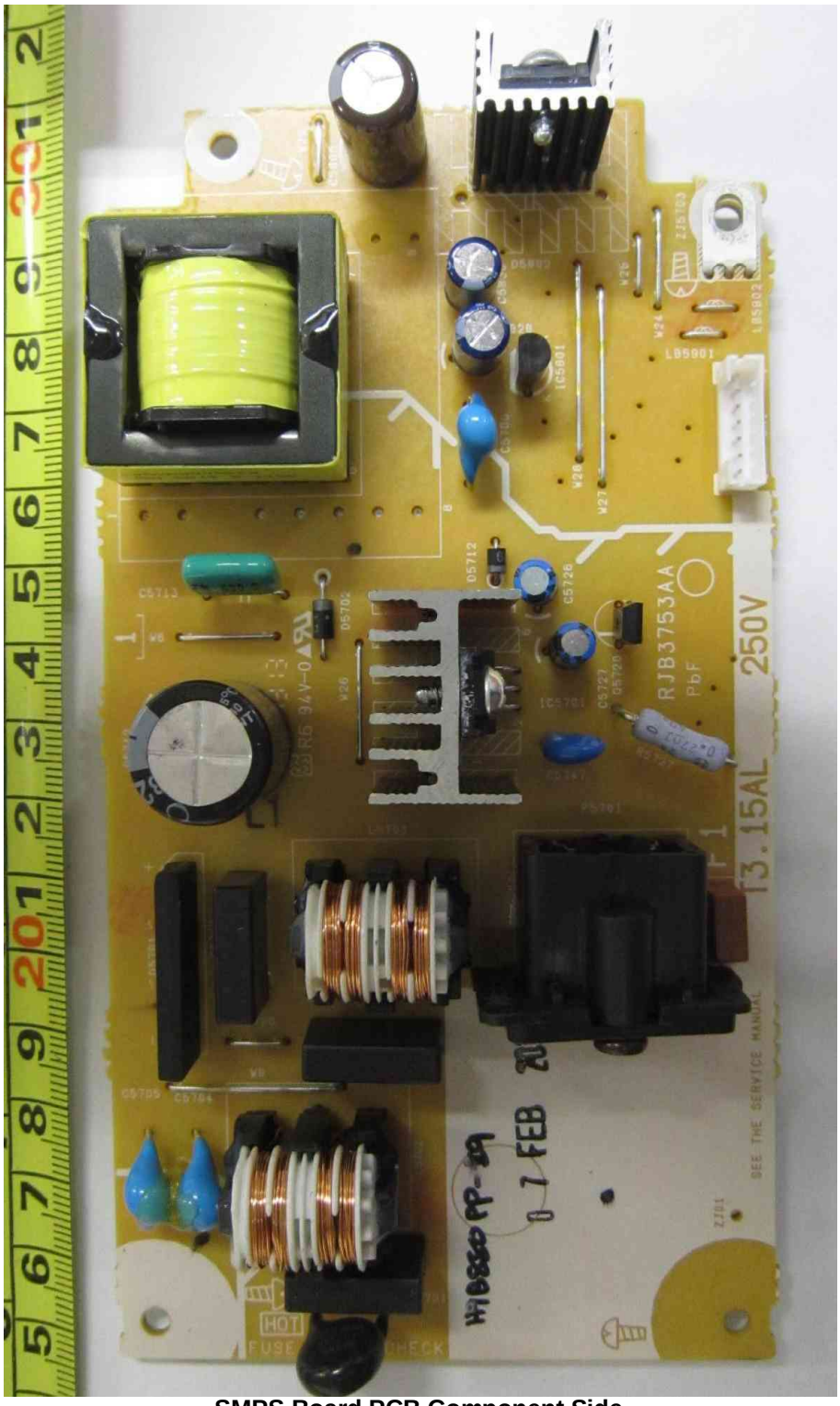
RF Transmitter Module PCB Component Side

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880



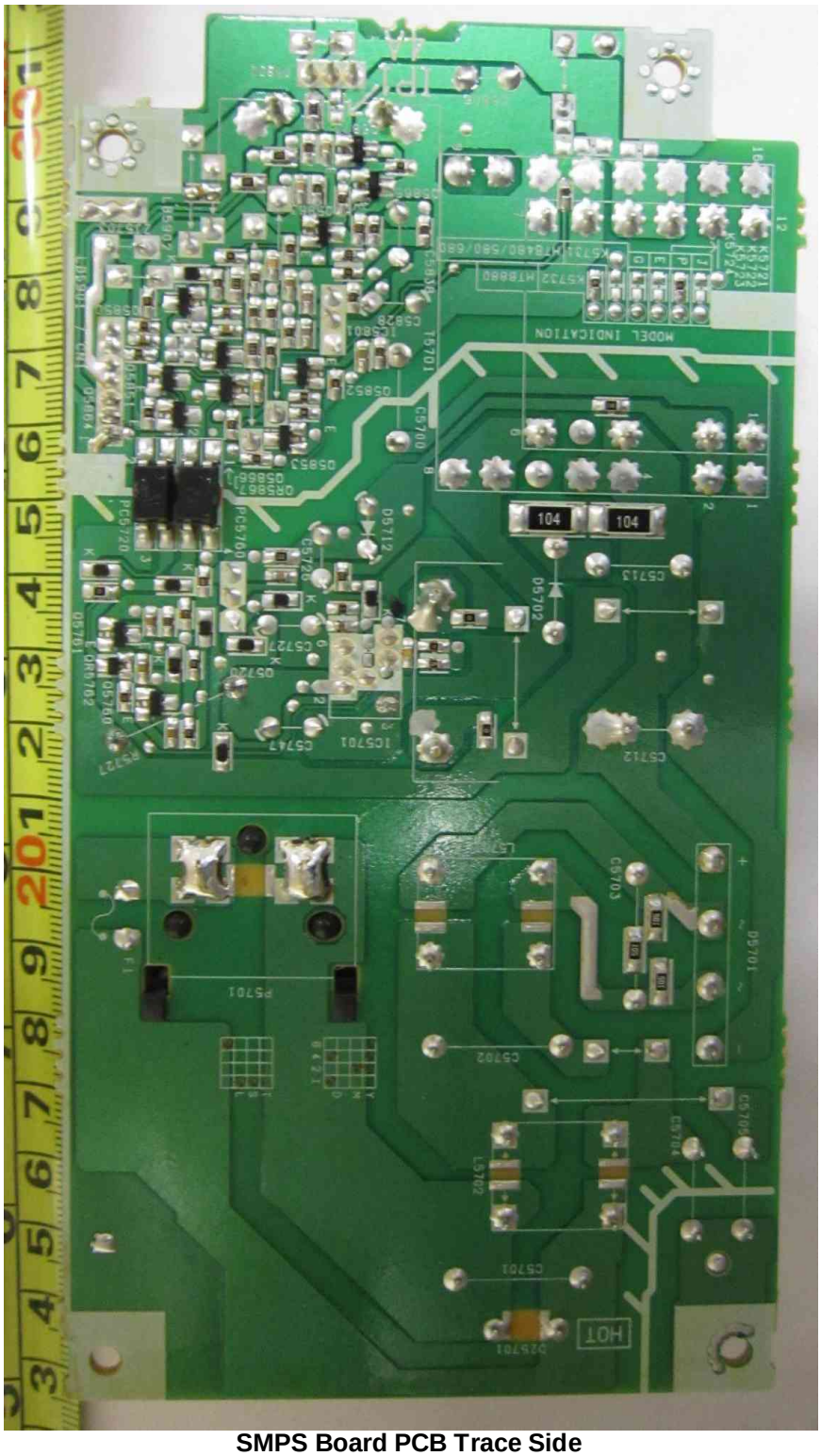
RF Transmitter Module PCB Trace Side

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880



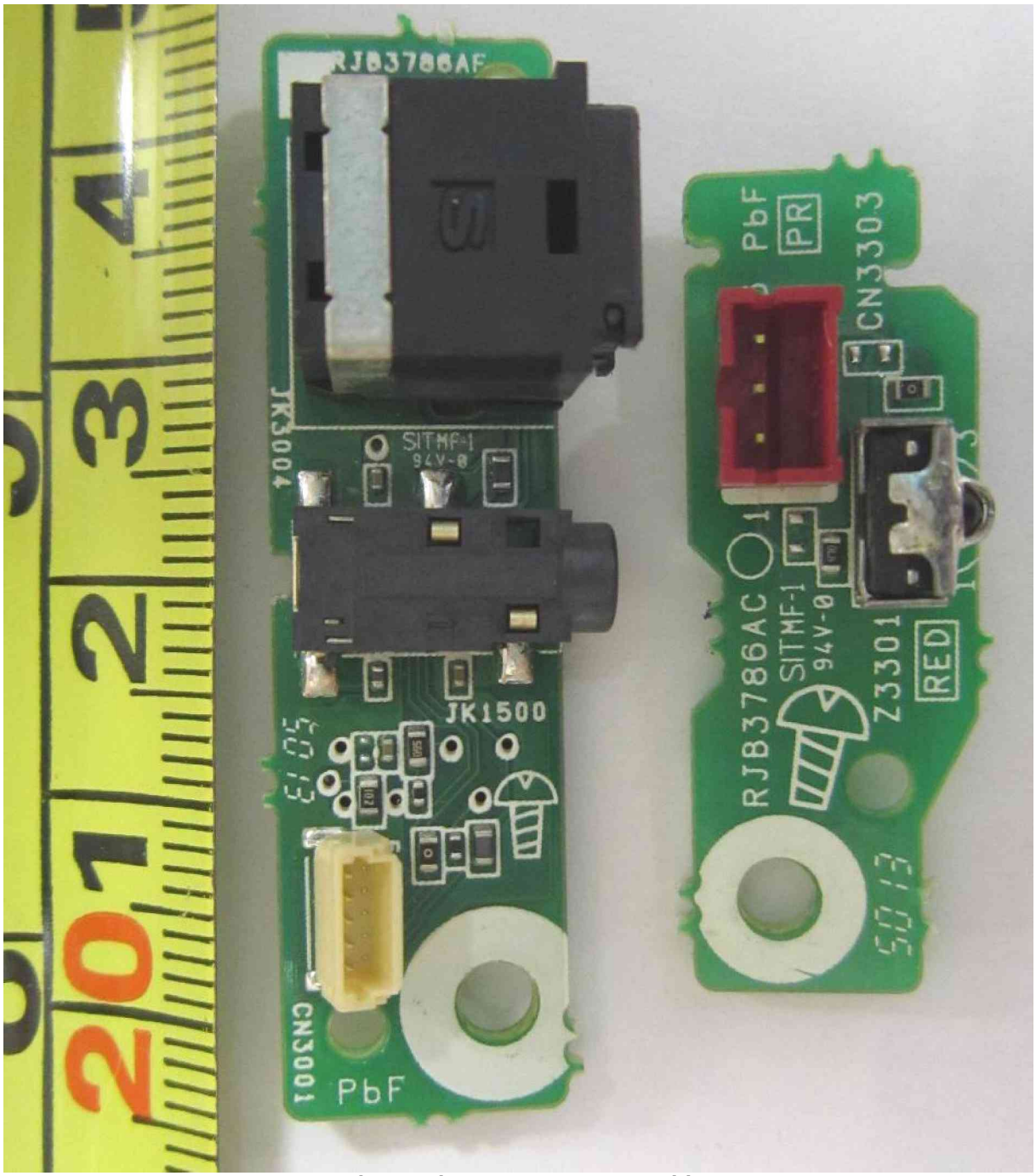
SMPS Board PCB Component Side

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880



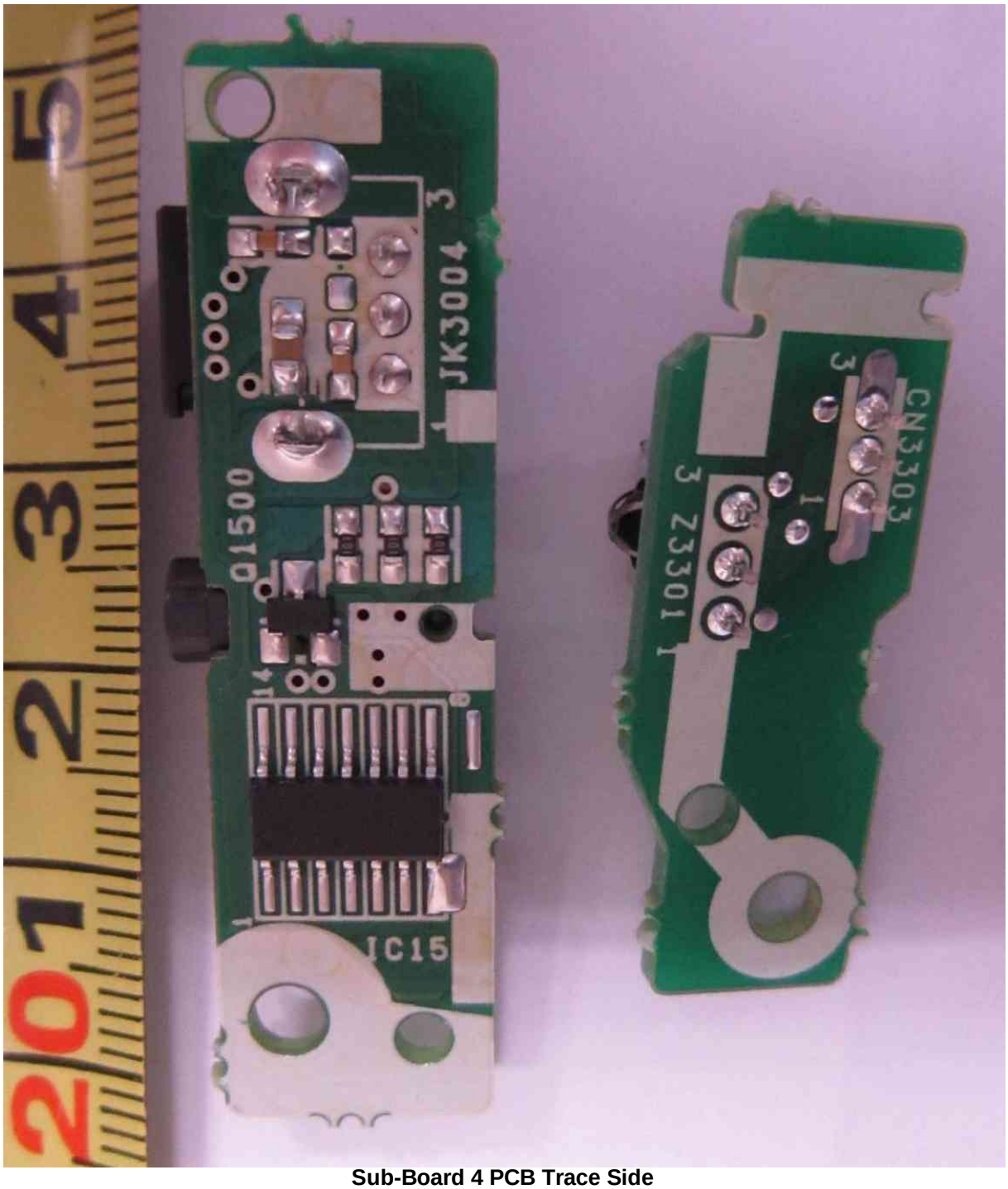
SMPS Board PCB Trace Side

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880



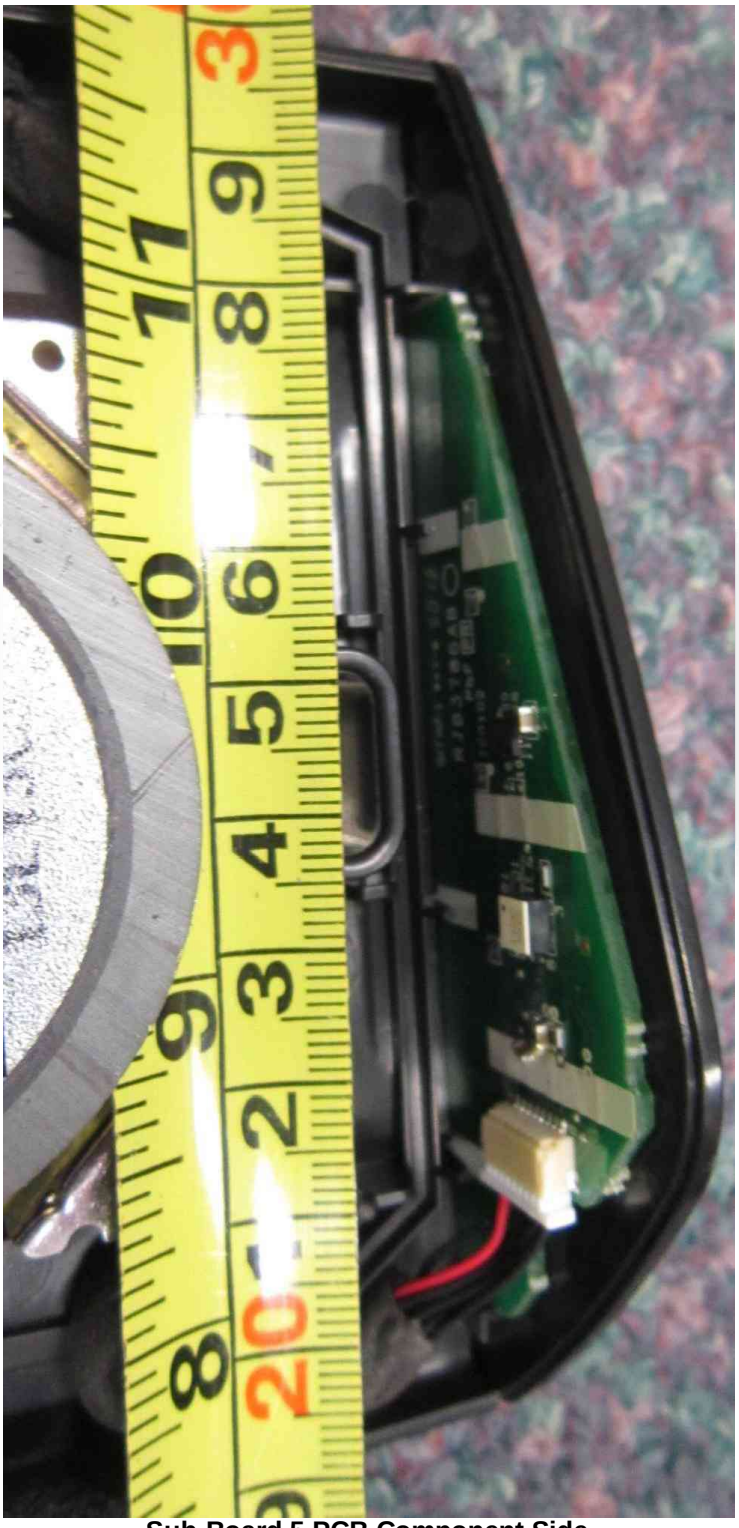
Sub-Board 4 PCB Component Side

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880



Sub-Board 4 PCB Trace Side

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880

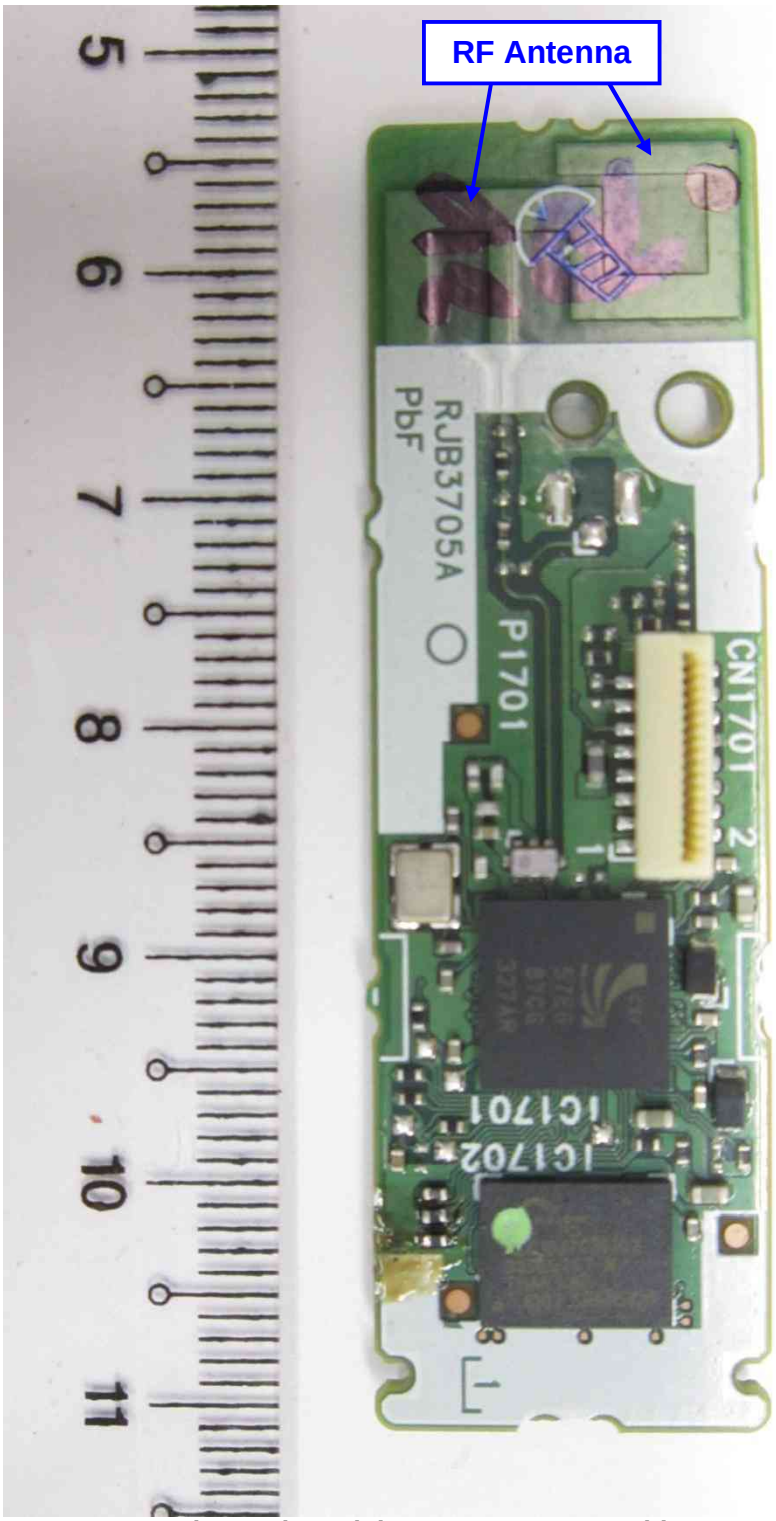


Sub-Board 5 PCB Component Side

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880

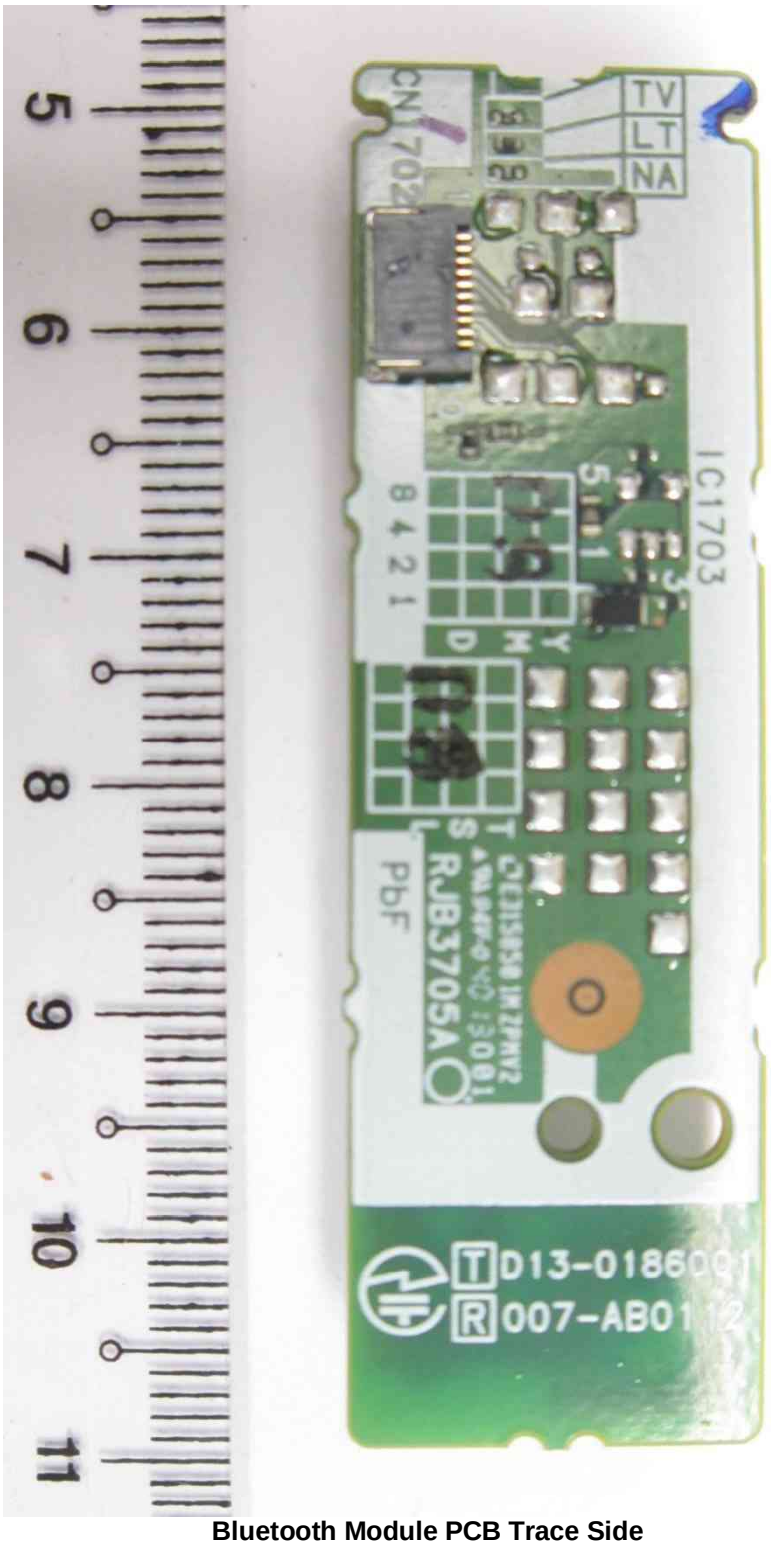
Sub-Board 5 PCB Component Side

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880



Bluetooth Module PCB Component Side

EUT PHOTOGRAPHS – MAIN UNIT, SU-HTB880



Bluetooth Module PCB Trace Side

PSB Singapore

ANNEX B

USER MANUAL
TECHNICAL DESCRIPTION
BLOCK & CIRCUIT DIAGRAMS

(Please refer to manufacturer for details)

ANNEX C

FCC LABEL & POSITION

ANNEX C FCC LABEL & 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.

Sub-Woofer Sample Label

Physical Location of FCC Label on EUT

ANNEX C FCC LABEL & 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.

Sound Bar Sample Label

Physical Location of FCC Label on EUT