



FCC RF Test Report

Product Type : WCDMA Mobile Phone
Applicant : Sky Phone LLC
Address : 1348 Washington Av., Miami Beach
Trade Name : SKY DEVICE
Model Number : SKY 4.5D
Test Specification : FCC 47 CFR PART 15 SUBPART C: Oct., 2013
Receive Date : 20 June, 2014
Test Period : 23 June, 2014 to 23 July, 2014
Issue Date : 31, July 2014

Issue by

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade City,
Taoyuan County 334, Taiwan R.O.C.
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Taiwan Accreditation Foundation accreditation number: 1330

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Revision History

| Rev. | Issue Date | Revisions | Revised By |
|------|---------------|---------------|------------|
| 00 | 31, July 2014 | Initial Issue | |
| | | | |
| | | | |
| | | | |

Verification of Compliance

Issued Date: 07/31/2014

Product Type : WCDMA Mobile Phone
Applicant : Sky Phone LLC
Address : 1348 Washington Av., Miami Beach
Trade Name : SKY DEVICE
Model Number : SKY 4.5D
FCC ID : 2ABOSGC140601
EUT Rated Voltage : AC 120V; DC 3.7V battery, DC 5.0V USB charge;
Test Voltage : AC 120V; DC 3.7V;
Applicable Standard : FCC 47 CFR PART 15 SUBPART C: Oct., 2013
Test Result : Complied
Performing Lab. : A Test Lab Techno Corp.


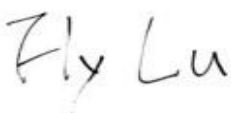
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Taiwan Accreditation Foundation accreditation number: 1330
<http://www.atl-lab.com.tw/e-index.htm>



The above equipment was tested by A Test Lab Techno Corp. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2009 and the energy emitted by the sample tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247 .

The test results of this report relate only to the tested sample identified in this report.

Approved By :  Reviewed By : 
(Manager) _____ (Murphy Wang) (Testing Engineer) _____ (Fly Lu)

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1. General Information

1.1 Applied Standard

Applied Rules: FCC 47 CFR PART 15 SUBPART C: Oct., 2013

Test Method: FCC PUBLIC NOTICE DA 00-705 Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems (Released March 30, 2000)

ANSI C63.4-2003/-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

ANSI C63.10-2009, American National Standard for Testing Unlicensed Wireless Devices.

1.2 Test Location

Test Location 1: A Test Lab Techno Corp.

Address: No. 140-1, Changan Street, Bade City, Taoyuan County 334, Taiwan
R.O.C.

1.3 Test Environment Condition

Ambient Temperature: 19.5 to 25 °C

Ambient Relative Humidity: 45 to 55 %

Atmospheric Pressure: Not applicable



2. Test Summary

| Test Item | FCC Part No. | Requirements | Test Result | Verdict (NOTE) |
|--|---------------------|---|-------------|----------------|
| 20dB Emission Bandwidth (EBW) | 15.247(a)(1) | No limit. | Appendix A | Pass |
| Carrier Frequency Separation | 15.247(a)(1) | $\geq \text{MAX} \{25\text{kHz}, \text{IIF}\{\text{output power} \leq 125\text{mW}, 2/3 * 20\text{dB EBW}, 20\text{dB EBW}\}\}$. | Appendix B | Pass |
| Number of Hopping Channel | 15.247(a)(1)(iii) | ≥ 15 channels. | Appendix C | Pass |
| Time of Occupancy (Dwell Time) | 15.247(a)(1)(iii) | $< 0.4\text{s}$ within a period of $(0.4\text{s} * \text{hopping number})$. | Appendix D | Pass |
| Maximum Peak Conducted Output Power | 15.247(b)(1) | $< 1\text{ W}$ if using ≥ 75 non-overlapping channels. | Appendix E | Pass |
| Band edge spurious emission | 15.247(d) | $< -20\text{ dBc}/100\text{ kHz}$ if total peak power \leq power limit. | Appendix F | Pass |
| Conducted RF Spurious Emission | 15.247(d) | $< -20\text{ dBc}/100\text{ kHz}$ if total peak power \leq power limit. | Appendix G | Pass |
| Radiated Emissions in the Restricted Bands | 15.247(d) 15.209 | FCC Part 15.209 field strength limit; | Appendix H | Pass |
| AC Power Line Conducted Emissions | 15.207 | FCC Part 15.207 conducted limit; | Appendix I | Pass |

3. Description of the Equipment under Test (EUT)

3.1 General Description

| | |
|--------------------------------|--|
| Product | WCDMA Mobile Phone |
| Trade Name | SKY DEVICE |
| Model Number | SKY 4.5D |
| Applicant | Sky Phone LLC 1348 Washington Av., Miami Beach |
| Manufacturer | Shenzhen Malata Mobile Communication CO.,LTD 25/F,Malata Technology Building,NO9998 Shennan Rd,Hi-tech Park, Nanshan,Shenzhen,P.R. China 518057. |
| FCC ID | 2ABOSGC140601 |
| Frequency Range | 2402 ~ 2480 MHz |
| Modulation Type | GFSK for 1Mbps |
| | $\pi/4$ -DQPSK for 2Mbps |
| | 8DPSK for 3Mbps |
| Antenna Type | Internal |
| Antenna Gain | 0 dBi |
| RF Output Power (Conducted) | GFSK for 1Mbps : 3.285 dBm / 2.128 mW $\pi/4$ -DQPSK for 2Mbps : 2.475 dBm / 1.768 mW 8DPSK for 3Mbps : 2.481 dBm / 1.771 mW |
| 20dB bandwidth | 0.831MHz for GFSK 1.144MHz for $\pi/4$ -DQPSK&8DPSK |

NOTE: Only Bluetooth test data included in this report.

3.2 EUT Identity

| IMEI No. | |
|----------|-----------------|
| SIM 1 | 868817019960135 |
| SIM 2 | 868817019960093 |

NOTE: Unless otherwise noted in the report, the functional boards installed in the units shall be selected from the below list, but not means all the functional boards listed below shall be installed in one unit.

4. General Test Conditions / Configurations

4.1 EUT Configurations

4.1.1 General Configurations

| Configuration | Description |
|---------------------|--|
| Test Antenna Ports | Until otherwise specified, <ul style="list-style-type: none"> - All TX tests are performed at all TX antenna ports of the EUT, and - All RX tests are performed at all RX antenna ports of the EUT. |
| Multiple RF Sources | Other than the tested RF source of the EUT, other RF source(s) are disabled or shutdown during measurements. |

4.1.2 Customized Configurations

| # EUT Conf. | Signal Description | Operating Frequency |
|---------------|--|----------------------|
| TM1_DH5_Hop | GFSK modulation, package type DH5, hopping on. | --- |
| TM1_DH5_Ch0 | GFSK modulation, package type DH5, hopping off. | Ch No. 0 / 2402 MHz |
| TM1_DH5_Ch39 | GFSK modulation, package type DH5, hopping off. | Ch No. 39 / 2441 MHz |
| TM1_DH5_Ch78 | GFSK modulation, package type DH5, hopping off. | Ch No. 78 / 2480 MHz |
| TM2_2DH5_Hop | $\pi/4$ -DQPSK modulation, package type 2DH5, hopping on. | --- |
| TM2_2DH5_Ch0 | $\pi/4$ -DQPSK modulation, package type 2DH5, hopping off. | Ch No. 0 / 2402 MHz |
| TM2_2DH5_Ch39 | $\pi/4$ -DQPSK modulation, package type 2DH5, hopping off. | Ch No. 39 / 2441 MHz |
| TM2_2DH5_Ch78 | $\pi/4$ -DQPSK modulation, package type 2DH5, hopping off. | Ch No. 78 / 2480 MHz |
| TM3_3DH5_Hop | 8DPSK modulation, package type 3DH5, hopping on. | --- |
| TM3_3DH5_Ch0 | 8DPSK modulation, package type 3DH5, hopping off. | Ch No. 0 / 2402 MHz |
| TM3_3DH5_Ch39 | 8DPSK modulation, package type 3DH5, hopping off. | Ch No. 39 / 2441 MHz |
| TM3_3DH5_Ch78 | 8DPSK modulation, package type 3DH5, hopping off. | Ch No. 78 / 2480 MHz |

4.2 Test Environments

NOTE: The values used in the test report may be stringent than the declared.

| Environment Parameter | Selected Values During Tests | | |
|-----------------------|------------------------------|---------|-------------------|
| | Temperature | Voltage | Relative Humidity |
| NTNV | Ambient | 3.7 VDC | Ambient |

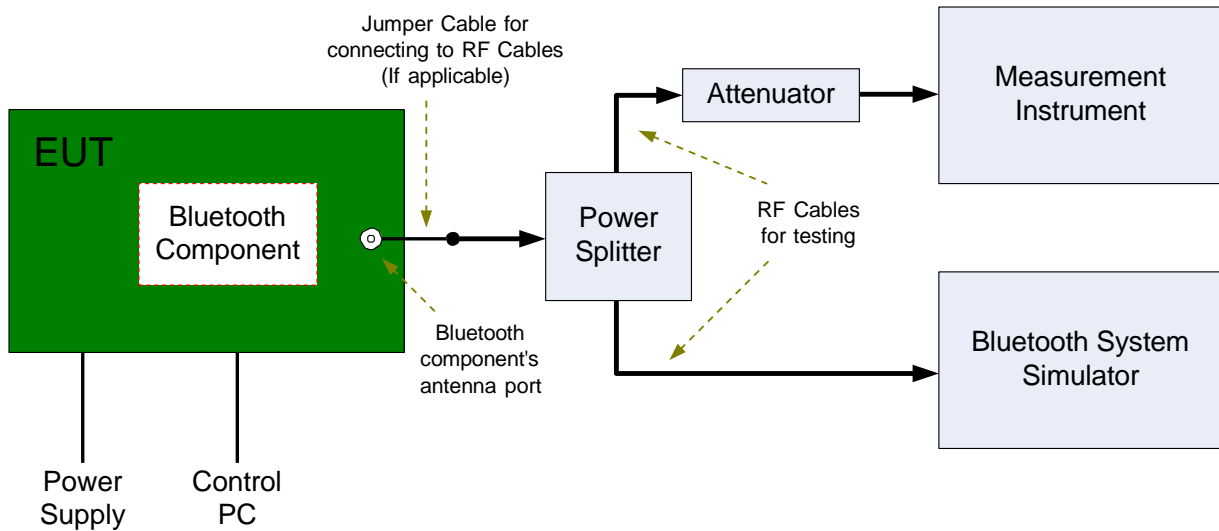
4.3 Measurement Uncertainty

| Test Item | Frequency Range | Uncertainty (dB) | |
|--------------------|---------------------|------------------|--------|
| Conducted Emission | 9kHz ~ 30MHz | ± 2.02 | |
| Radiated Emission | 9kHz ~ 30MHz | ± 3.14 | |
| | 30MHz ~ 1000MHz | Horizontal | ± 3.98 |
| | | Vertical | ± 3.62 |
| | 1000MHz ~ 18000MHz | Horizontal | ± 3.11 |
| | | Vertical | ± 3.07 |
| | 18000MHz ~ 40000MHz | Horizontal | ± 3.66 |
| Vertical | | ± 3.54 | |

4.4 Test Setups

4.3.1 Test Setup 1

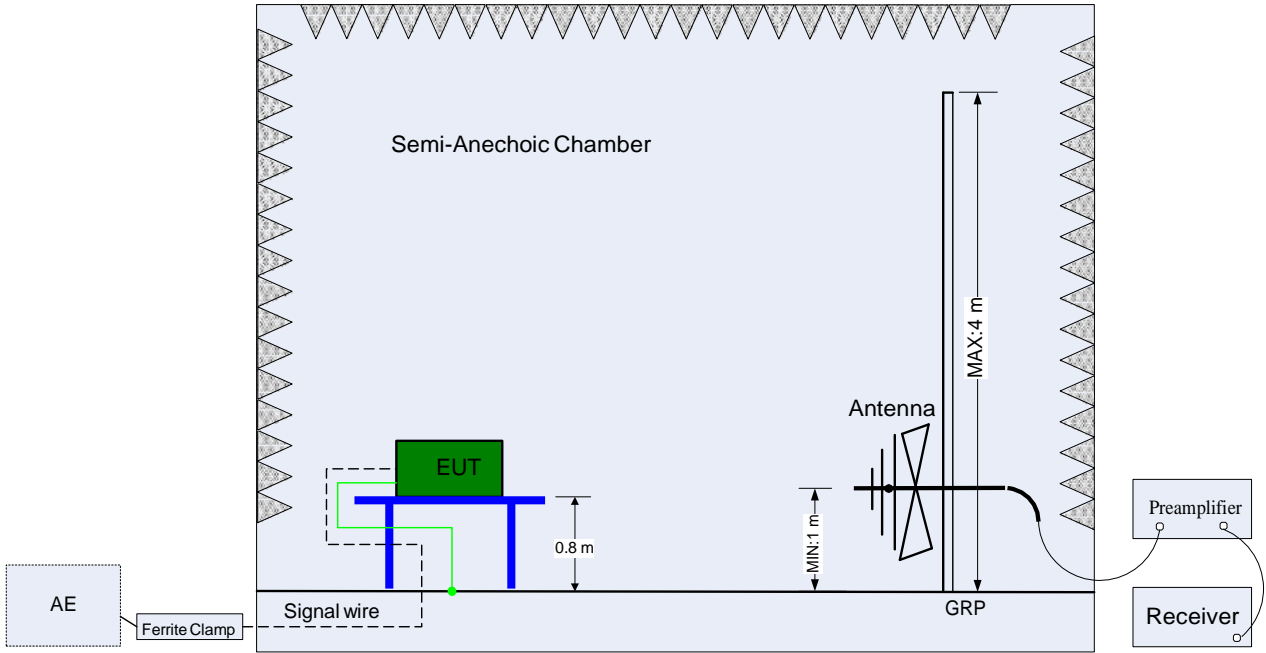
The Bluetooth component's antenna port(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by Bluetooth System Simulator and/or PC/software to emit the specified signals for the purpose of measurements.



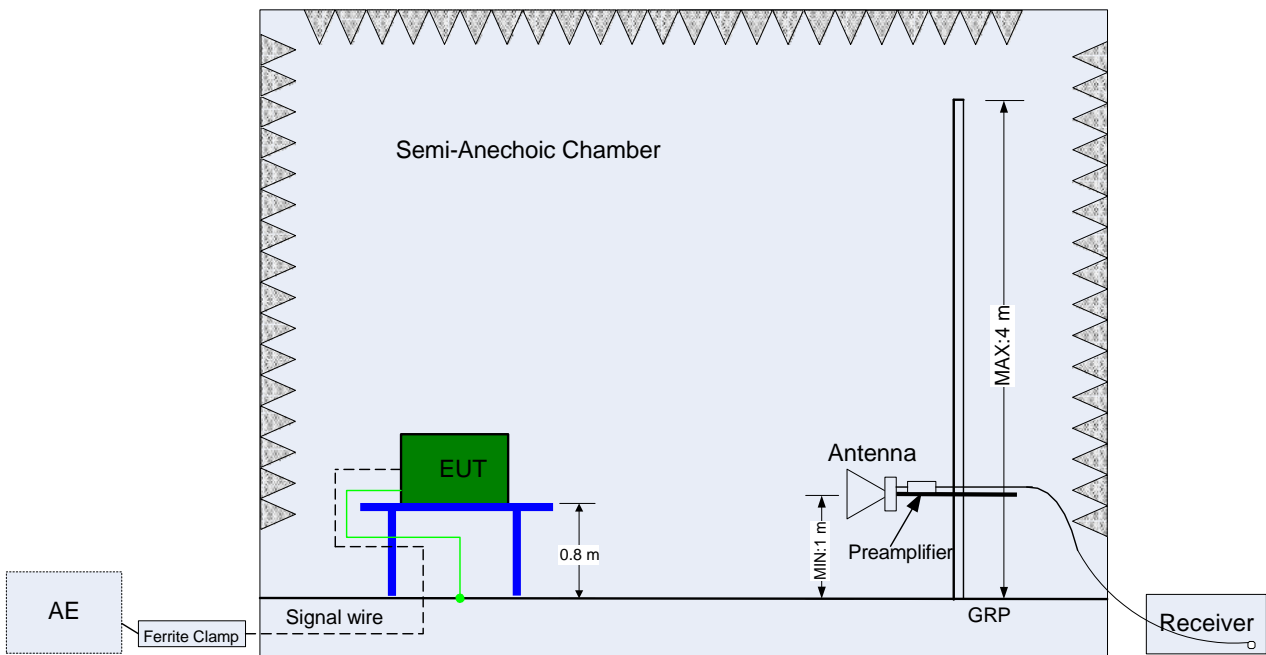
4.3.2 Test Setup 2

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.4. The test distance is 3m. The setup is according to ANSI C63.4 and CAN/CSA-CEI/IEC CISPR 22.

The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).



(Below 1 GHz)

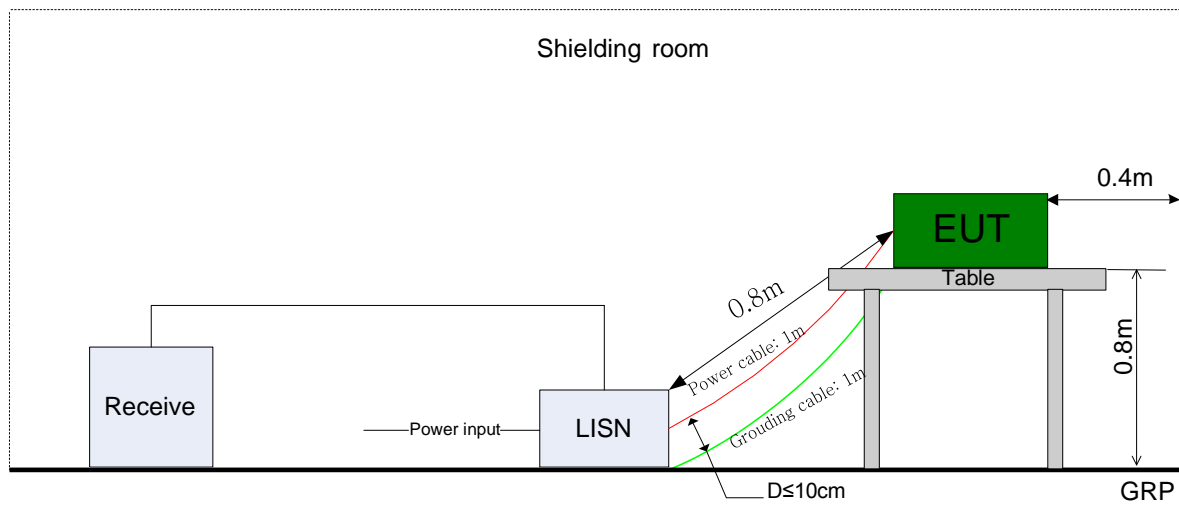


(Above 1 GHz)

4.3.3 Test Setup 3

The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.



4.5 Test Conditions

| Test Case | Test Conditions | |
|---|-----------------|--|
| | Configuration | Description |
| 20dB Emission Bandwidth (EBW) | Meas. Method | DA 00-705 |
| | Test Env. | NTNV |
| | Test Setup | Test Setup 1 |
| | EUT Conf. | TM1_DH5_Ch0, TM1_DH5_Ch39, TM1_DH5_Ch78, TM2_2DH5_Ch0, TM2_2DH5_Ch39, TM2_2DH5_Ch78, TM3_3DH5_Ch0, TM3_3DH5_Ch39, TM3_3DH5_Ch78, TM4_DH5_Ch0, TM4_DH5_Ch19, TM4_DH5_Ch39. |
| Carrier Frequency Separation | Meas. Method | DA 00-705 |
| | Test Env. | NTNV |
| | Test Setup | Test Setup 1 |
| | EUT Conf. | TM1_DH5_Hop, TM2_2DH5_Hop, TM3_3DH5_Hop, |
| Number of Hopping Channel | Meas. Method | DA 00-705 |
| | Test Env. | NTNV |
| | Test Setup | Test Setup 1 |
| | EUT Conf. | TM1_DH5_Hop, TM2_2DH5_Hop, TM3_3DH5_Hop, |
| Time of Occupancy (Dwell Time) | Meas. Method | DA 00-705 |
| | Test Env. | NTNV |
| | Test Setup | Test Setup 1 |
| | EUT Conf. | TM1_DH5_Ch39, TM2_2DH5_Ch39, TM3_3DH5_Ch39. |
| Maximum Peak Conducted Output Power | Meas. Method | DA 00-705 |
| | Test Env. | NTNV |
| | Test Setup | Test Setup 1 |
| | EUT Conf. | TM1_DH5_Ch0, TM1_DH5_Ch39, TM1_DH5_Ch78, TM2_2DH5_Ch0, TM2_2DH5_Ch39, TM2_2DH5_Ch78, TM3_3DH5_Ch0, TM3_3DH5_Ch39, TM3_3DH5_Ch78, TM4_DH5_Ch0, TM4_DH5_Ch19, TM4_DH5_Ch39. |
| Band edge spurious emission | Meas. Method | DA 00-705 |
| | Test Env. | NTNV |
| | Test Setup | Test Setup 1 |
| | EUT Conf. | TM1_DH5_Ch0, TM1_DH5_Ch78, TM2_2DH5_Ch0, TM2_2DH5_Ch78, TM3_3DH5_Ch0, TM3_3DH5_Ch78. |

| Test Case | Test Conditions | | |
|--|-----------------|---|--|
| | Configuration | Description | |
| | | TM4_DH5_Ch0, TM4_DH5_Ch39. | |
| Conducted RF Spurious Emission | Meas. Method | DA 00-705 | |
| | Test Env. | NTNV | |
| | Test Setup | Test Setup 1 | |
| | EUT Conf. | TM1_DH5_Ch0, TM1_DH5_Ch39, TM1_DH5_Ch78, TM2_2DH5_Ch0, TM2_2DH5_Ch39, TM2_2DH5_Ch78, TM3_3DH5_Ch0, TM3_3DH5_Ch39, TM3_3DH5_Ch78. TM4_DH5_Ch0, TM4_DH5_Ch19, TM4_DH5_Ch39. | |
| Radiated Emissions in the Restricted Bands | Meas. Method | DA 00-705, C63.4, C63.10. (1) 30 MHz to 1 GHz: Pre: RBW = 100 kHz; VBW = 300 kHz; Det. = Peak. Final: RBW = 120 kHz; Det. = CISPR Quasi-Peak. (2) 1 GHz to 26.5 GHz: Average: RBW = 1 MHz; VBW = 10 Hz; Det. = Peak; Sweep-time = Auto; Trace = Single. Peak: RBW = 1 MHz; VBW = 3 MHz; Det. = Peak; Sweep-time = Auto; Trace ≥ Max Hold * 100. | |
| | Test Env. | NTNV | |
| | Test Setup | Test Setup 2 | |
| | EUT Conf. | 30 MHz -1 GHz | TM1_DH5_Ch0 (Worst Conf.). |
| | | 1-3 GHz | TM1_DH5_Ch0, TM1_DH5_Ch39, TM1_DH5_Ch78, TM2_2DH5_Ch0, TM2_2DH5_Ch39, TM2_2DH5_Ch78, TM3_3DH5_Ch0, TM3_3DH5_Ch39, TM3_3DH5_Ch78. TM4_DH5_Ch0, TM4_DH5_Ch19, TM4_DH5_Ch39. |
| | | 3-18 GHz | TM1_DH5_Ch0 (Worse Conf.), TM1_DH5_Ch39 (Worse Conf.), TM1_DH5_Ch78 (Worse Conf.), TM4_DH5_Ch19 (Worse Conf.), |
| | | 18-26.5 GHz | TM1_DH5_Ch0 (Worst Conf.). |
| AC Power Line Conducted Emissions | Meas. Method | AC mains conducted. Pre: RBW = 10 kHz; Det. = Peak. Final: RBW = 9 kHz; Det. = CISPR Quasi-Peak & Average. | |
| | Test Env. | NTNV | |
| | Test Setup | Test Setup 3 | |
| | EUT Conf. | TM1_DH5_Ch39. | |

Note: For Radiated Emissions, By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "Z axis" position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

5 Main Test Instruments

| Equipment Name | Manufacturer | Model | Serial Number | Cal Date | Cal. Period |
|---|--------------------------------|-----------|---------------|------------|-------------|
| MXA Signal Analyzer | Agilent | N9020A | MY53420615 | 2014.05.12 | 1 year |
| Power Sensor | Agilent | U2021XA | MY53180015 | 2013.09.27 | 1 year |
| Power Sensor | Agilent | U2021XA | MY53260040 | 2013.09.27 | 1 year |
| Power Sensor | Agilent | U2021XA | MY53360002 | 2013.09.27 | 1 year |
| Power Sensor | Agilent | U2021XA | MY53360006 | 2013.09.27 | 1 year |
| USB Modular Simultaneous Data Acquisition | Agilent | U2531A | TW53353509 | N.C.R | 1 year |
| USB Modular Simultaneous Data Acquisition | Agilent | U2531A | TW53353511 | N.C.R | 1 year |
| Test Receiver | R&S | ESCI | 100367 | 2014.06.18 | 1 year |
| LISN | R&S | ENV216 | 101040 | 2014.03.07 | 1 year |
| LISN | R&S | ENV216 | 101041 | 2014.03.07 | 1 year |
| RF Pre-selector | Agilent | N9039A | MY46520256 | 2014.01.21 | 1 year |
| Spectrum Analyzer | Agilent | E4446A | MY46180578 | 2014.01.21 | 1 year |
| Pre Amplifier | Agilent | 8449B | 3008A02237 | 2014.01.21 | 1 year |
| Pre Amplifier | Agilent | 8447D | 2944A10961 | 2014.01.21 | 1 year |
| Broadband Antenna (30MHz~1GHz) | SCHWARZBECK MESS-ELEKTRONIK | VULB9163 | 9163-270 | 2014.07.01 | 1 year |
| Horn Antenna (1~18GHz) | SCHWARZBECK MESS-ELEKTRONIK | BBHA9120D | 9120D-550 | 2014.06.10 | 1 year |
| Horn Antenna (18~40GHz) | SCHWARZBECK MESS-ELEKTRONIK | BBHA9170 | 9170-320 | 2014.06.13 | 1 year |
| Loop Antenna | COM-POWER CORPORATION | AL-130 | 121014 | 2013.0814 | 1 year |

END

Appendix A: 20dB Emission Bandwidth (EBW)

1. Result Table

| EUT Conf. | EBW [MHz] | OBW [MHz] | Verdict |
|---------------|-----------|-----------|---------|
| TM1-DH5-Ch0 | 0.8314 | 0.83919 | PASS |
| TM1-DH5-Ch39 | 0.8296 | 0.83910 | PASS |
| TM1-DH5-Ch78 | 0.8304 | 0.83879 | PASS |
| TM2-2DH5-Ch0 | 1.139 | 1.0813 | PASS |
| TM2-2DH5-Ch39 | 1.138 | 1.0812 | PASS |
| TM2-2DH5-Ch78 | 1.142 | 1.0810 | PASS |
| TM3-3DH5-Ch0 | 1.138 | 1.0785 | PASS |
| TM3-3DH5-Ch39 | 1.142 | 1.0789 | PASS |
| TM3-3DH5-Ch78 | 1.144 | 1.0786 | PASS |

2. Test Plot

2.1. TM1-DH5-Ch0



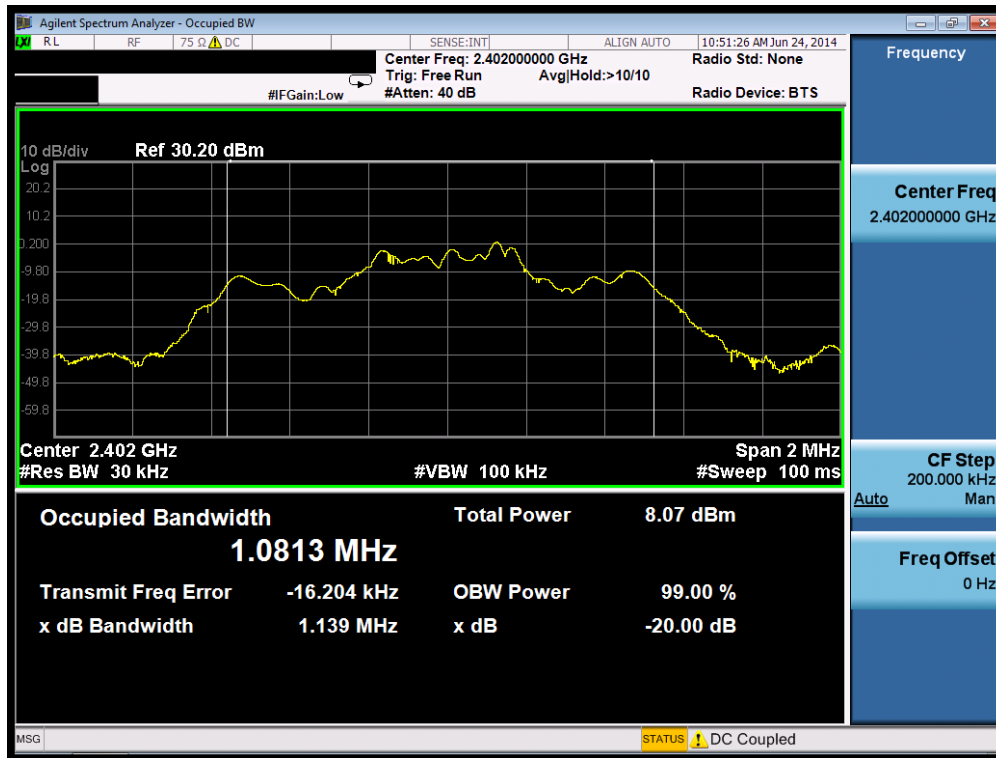
2.2. TM1-DH5-Ch39



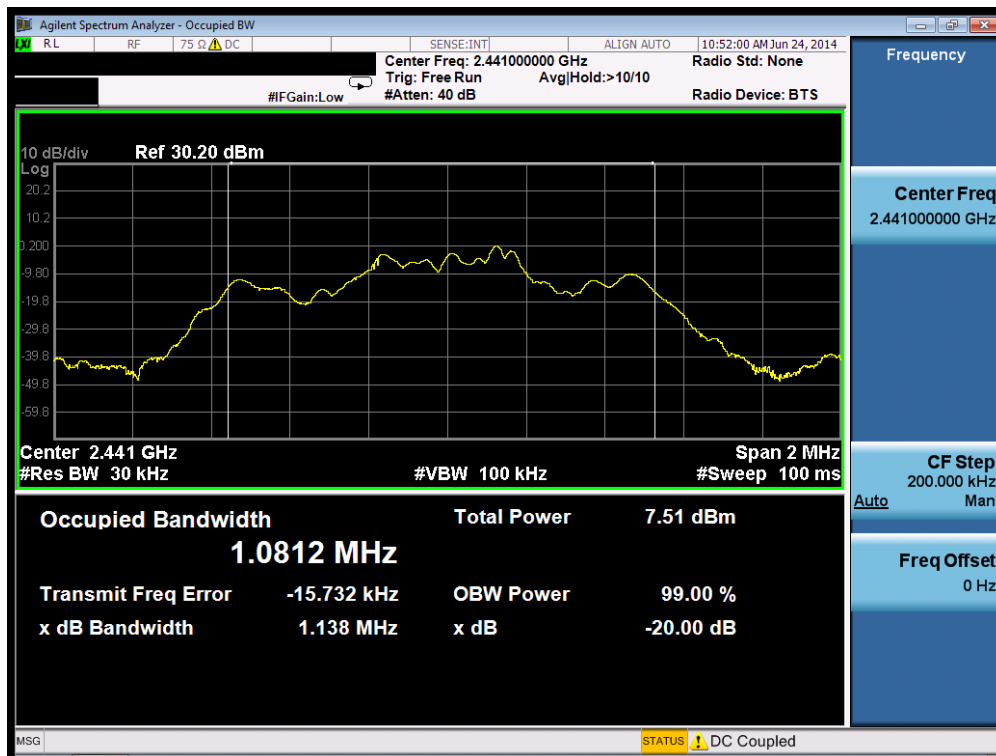
2.3. TM1-DH5-Ch78



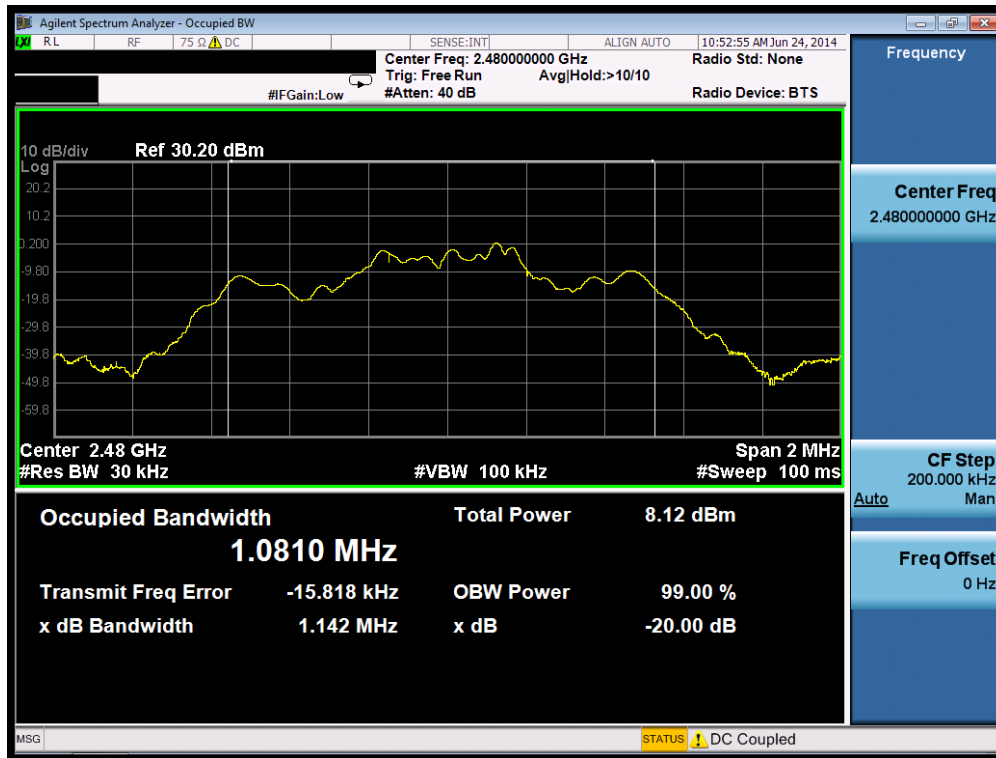
2.4. TM2-2DH5-Ch0



2.5. TM2-2DH5-Ch39



2.6. TM2-2DH5-Ch78



2.7. TM3-3DH5-Ch0



2.8. TM3-3DH5-Ch39



2.9. TM3-3DH5-Ch78



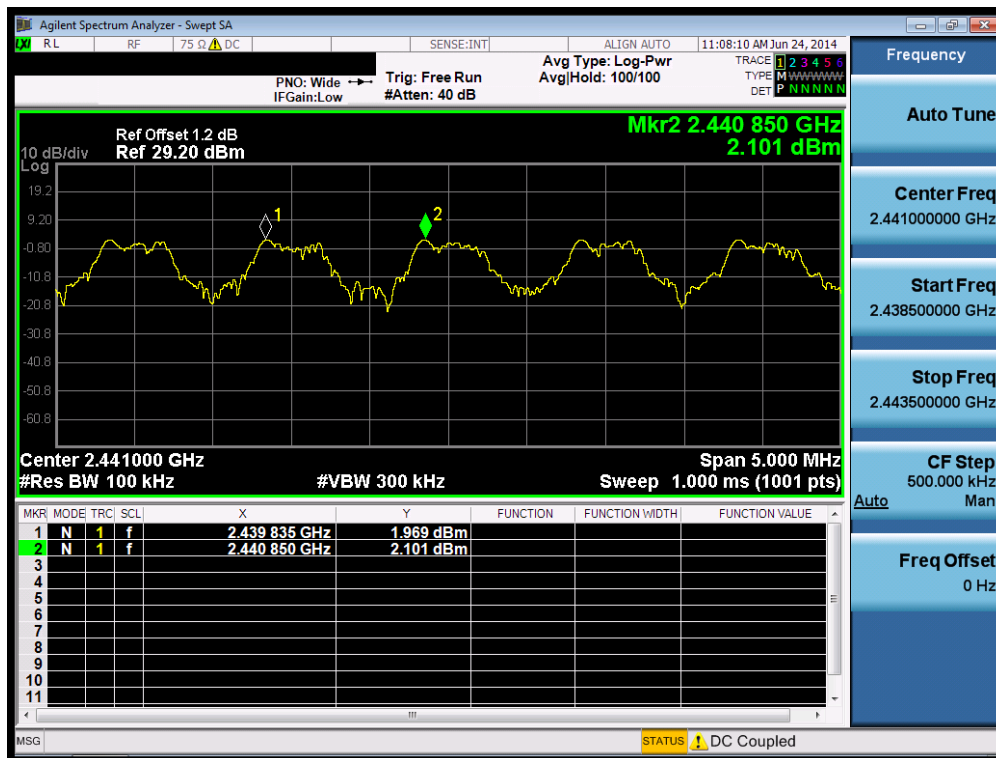
Appendix B: Carrier Frequency Separation

1. Result Table

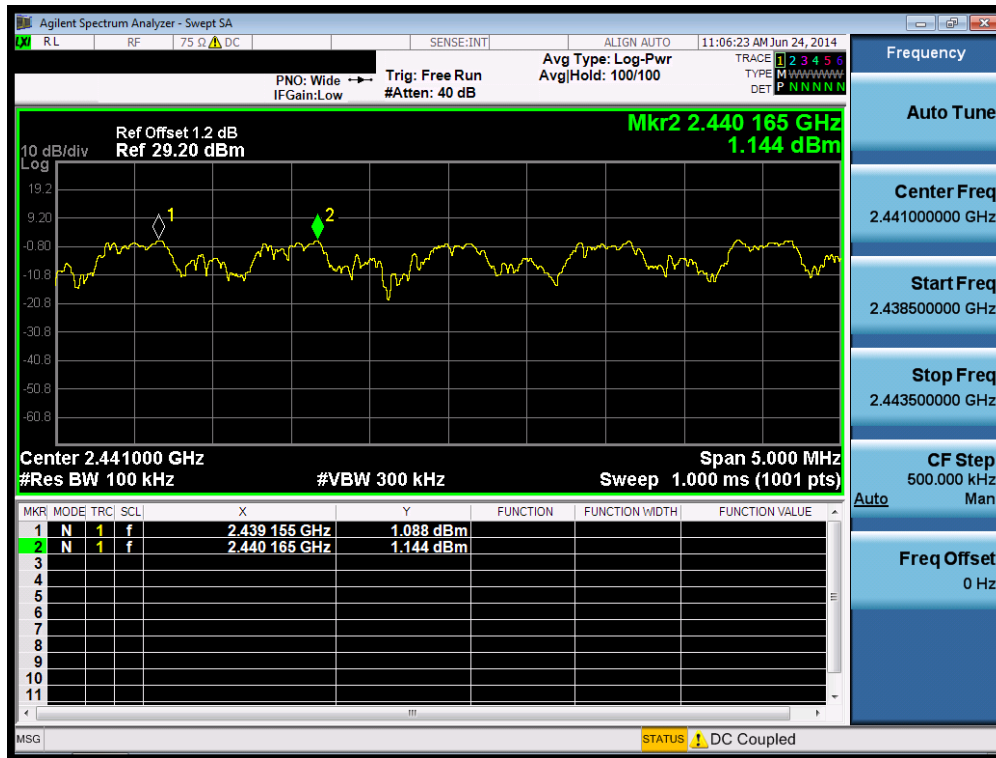
| EUT Conf. | Carrier Frequency Separation [MHz] | Verdict |
|--------------|------------------------------------|---------|
| TM1-DH5-Hop | 1.015 | PASS |
| TM2-2DH5-Hop | 1.010 | PASS |
| TM3-3DH5-Hop | 1.020 | PASS |

2. Test Plot

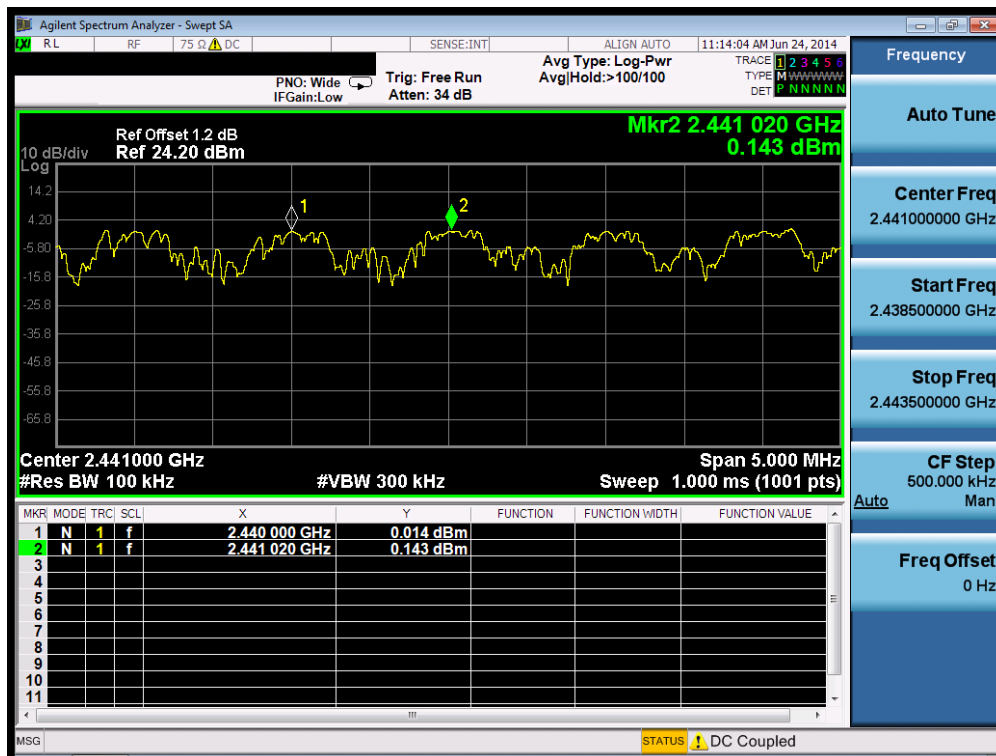
2.1. TM1-DH5-Hop



2.2. TM2-2DH5-Hop



2.3. TM3-3DH5-Hop



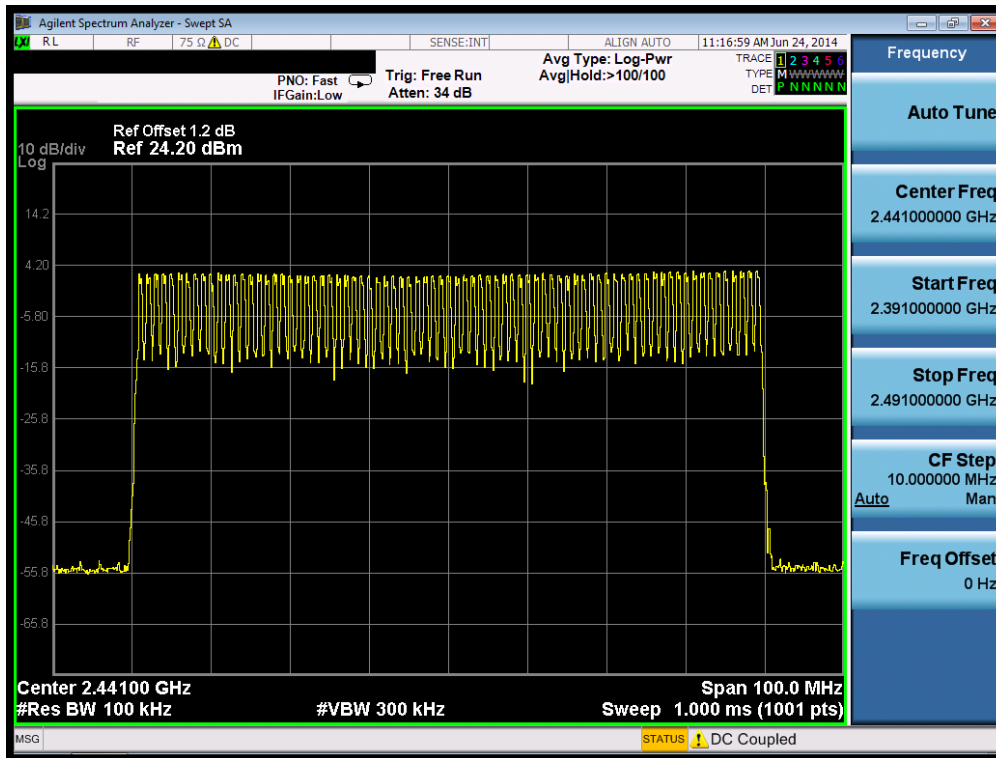
Appendix C: Number of Hopping Channel

1. Result Table

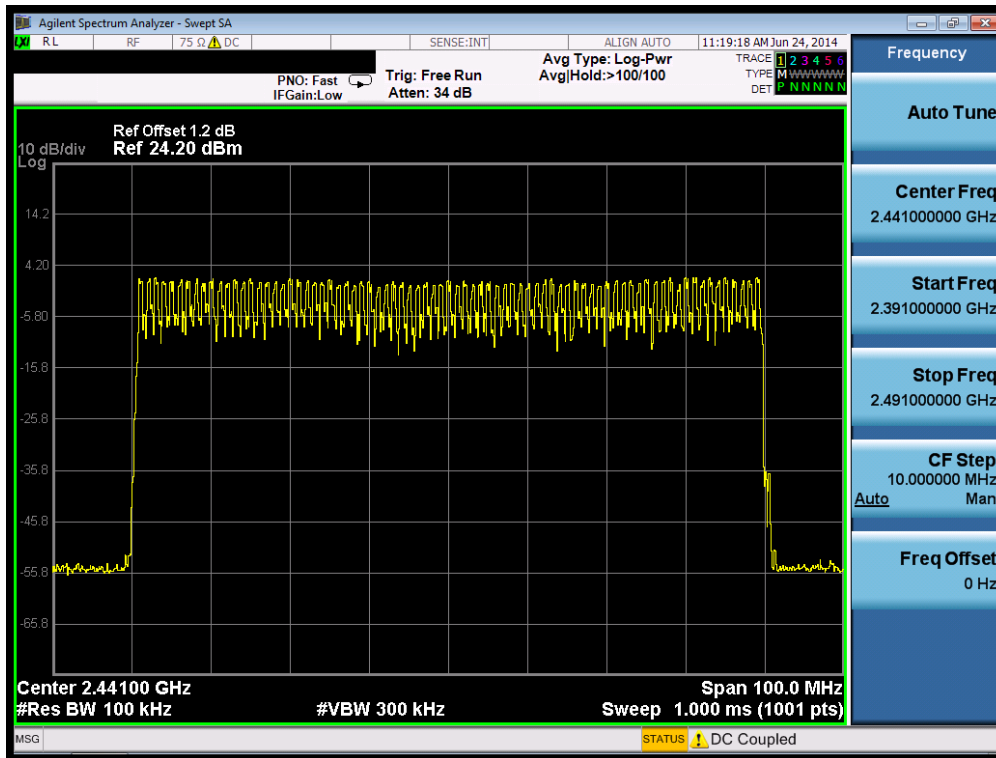
| EUT Conf. | Number of Hopping Channel | Verdict |
|--------------|---------------------------|---------|
| TM1-DH5-Hop | 79 | PASS |
| TM2-2DH5-Hop | 79 | PASS |
| TM3-3DH5-Hop | 79 | PASS |

2. Test Plot

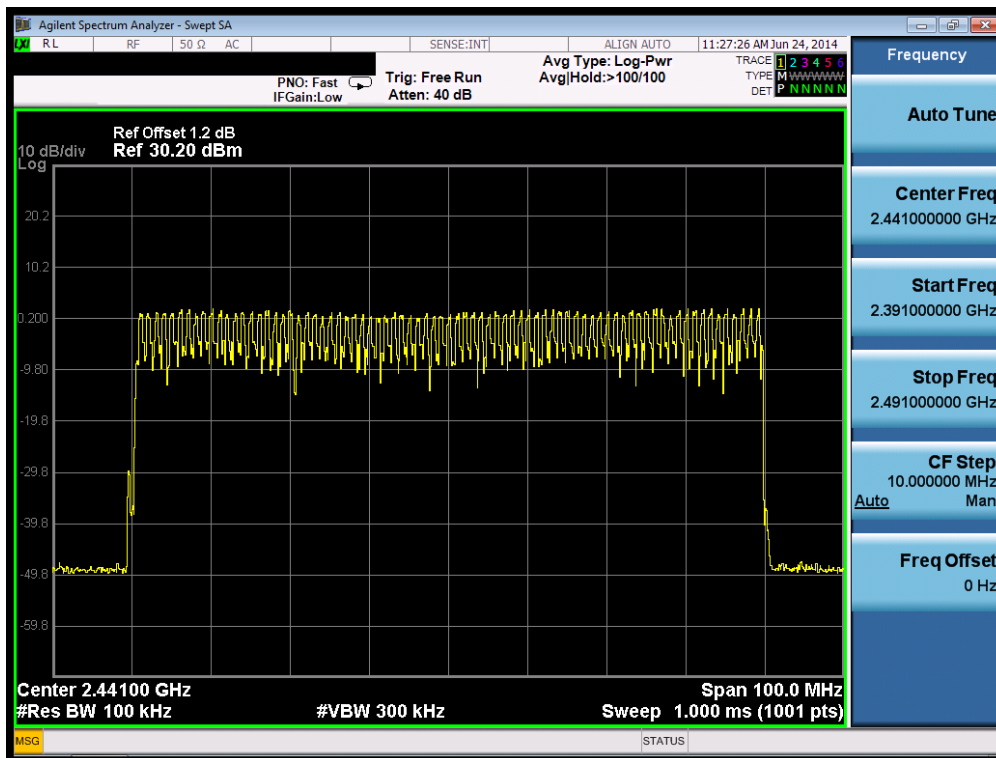
2.1. TM1-DH5-Hop



2.2. TM2-2DH5-Hop



2.3. TM3-3DH5-Hop



Appendix D: Time of Occupancy (Dwell Time)

1. Result Table

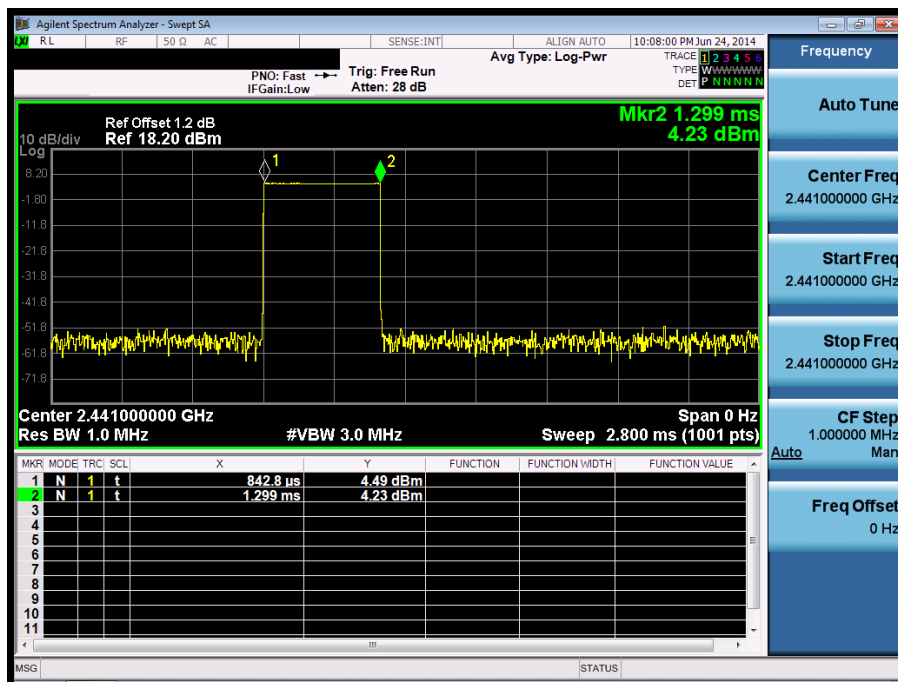
The Dwell Time=Burst Width*Total Hops. The detailed calculations are showed as follows:

- The duration for dwell time calculation: $0.4[s]*\text{hopping number}=0.4[s]*79[\text{ch}]=31.6[s*\text{ch}]$;
- The burst width [ms/hop/ch], which is directly measured, refers to the duration on one channel hop.
- The hops per second for all channels: The selected EUT Conf uses a slot type of 5-Tx&1-Rx and a hopping rate of 1600 [ch*hop/s] for all channels. So the final hopping rate for all channels is $1600/6=266.67$ [ch*hop/s]
- The hops per second on one channel: $266.67 [\text{ch}*\text{hops/s}]/79 [\text{ch}]=3.38$ [hop/s];
- The total hops for all channels within the dwell time calculation duration: $3.38 [\text{hop/s}]*31.6[s*\text{ch}]=106.67$ [hop*ch];
- The dwell time for all channe hoppinls: $106.67 [\text{hop}*\text{ch}]*\text{Burst Width} [\text{ms}/\text{hop}/\text{ch}]$.

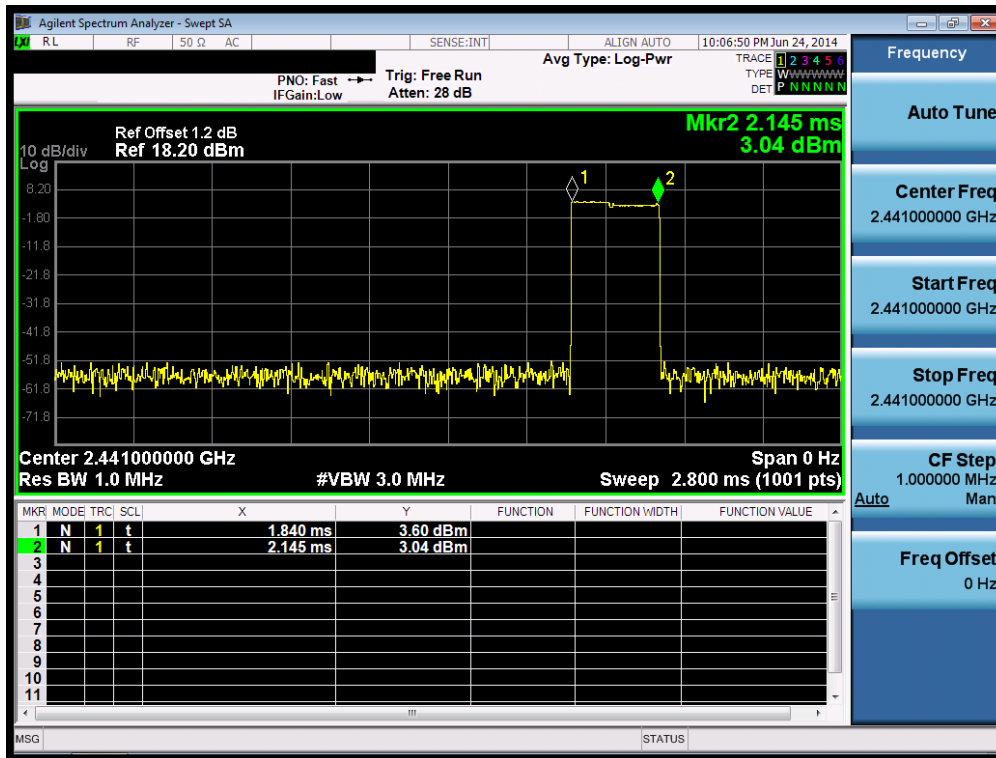
| EUT Conf. | Burst Width [ms/hop/ch] | Total Hops[hop*ch] | Dwell Time[s] | Verdict |
|---------------|-------------------------|--------------------|---------------|---------|
| TM1-DH5-Ch39 | 0.4562 | 106.67 | 0.049 | PASS |
| TM2-2DH5-Ch39 | 0.305 | 106.67 | 0.033 | PASS |
| TM3-3DH5-Ch39 | 0.252 | 106.67 | 0.027 | PASS |

2. Test Plot

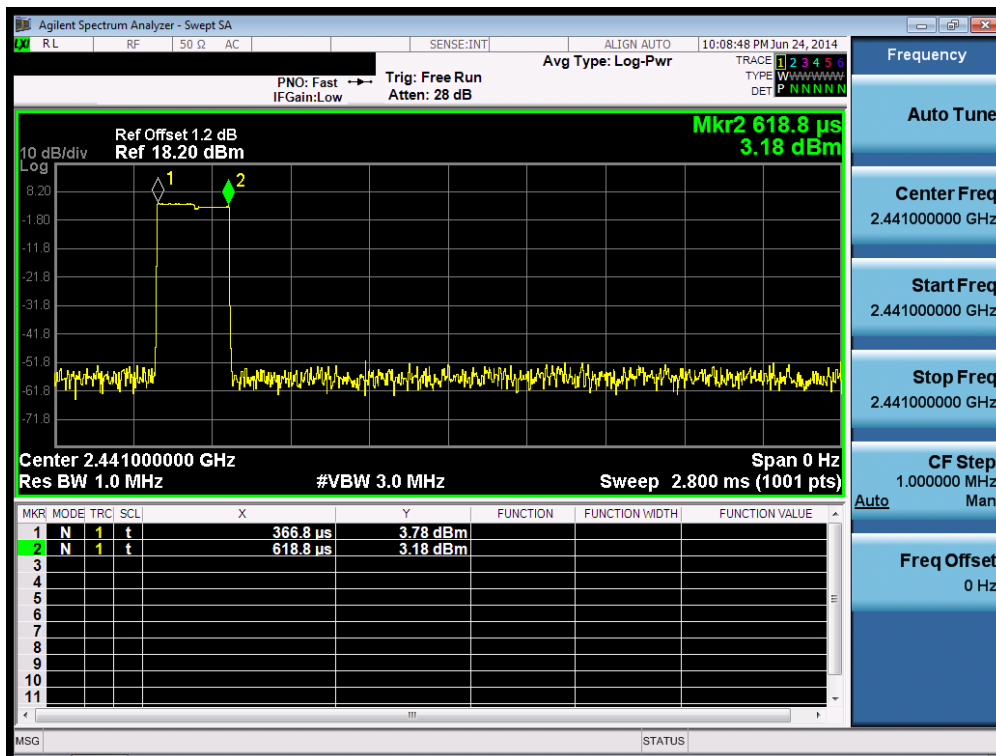
2.1. TM1-DH5-Ch39



2.2. TM2-2DH5-Ch39



2.3. TM3-3DH5-Ch39



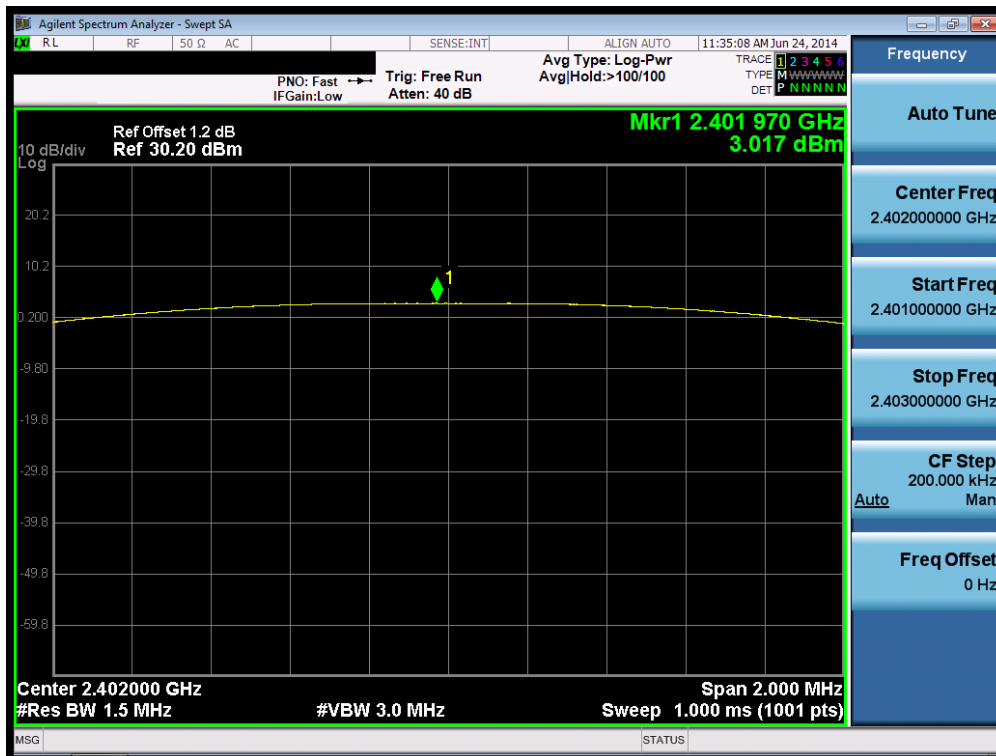
Appendix E: Maximum Peak Conducted Output Power

1. Result Table

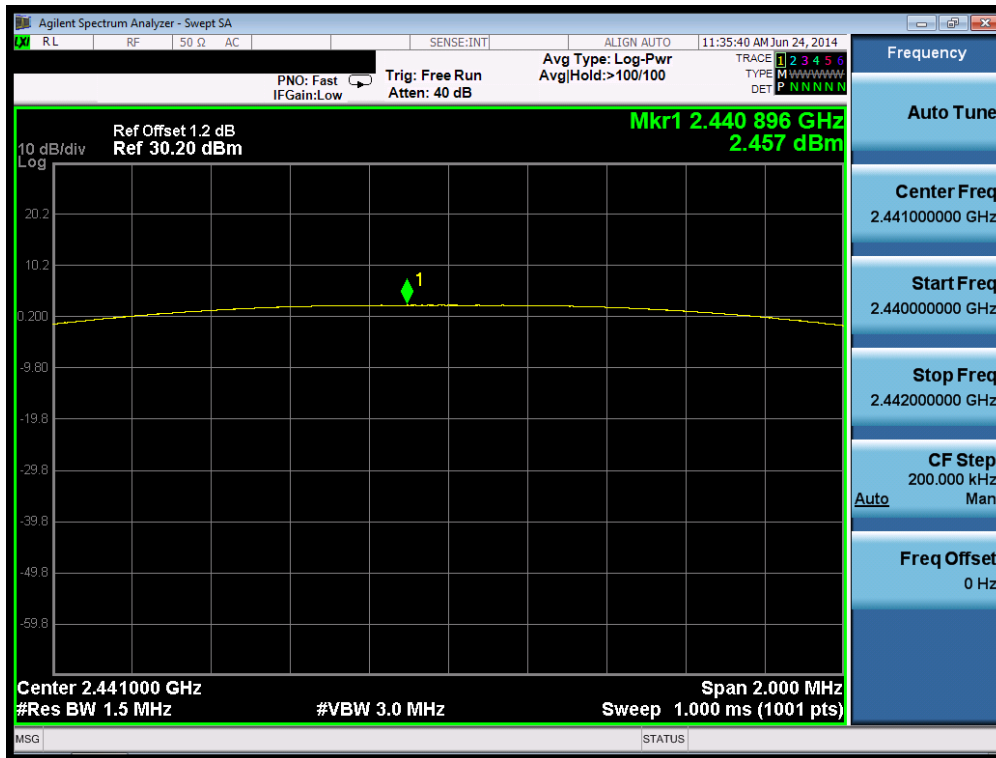
| EUT Conf. | Maximum Peak Output Power [dBm] | Verdict |
|---------------|---------------------------------|---------|
| TM1-DH5-Ch0 | 3.017 | PASS |
| TM1-DH5-Ch39 | 2.457 | PASS |
| TM1-DH5-Ch78 | 3.285 | PASS |
| TM2-2DH5-Ch0 | 2.475 | PASS |
| TM2-2DH5-Ch39 | 1.770 | PASS |
| TM2-2DH5-Ch78 | 2.466 | PASS |
| TM3-3DH5-Ch0 | 2.441 | PASS |
| TM3-3DH5-Ch39 | 1.758 | PASS |
| TM3-3DH5-Ch78 | 2.481 | PASS |

2. Test Plot

2.1. TM1-DH5-Ch0



2.2. TM1-DH5-Ch39



2.3. TM1-DH5-Ch78



2.4. TM2-2DH5-Ch0



2.5. TM2-2DH5-Ch39



2.6. TM2-2DH5-Ch78



2.7. TM3-3DH5-Ch0



2.8. TM3-3DH5-Ch39



2.9. TM3-3DH5-Ch78



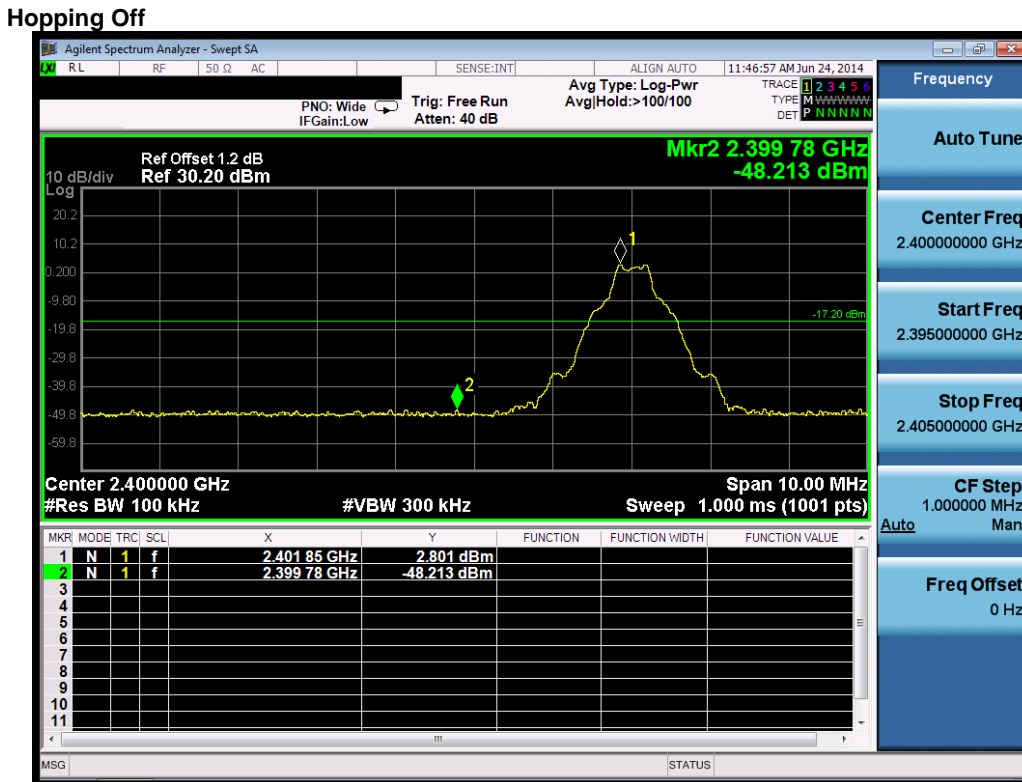
Appendix F: Band Edge Spurious Emission

1. Result Table

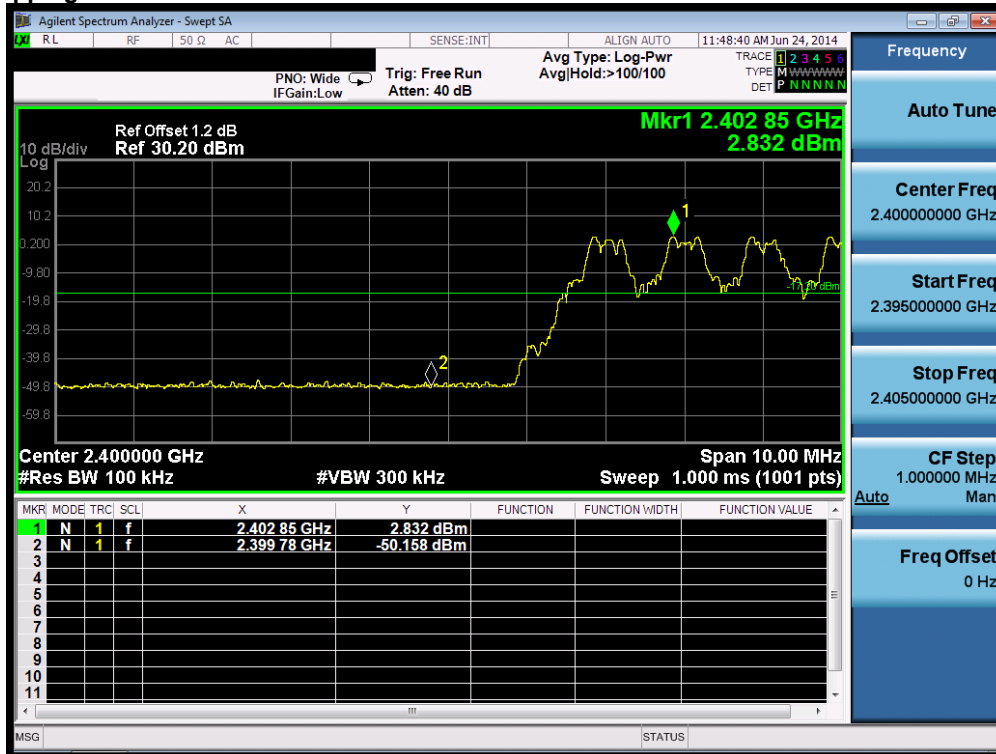
| EUT Conf. | Channel NO. | Carrier Frequency [MHz] | Carrier Power [dBm] | Frequency Hopping | Max Spurious Level [dBm] | Limit [dBm] | Verdict |
|---------------|-------------|-------------------------|---------------------|-------------------|--------------------------|-------------|---------|
| TM1-DH5-Ch0 | 0 | 2402 | 2.801 | Off | -48.213 | -17.20 | PASS |
| | | | 2.832 | On | -50.158 | -17.20 | PASS |
| TM1-DH5-Ch78 | 78 | 2480 | 3.088 | Off | -49.153 | -16.92 | PASS |
| | | | 3.079 | On | -48.388 | -16.92 | PASS |
| TM2-2DH5-Ch0 | 0 | 2402 | 2.179 | Off | -50.627 | -17.90 | PASS |
| | | | 1.687 | On | -48.934 | -18.32 | PASS |
| TM2-2DH5-Ch78 | 78 | 2480 | 2.075 | Off | -50.135 | -17.93 | PASS |
| | | | 0.911 | On | -49.860 | -19.10 | PASS |
| TM3-3DH5-Ch0 | 0 | 2402 | 2.199 | Off | -49.831 | -17.81 | PASS |
| | | | 1.757 | On | -48.988 | -18.25 | PASS |
| TM3-3DH5-Ch78 | 78 | 2480 | 2.081 | Off | -49.669 | -17.92 | PASS |
| | | | 1.440 | On | -49.490 | -18.56 | PASS |

2. Test Plot

2.1. TM1-DH5-Ch0

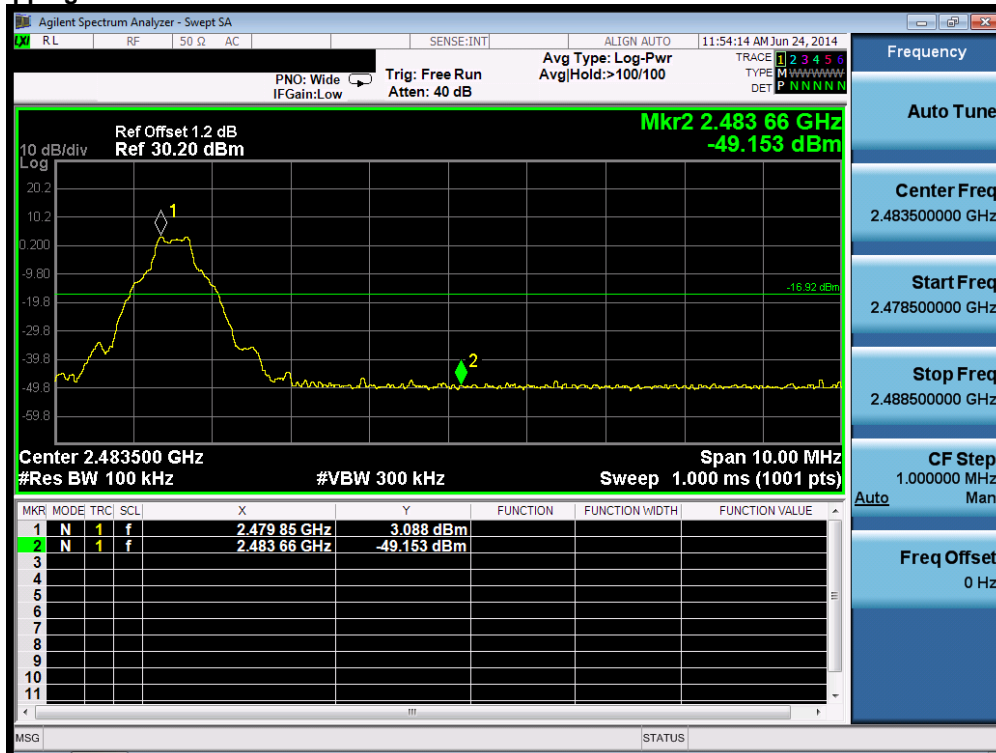


Hopping On

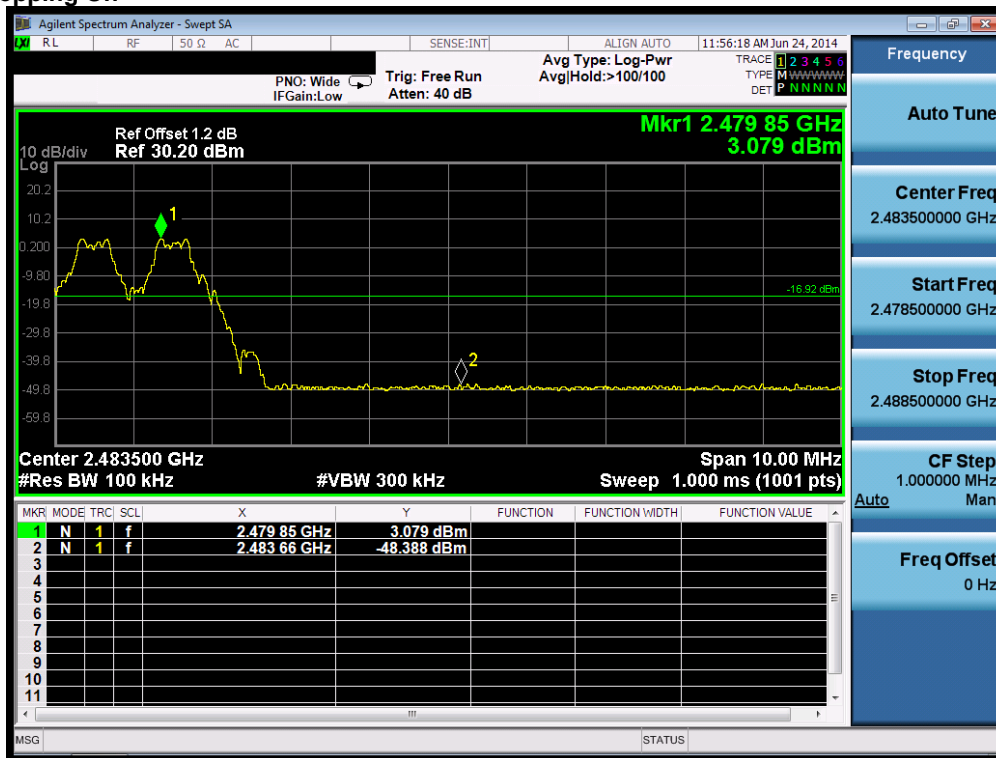


2.2. TM1-DH5-Ch78

Hopping Off

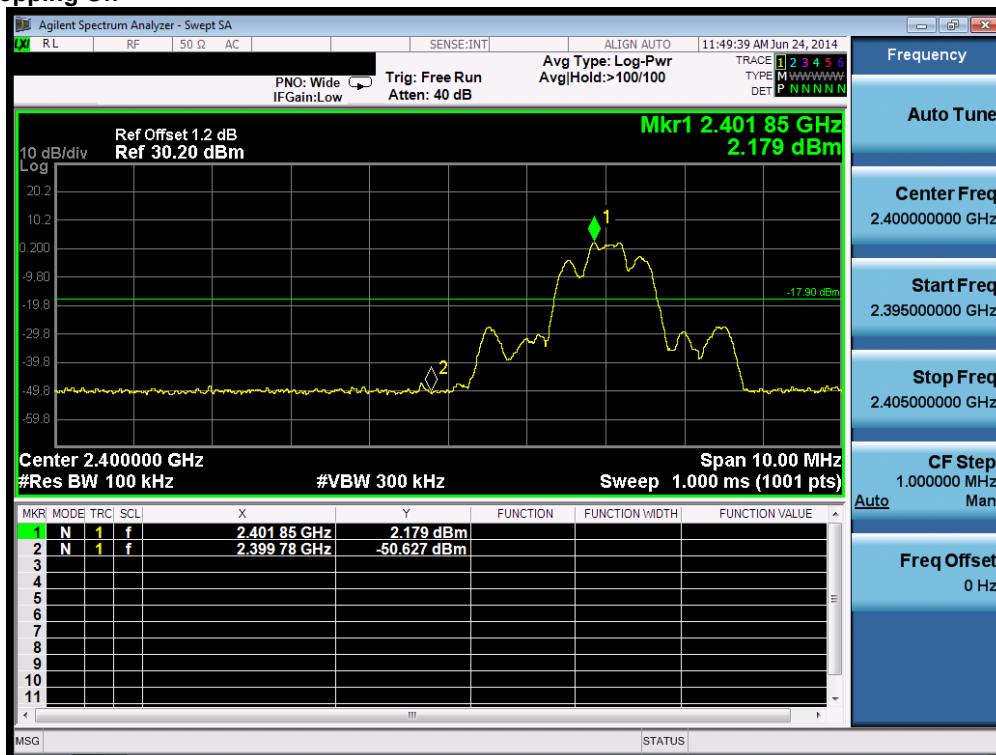


Hopping On



2.3. TM2-2DH5-Ch0

Hopping Off

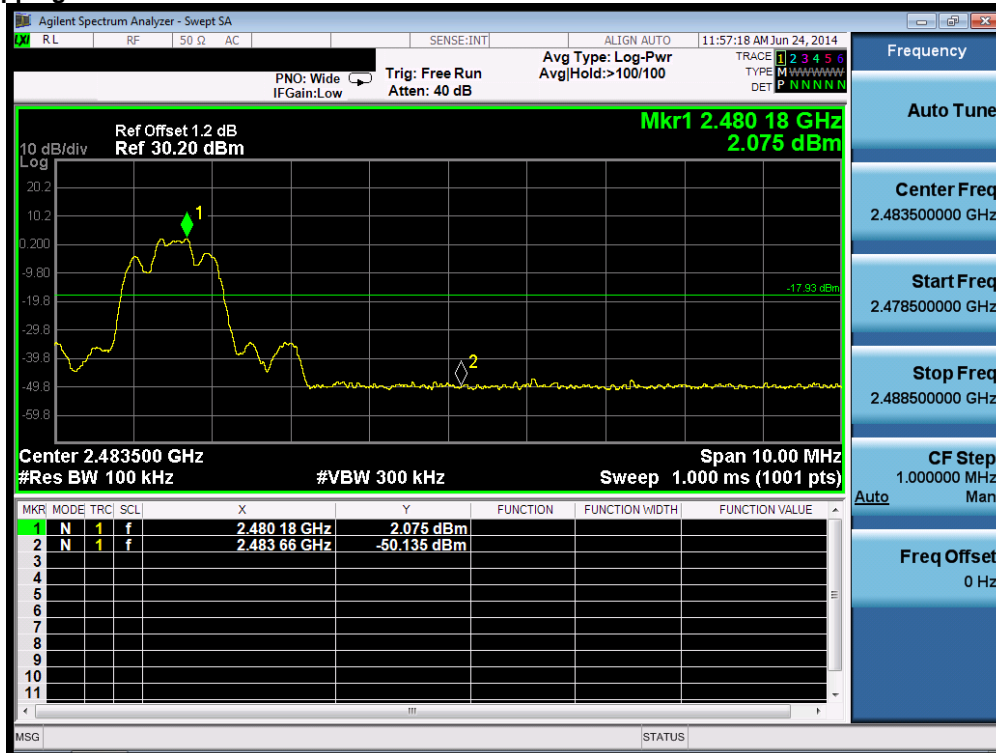


Hopping On



2.4. TM2-2DH5-Ch78

Hopping Off

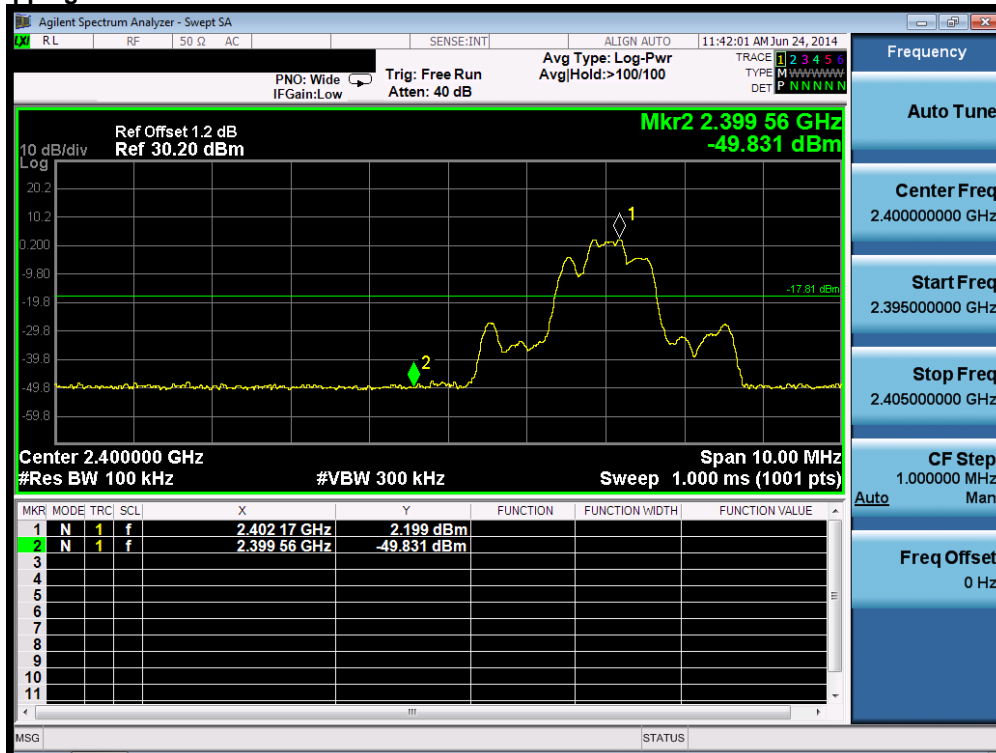


Hopping On



2.5. TM3-3DH5-Ch0

Hopping Off

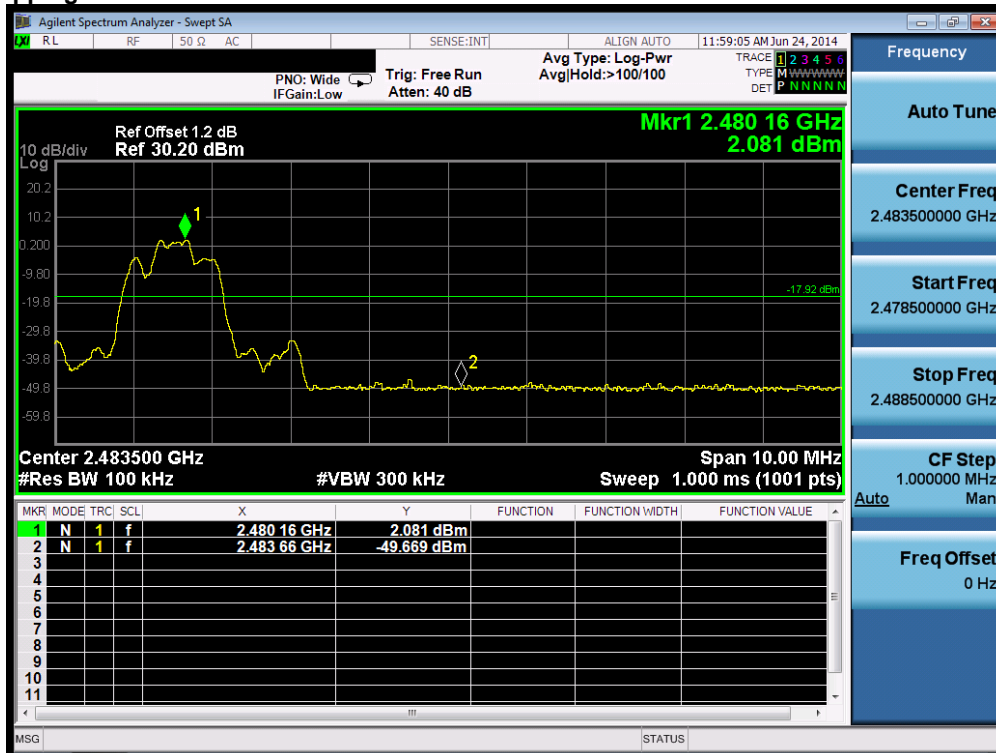


Hopping On

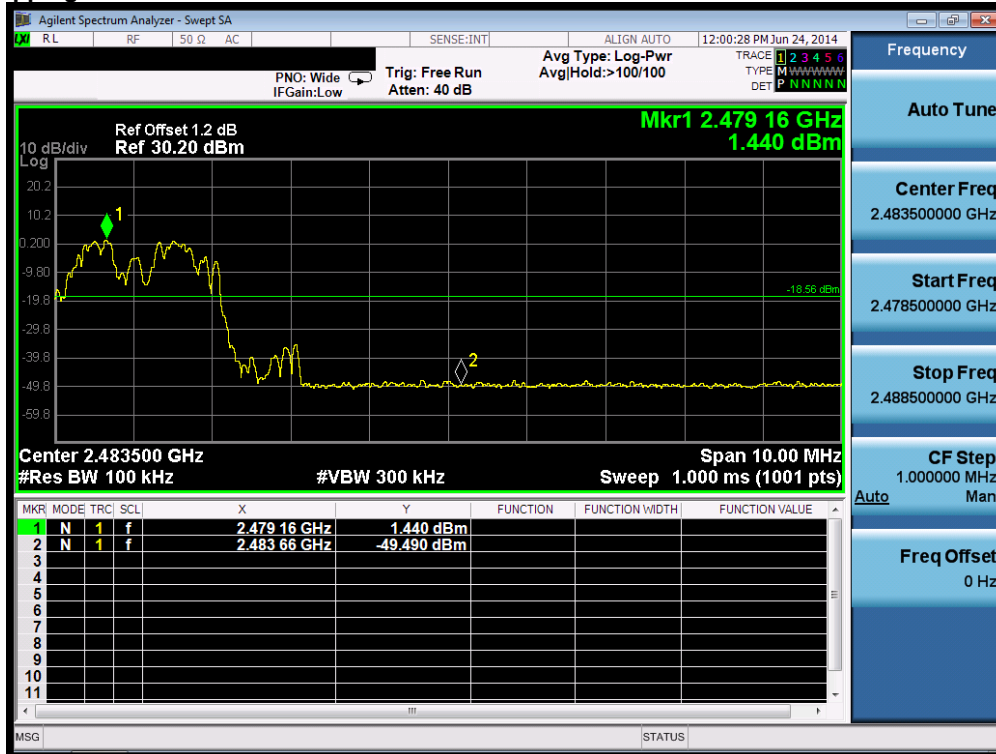


2.6. TM3-3DH5-Ch78

Hopping Off



Hopping On



Appendix G: Conducted RF Spurious Emission

1. Result Table

| EUT Conf. | Pref [dBm] | Puw[dBm] | Verdict |
|---------------|------------|----------|---------|
| TM1-DH5-Ch0 | 2.844 | <Limit | PASS |
| TM1-DH5-Ch39 | 2.279 | <Limit | PASS |
| TM1-DH5-Ch78 | 3.097 | <Limit | PASS |
| TM2-2DH5-Ch0 | 2.202 | <Limit | PASS |
| TM2-2DH5-Ch39 | 1.541 | <Limit | PASS |
| TM2-2DH5-Ch78 | 1.693 | <Limit | PASS |
| TM3-3DH5-Ch0 | 2.168 | <Limit | PASS |
| TM3-3DH5-Ch39 | 1.538 | <Limit | PASS |
| TM3-3DH5-Ch78 | 2.228 | <Limit | PASS |

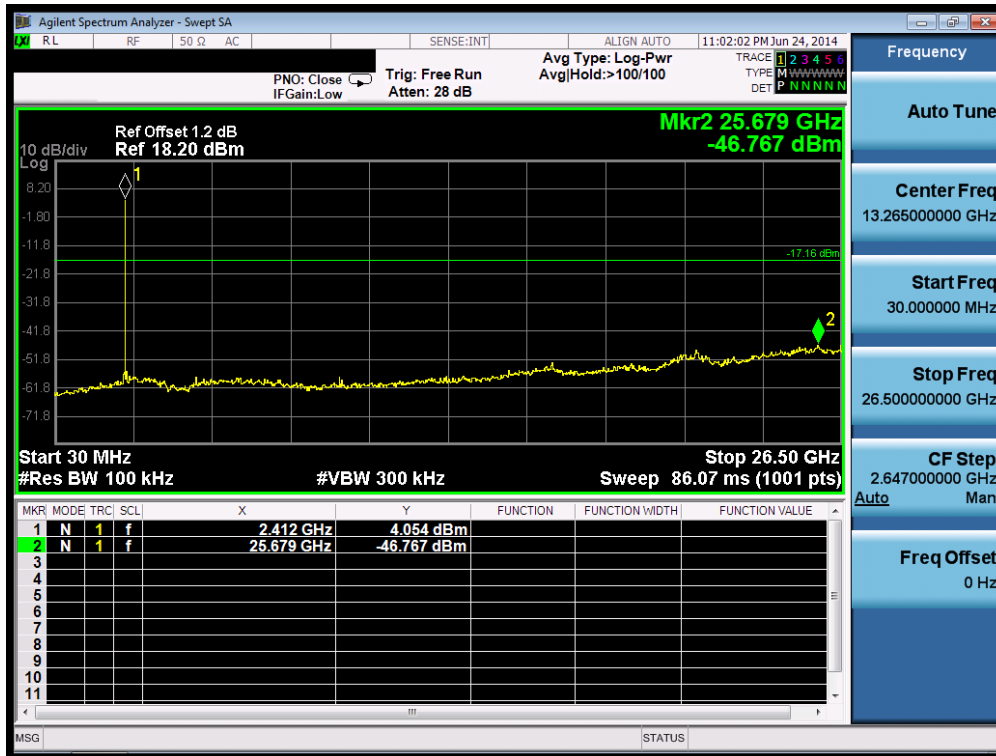
2. Test Plot

2.1. TM1-DH5-Ch0

Pref:



PUW:

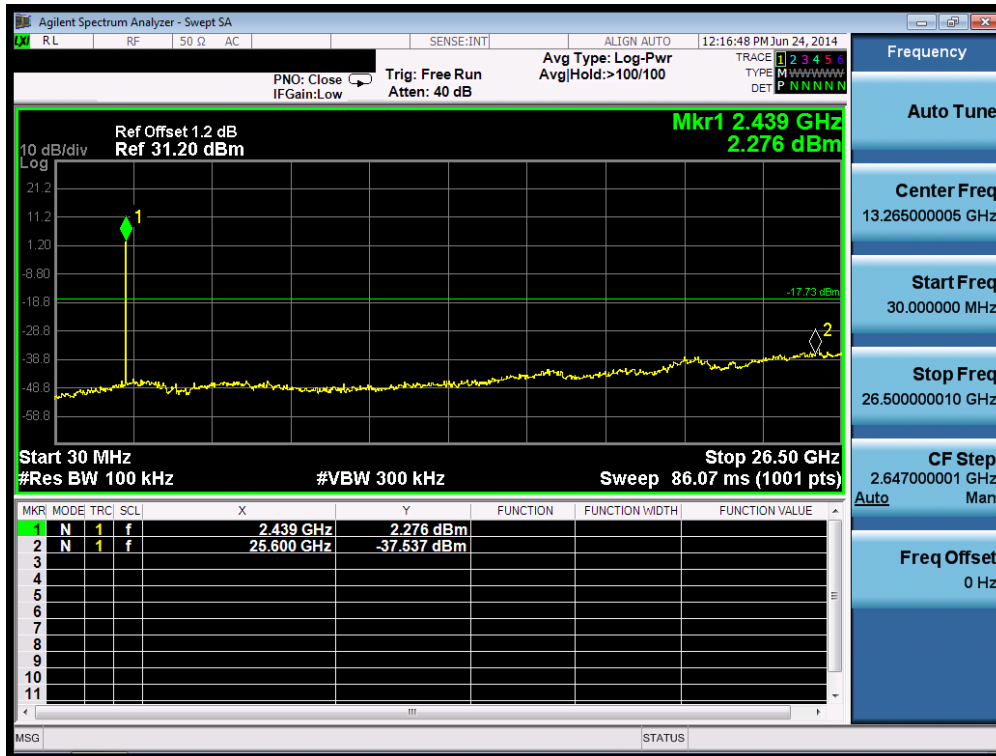


2.2. TM1-DH5-Ch39

Pref:



PUW:

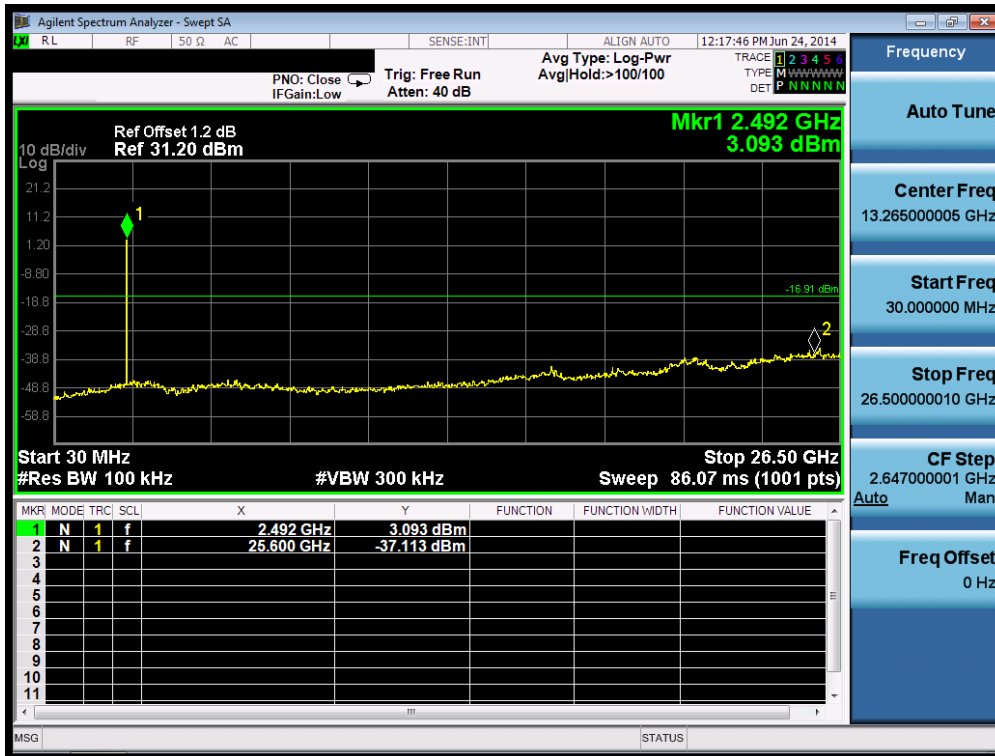


2.3. TM1-DH5-Ch78

Pref:



PUW:

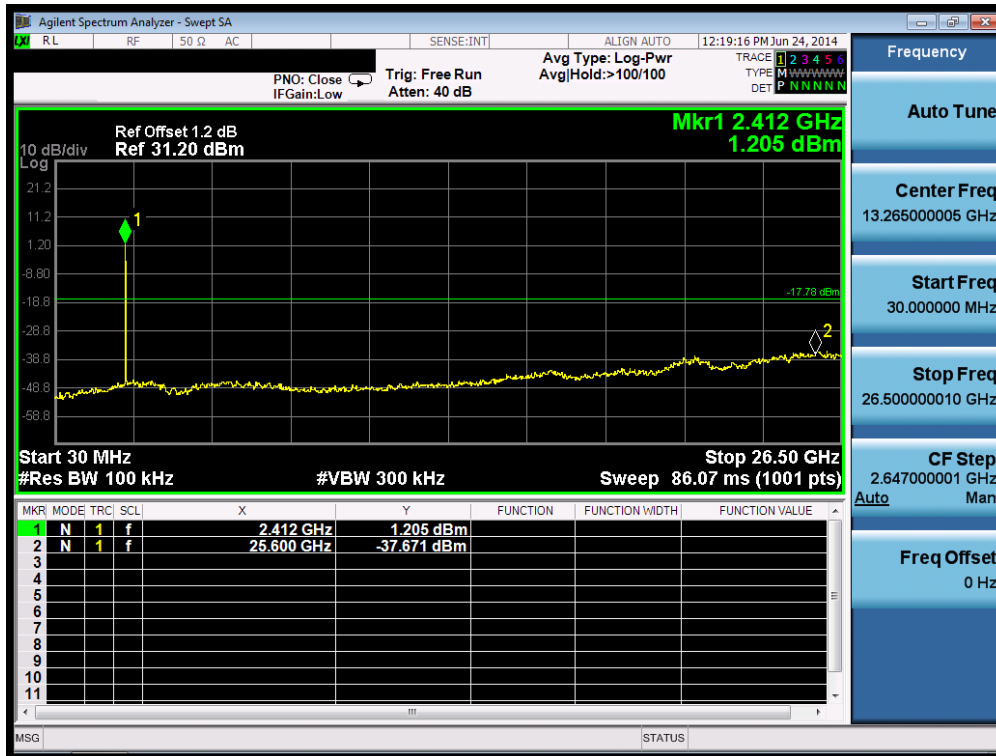


2.4. TM2-2DH5-Ch0

Pref:



PUW:

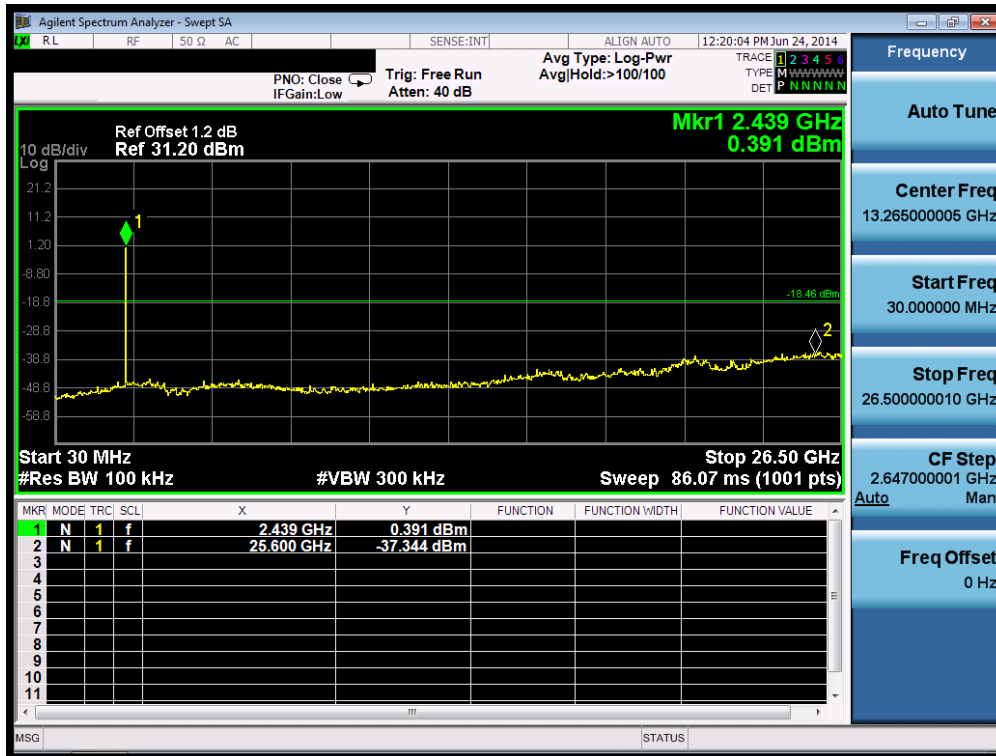


2.5. TM2-2DH5-Ch39

Pref:



PUW:

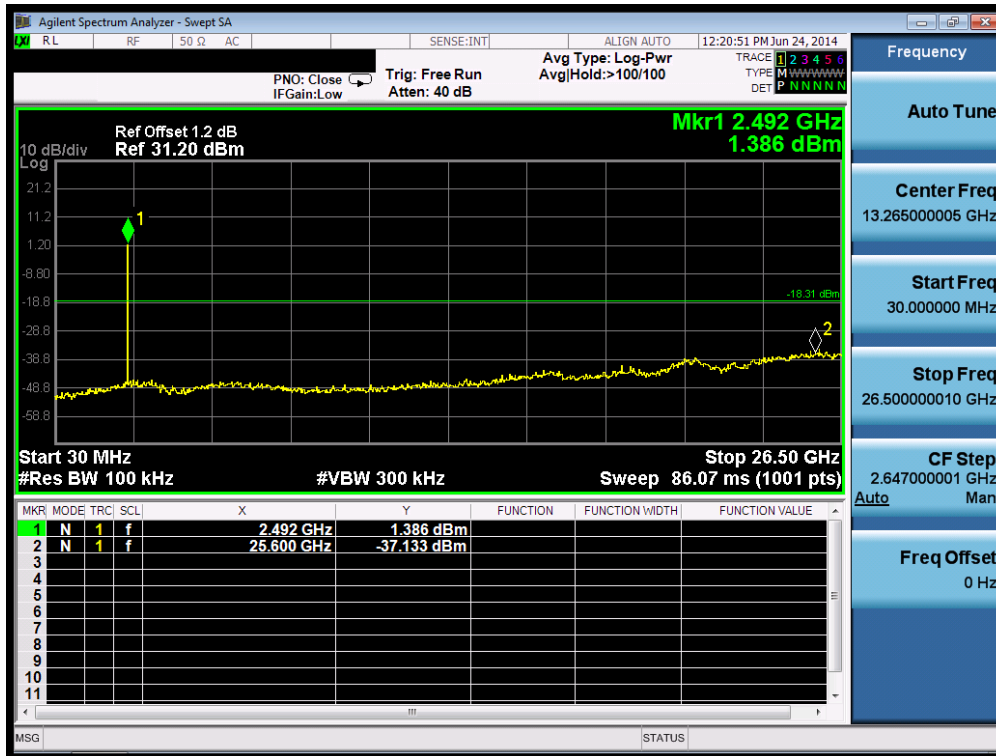


2.6. TM2-2DH5-Ch78

Pref:



PUW:

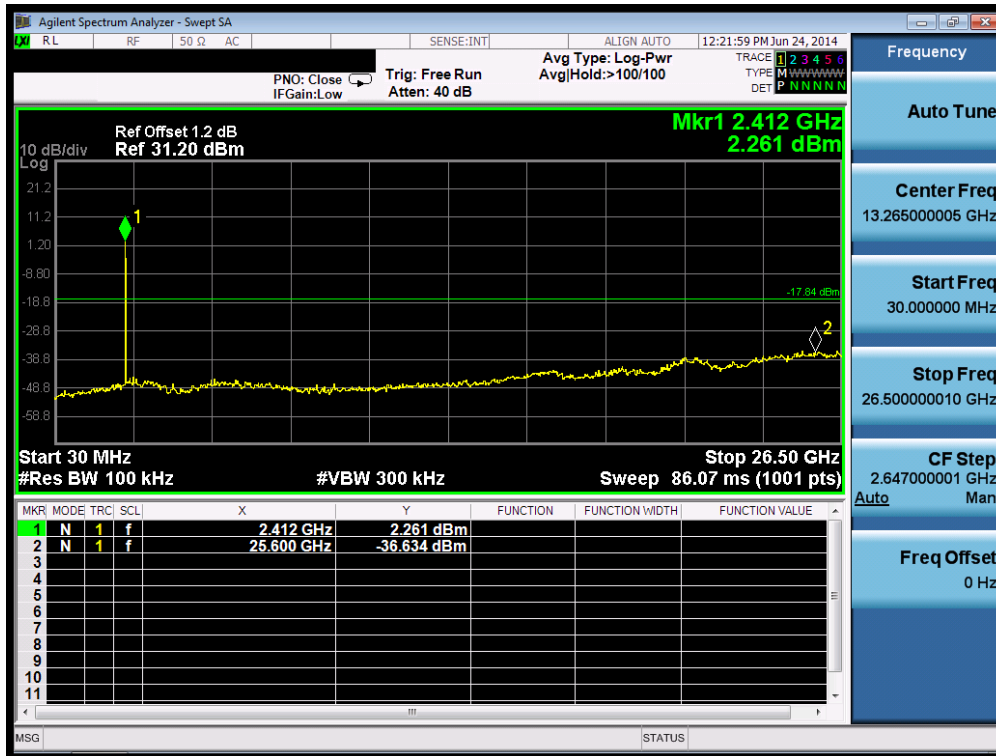


2.7. TM3-3DH5-Ch0

Pref:



PUW:

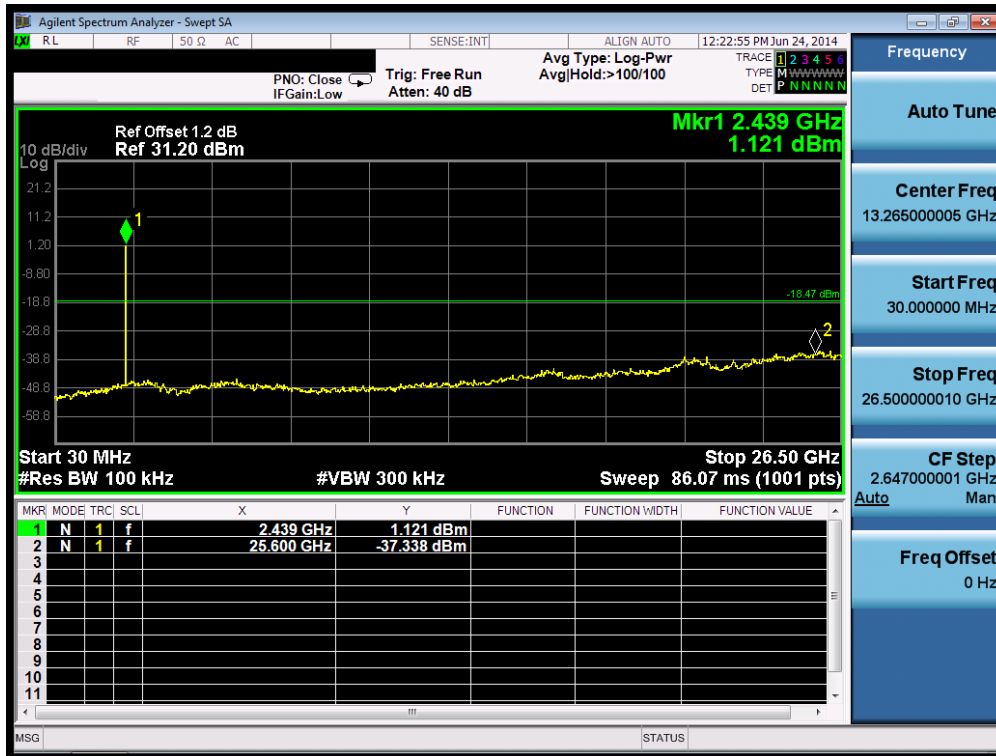


2.8. TM3-3DH5-Ch39

Pref:



PUW:

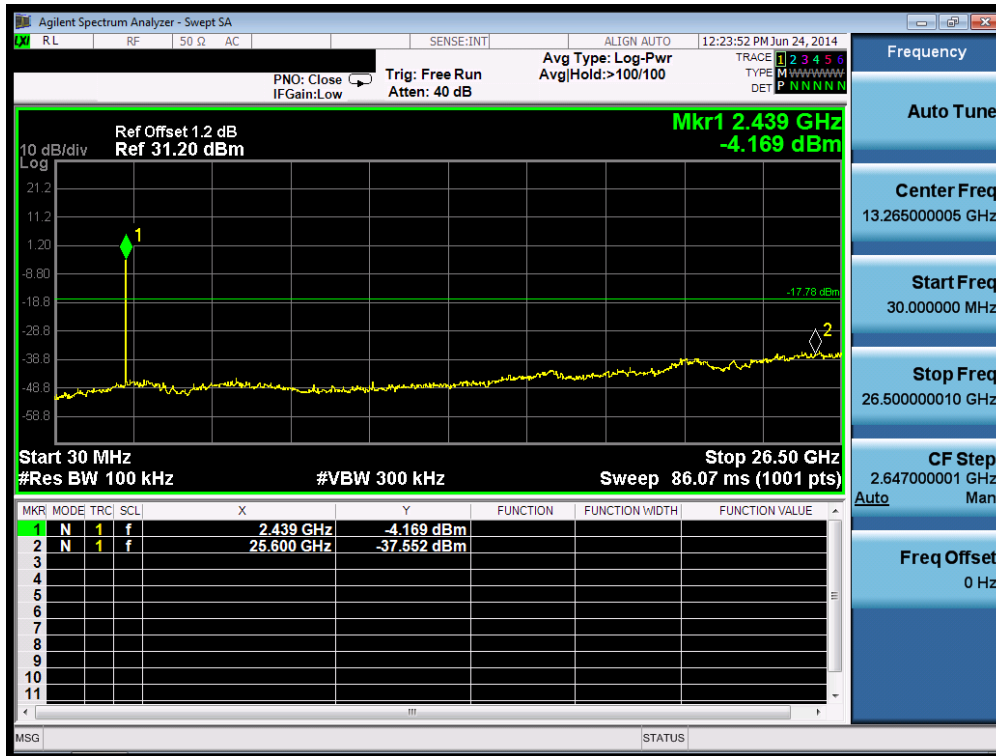


2.9. TM3-3DH5-Ch78

Pref:



PUW:



Appendix H: Radiated Emissions in the Restricted Bands

Part 1: Testing Range of “9kHz to 30MHz”

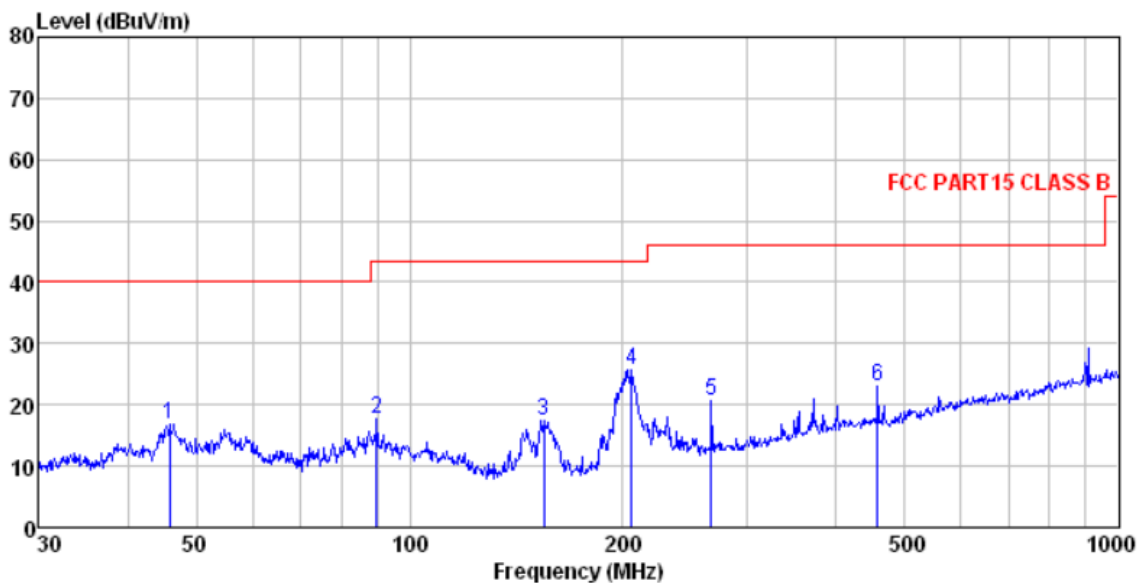
Note 1: The test for testing range of “9kHz to 30MHz” is measured with a loop antenna. This range will not be presented for each Test Mode and each Channel.

Note 2: The emissions in this range are mainly from background noise, so this report will not show the plot unless insistent emission (within 20dB down below the limit) is detected.

Part 2: Testing Range of “30 MHz to 1 GHz”

Note 1: The test results and plot for testing range of “30 MHz to 1 GHz” showed as below is [the WORST case for all Test Modes and Channels](#). This range will not be presented for each Test Mode and each Channel.

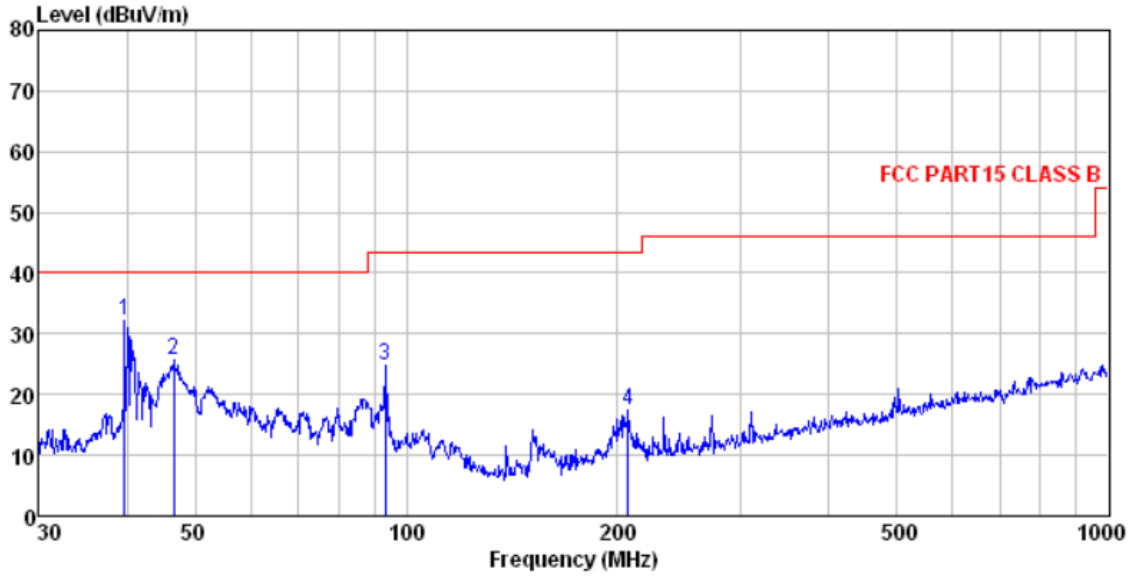
30MHz~1GHz(Horizontal)



MEASUREMENT RESULT: QP Detector

| | Freq | ReadAntenna Level | Antenna Factor | Cable Loss | Preamp Factor | Level | Limit Line | Over Limit | Remark |
|---|---------|-------------------|----------------|------------|---------------|--------|------------|------------|--------|
| | MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | |
| 1 | 45.855 | 32.72 | 13.49 | 0.57 | 29.85 | 16.93 | 40.00 | -23.07 | |
| 2 | 89.905 | 34.44 | 11.90 | 0.91 | 29.57 | 17.68 | 43.50 | -25.82 | |
| 3 | 154.821 | 36.78 | 8.45 | 1.33 | 29.18 | 17.38 | 43.50 | -26.12 | |
| 4 | 205.675 | 42.35 | 10.74 | 1.41 | 28.79 | 25.71 | 43.50 | -17.79 | |
| 5 | 266.609 | 35.24 | 12.26 | 1.67 | 28.51 | 20.66 | 46.00 | -25.34 | |
| 6 | 457.507 | 34.17 | 15.59 | 2.28 | 28.88 | 23.16 | 46.00 | -22.84 | |

30MHz~1GHz(Vertical)



MEASUREMENT RESULT: QP Detector

| | Freq | ReadAntenna Level | Antenna Factor | Cable Loss | Preamp Factor | Level | Limit Line | Over Limit | Remark |
|---|---------|-------------------|----------------|------------|---------------|--------|------------|------------|--------|
| | MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | |
| 1 | 39.715 | 47.98 | 13.49 | 0.52 | 29.90 | 32.09 | 40.00 | -7.91 | |
| 2 | 46.666 | 41.48 | 13.45 | 0.58 | 29.85 | 25.66 | 40.00 | -14.34 | |
| 3 | 93.440 | 40.95 | 12.58 | 0.92 | 29.56 | 24.89 | 43.50 | -18.61 | |
| 4 | 207.123 | 33.99 | 10.80 | 1.42 | 28.78 | 17.43 | 43.50 | -26.07 | |



Part 3: Testing Range of “1 GHz to 25 GHz”

Note 1: The test results and plot for testing range of “1 GHz to 25 GHz” showed as below is **the WORST case for all Test Modes**. After pre-sachn the GFSK, π /4-DQPSK,8DPSK modulation, we found the GFSK modulation is the worst case, and choose it to performed full test.

Note 2: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB μ V/m) and Average Limit (54 dB μ V/m).

Note 3: “--“means the emission of these frequencies are very lower than the limit and not show in this report. And, for other frequencies, if their emissions are not stronger than the background noise, they will not recorded in this report also .

Above 1GHz (Horizontal)

Low channel

| Frequency (MHz) | Corr.Amp. (dB μ V/m) | Detector (PK/Ave.) | Corr. (dB) | Limit (dB μ V/m) | Margin (dB) |
|-----------------|--------------------------|--------------------|------------|----------------------|-------------|
| 4804 | 44.58 | PK | 0.19 | 74.0 | 29.42 |
| 7206 | -- | PK | -- | 74.0 | -- |
| 9608 | -- | PK | -- | 74.0 | -- |
| 4804 | 33.59 | Ave. | 0.19 | 54.0 | 20.41 |
| 7206 | -- | Ave. | -- | 54.0 | -- |
| 9608 | -- | Ave. | -- | 54.0 | -- |

Middle channel

| Frequency (MHz) | Corr.Amp. (dB μ V/m) | Detector (PK/Ave.) | Corr. (dB) | Limit (dB μ V/m) | Margin (dB) |
|-----------------|--------------------------|--------------------|------------|----------------------|-------------|
| 4882 | 46.10 | PK | 0.41 | 74.0 | 27.9 |
| 7323 | -- | PK | -- | 74.0 | -- |
| 9764 | -- | PK | -- | 74.0 | -- |
| 4882 | 34.27 | Ave. | 0.41 | 54.0 | 19.73 |
| 7323 | -- | Ave. | -- | 54.0 | -- |
| 9764 | -- | Ave. | -- | 54.0 | -- |

High channel

| Frequency (MHz) | Corr.Amp. (dB μ V/m) | Detector (PK/Ave.) | Corr. (dB) | Limit (dB μ V/m) | Margin (dB) |
|-----------------|--------------------------|--------------------|------------|----------------------|-------------|
| 4960 | 46.26 | PK | 0.74 | 74.0 | 27.74 |
| 7440 | -- | PK | -- | 74.0 | -- |
| 9920 | -- | PK | -- | 74.0 | -- |
| 4960 | 33.96 | Ave. | 0.74 | 54.0 | 20.04 |
| 7440 | -- | Ave. | -- | 54.0 | -- |
| 9920 | -- | Ave. | -- | 54.0 | -- |

Above 1GHz (Vertical)
Low channel

| Frequency (MHz) | Corr.Amp. (dBμV/m) | Detector (PK/Ave.) | Corr. (dB) | Limit (dBμV/m) | Margin (dB) |
|------------------------|---------------------------|---------------------------|-------------------|-----------------------|--------------------|
| 4804 | 45.28 | PK | 0.19 | 74.0 | 28.72 |
| 7206 | -- | PK | -- | 74.0 | -- |
| 9608 | -- | PK | -- | 74.0 | -- |
| 4804 | 36.16 | Ave. | 0.19 | 54.0 | 17.84 |
| 7206 | -- | Ave. | -- | 54.0 | -- |
| 9608 | -- | Ave. | -- | 54.0 | -- |

Middle channel

| Frequency (MHz) | Corr.Amp. (dBμV/m) | Detector (PK/Ave.) | Corr. (dB) | Limit (dBμV/m) | Margin (dB) |
|------------------------|---------------------------|---------------------------|-------------------|-----------------------|--------------------|
| 4882 | 47.57 | PK | 0.41 | 74.0 | 26.43 |
| 7323 | -- | PK | -- | 74.0 | -- |
| 9764 | -- | PK | -- | 74.0 | -- |
| 4882 | 36.84 | Ave. | 0.41 | 54.0 | 17.16 |
| 7323 | -- | Ave. | -- | 54.0 | -- |
| 9764 | -- | Ave. | -- | 54.0 | -- |

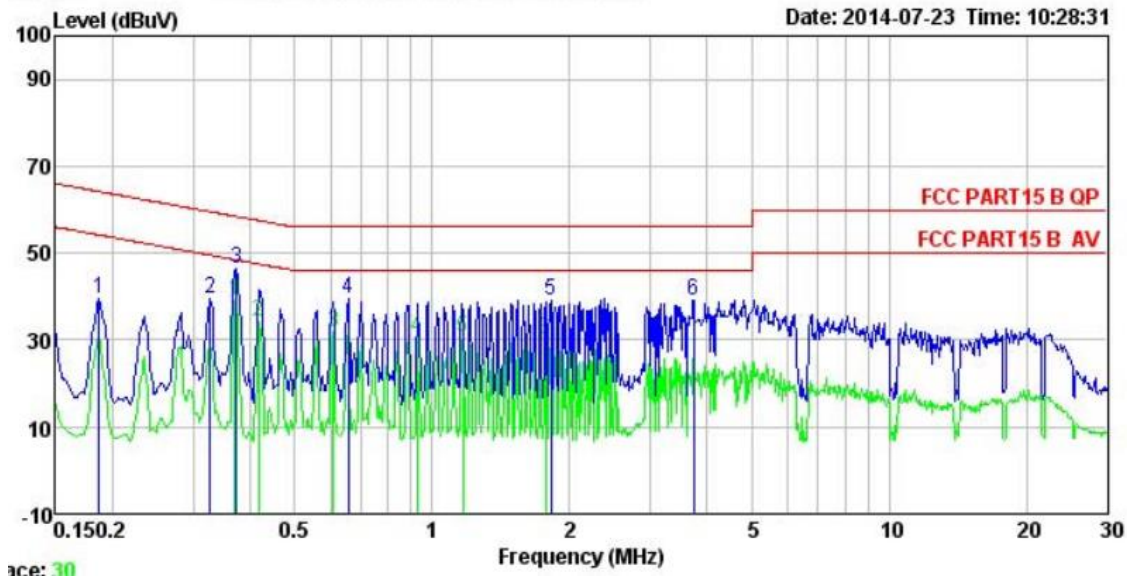
High channel

| Frequency (MHz) | Corr.Amp. (dBμV/m) | Detector (PK/Ave.) | Corr. (dB) | Limit (dBμV/m) | Margin (dB) |
|------------------------|---------------------------|---------------------------|-------------------|-----------------------|--------------------|
| 4960 | 46.62 | PK | 0.74 | 74.0 | 27.38 |
| 7440 | -- | PK | -- | 74.0 | -- |
| 9920 | -- | PK | -- | 74.0 | -- |
| 4960 | 36.11 | Ave. | 0.74 | 54.0 | 17.89 |
| 7440 | -- | Ave. | -- | 54.0 | -- |
| 9920 | -- | Ave. | -- | 54.0 | -- |

Appendix I: AC Power Line Conducted Emissions

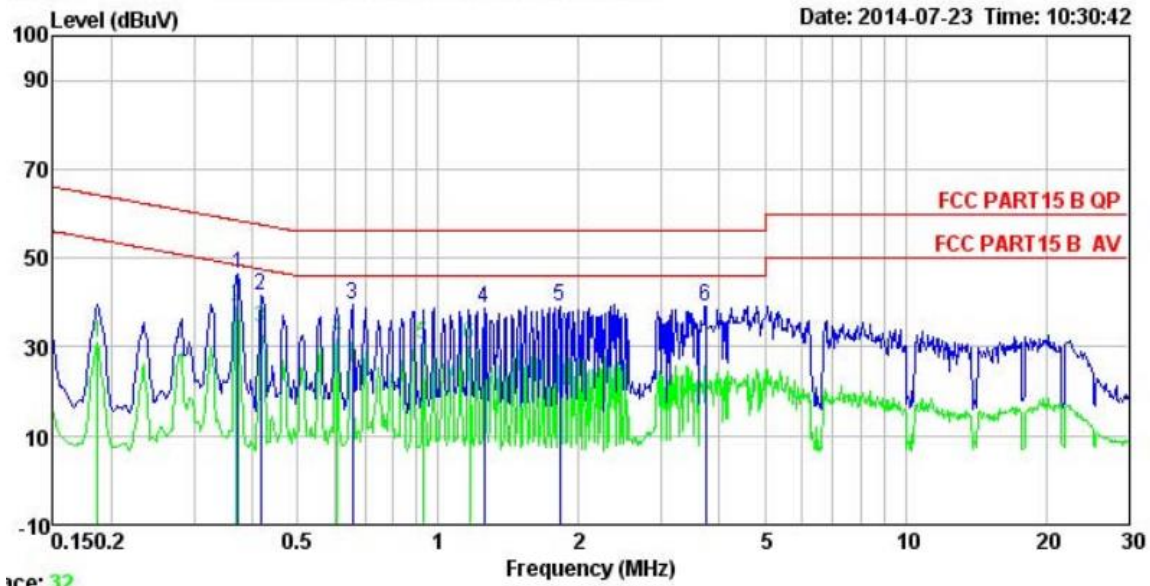
Channel 39

Line



| | Freq | Read Level | LISN Factor | Cable Loss | Level | Limit Line | Over Limit | Remark |
|---|-------|------------|-------------|------------|-------|------------|------------|--------|
| | MHz | dBuV | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.186 | 28.54 | 0.28 | 10.76 | 39.58 | 64.20 | -24.62 | QP |
| 2 | 0.327 | 28.72 | 0.27 | 10.73 | 39.72 | 59.53 | -19.81 | QP |
| 3 | 0.373 | 35.57 | 0.28 | 10.73 | 46.58 | 58.43 | -11.85 | QP |
| 4 | 0.654 | 28.38 | 0.23 | 10.77 | 39.38 | 56.00 | -16.62 | QP |
| 5 | 1.819 | 27.97 | 0.26 | 10.95 | 39.18 | 56.00 | -16.82 | QP |
| 6 | 3.740 | 27.86 | 0.28 | 10.90 | 39.04 | 56.00 | -16.96 | QP |

Neutral



Trace: 32

| | Read Freq | Read Level | LISN Factor | Cable Loss | Level | Limit Line | Over Limit | Remark |
|---|-----------|------------|-------------|------------|-------|------------|------------|--------|
| | MHz | dBuV | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.282 | 30.29 | 0.26 | 10.74 | 41.29 | 60.76 | -19.47 | Peak |
| 2 | 0.373 | 36.89 | 0.25 | 10.73 | 47.87 | 58.43 | -10.56 | Peak |
| 3 | 0.421 | 30.46 | 0.26 | 10.73 | 41.45 | 57.42 | -15.97 | Peak |
| 4 | 0.561 | 30.29 | 0.25 | 10.77 | 41.31 | 56.00 | -14.69 | Peak |
| 5 | 1.077 | 29.12 | 0.23 | 10.88 | 40.23 | 56.00 | -15.77 | Peak |
| 6 | 1.636 | 28.64 | 0.27 | 10.93 | 39.84 | 56.00 | -16.16 | Peak |

-----End of Report-----