

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.

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

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<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 .

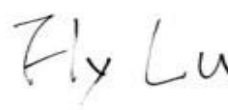
The test results of this report relate only to the tested sample identified in this report.

Approved By :  Reviewed By

(Manager)

(Murphy Wang)

(Testing Engineer)

: 

(Fly Lu)



CONTENT

1	General Information	5
1.1	Applied Standard	5
1.2	Test Location	5
1.3	Test Environment Condition	5
2	Test Summary	6
3	Description of the Equipment under Test (EUT)	7
3.1	General Description	7
3.2	EUT Identity	7
3.3	Technical Description	7
4	General Test Conditions / Configurations	8
4.1	EUT Configurations	8
4.2	Test Environments	9
4.3	Measurement Uncertainty	9
4.4	Test Setups	10
4.5	Test Conditions	13
5	Main Test Instruments	15

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, - 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

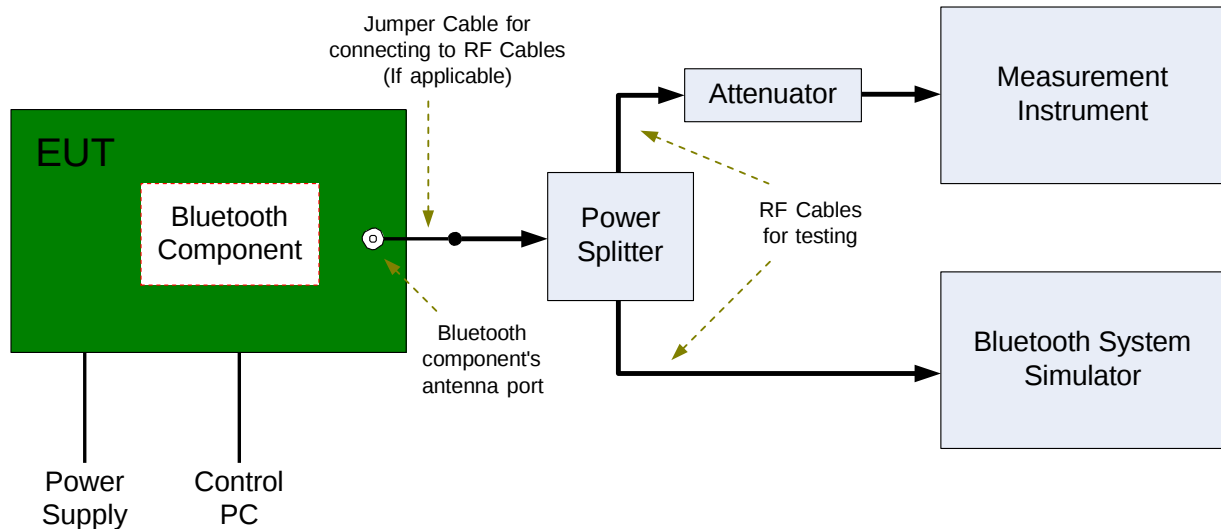
4.3 Measurement Uncertainty

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

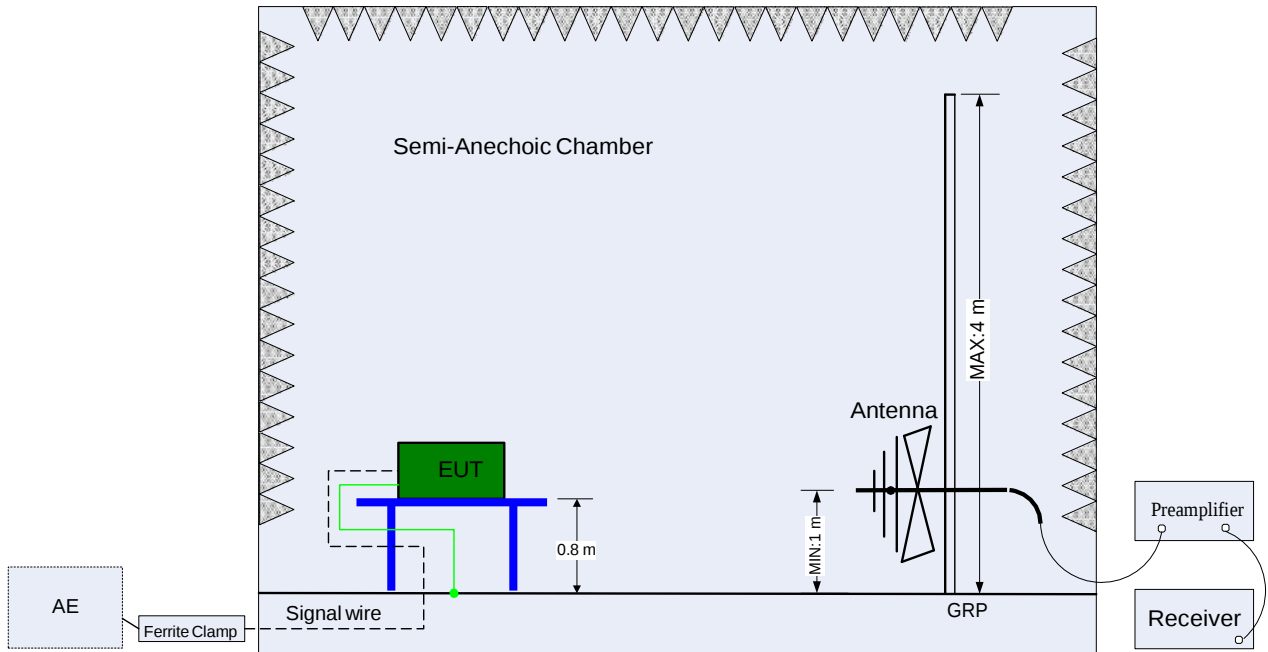
The Bluetooth component's antenna port(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by Bluetooth System Simulator and/or PC/software to emit the specified signals for the purpose of measurements.



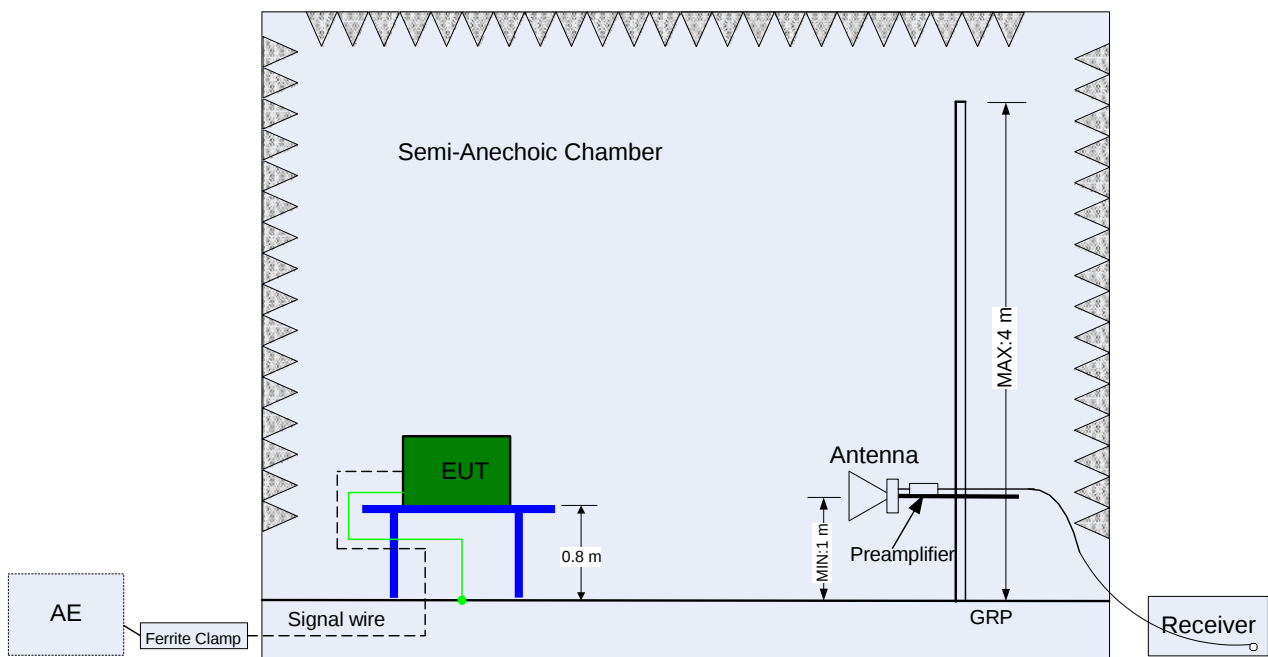
4.3.2 Test Setup 2

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)

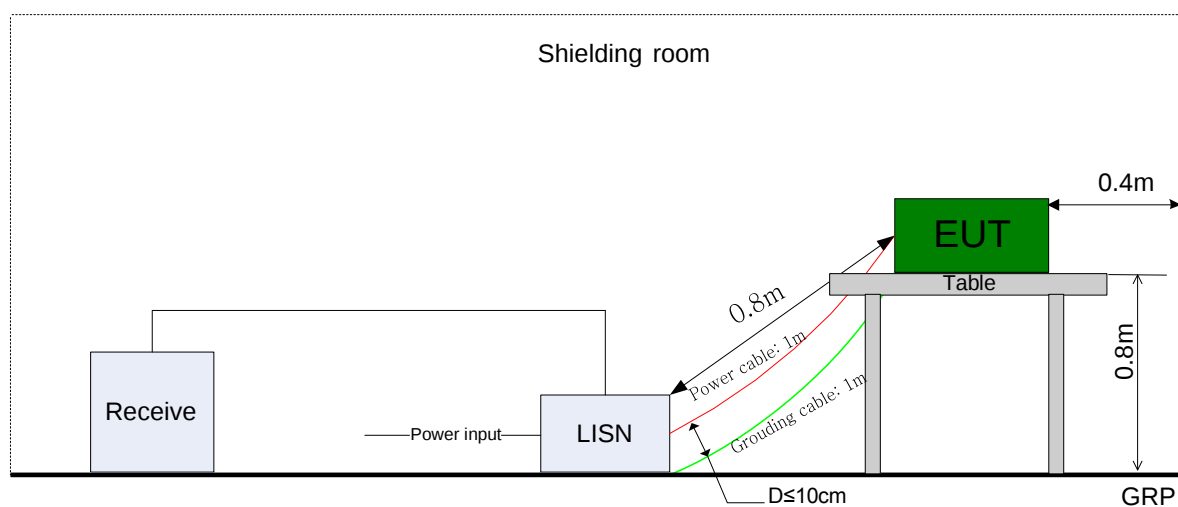


(Above 1 GHz)

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

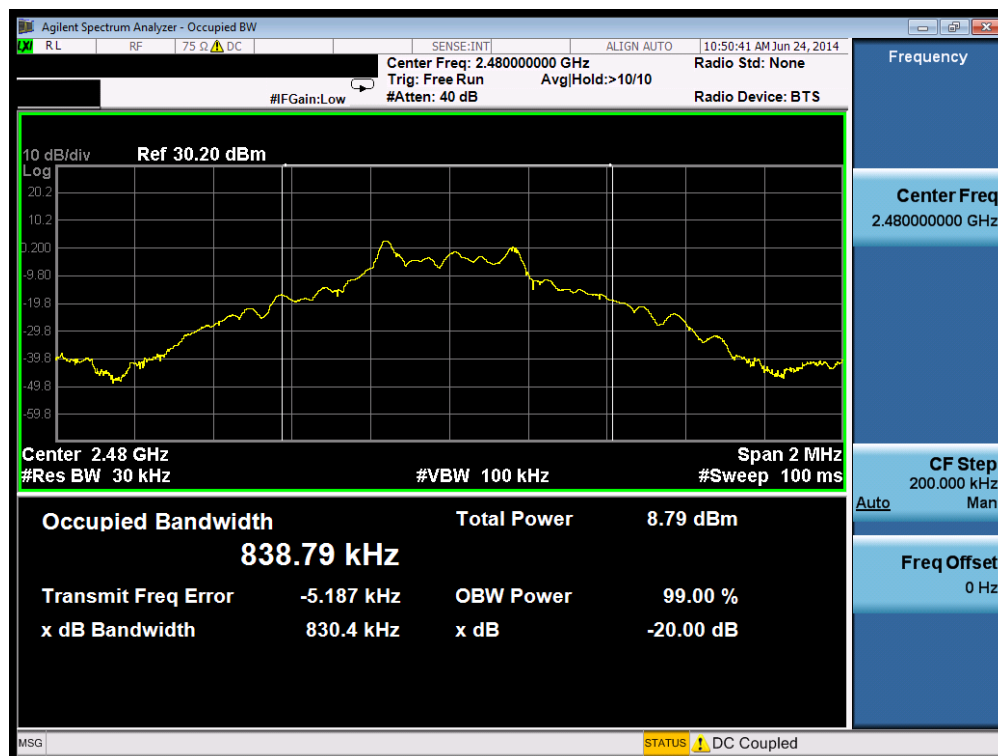
2.1. TM1-DH5-Ch0



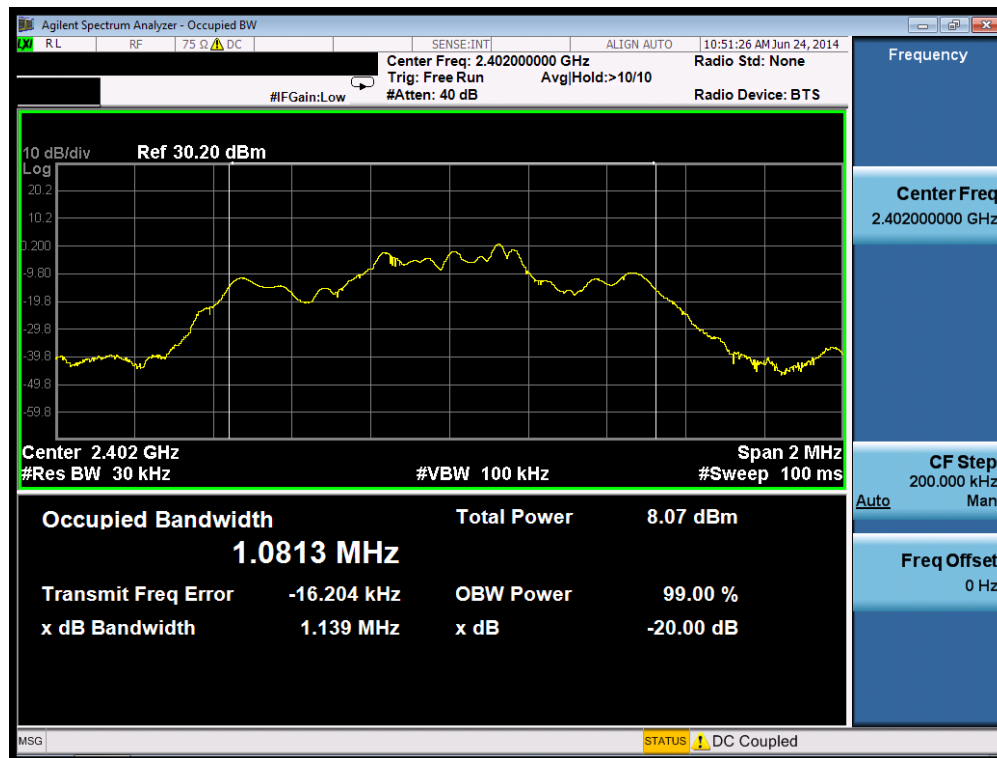
2.2. TM1-DH5-Ch39



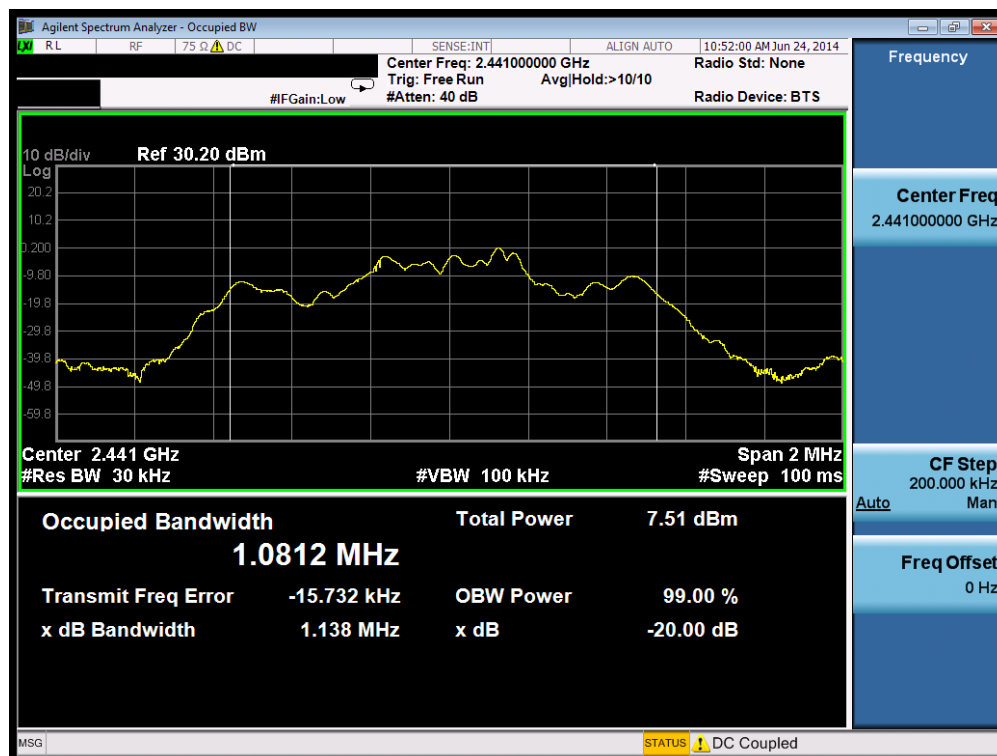
2.3. TM1-DH5-Ch78



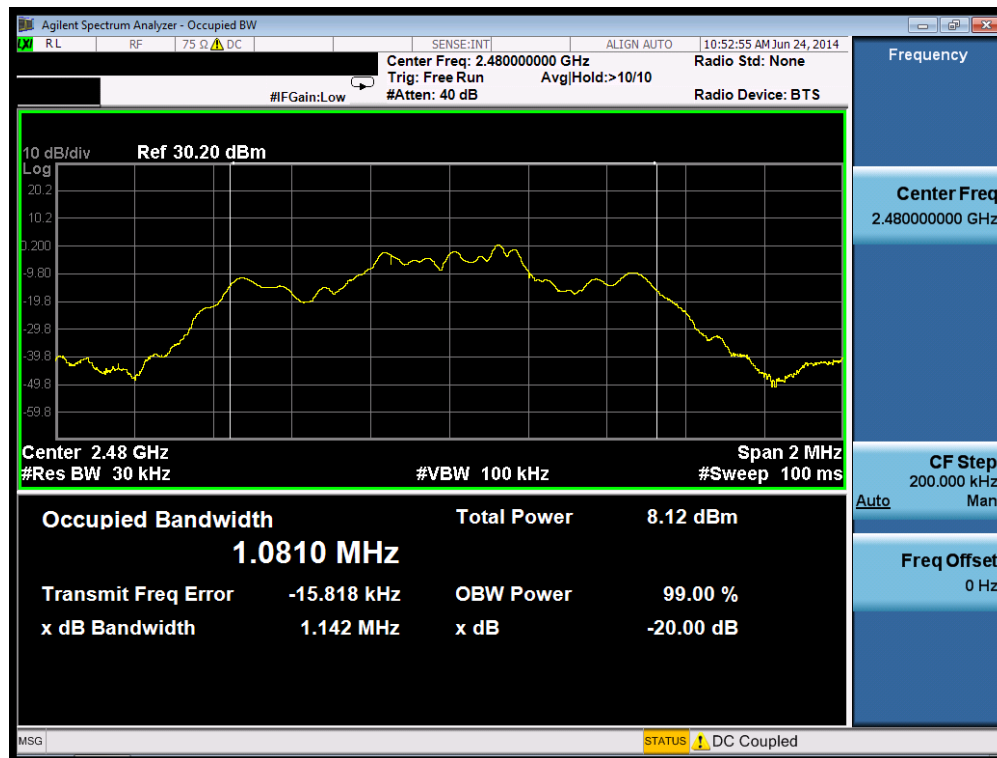
2.4. TM2-2DH5-Ch0



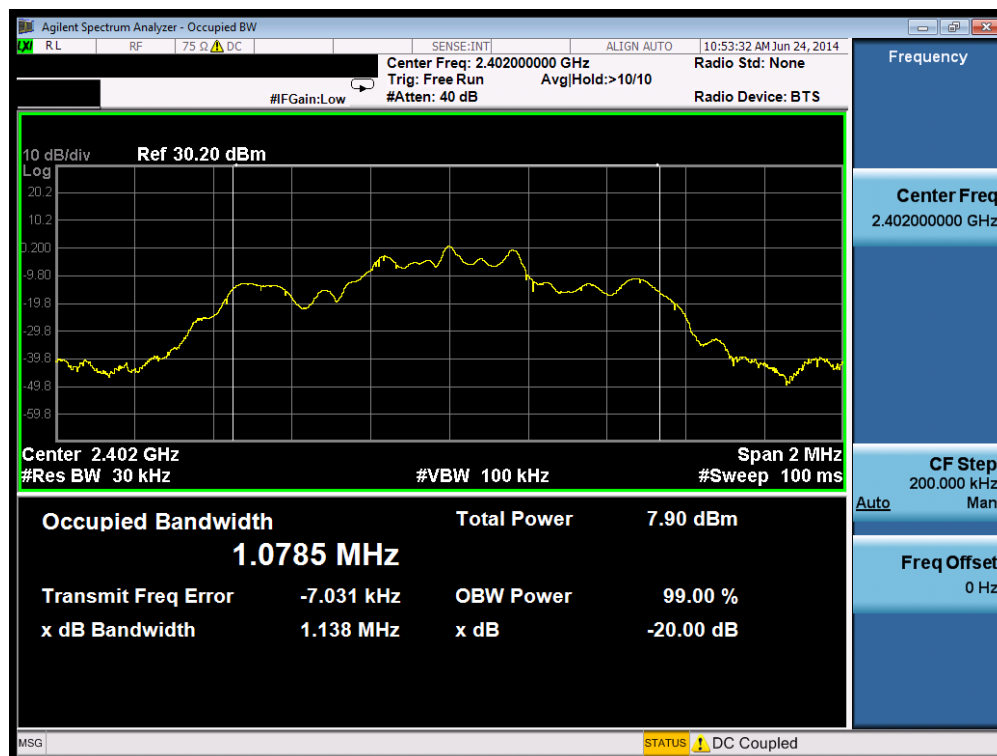
2.5. TM2-2DH5-Ch39



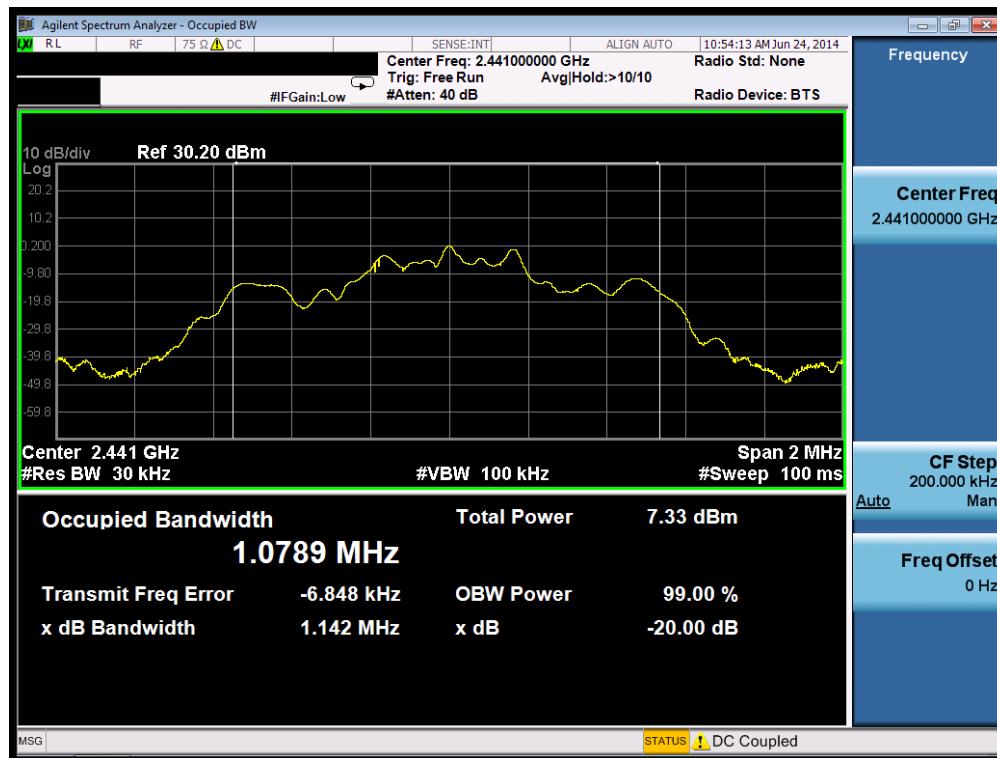
2.6. TM2-2DH5-Ch78



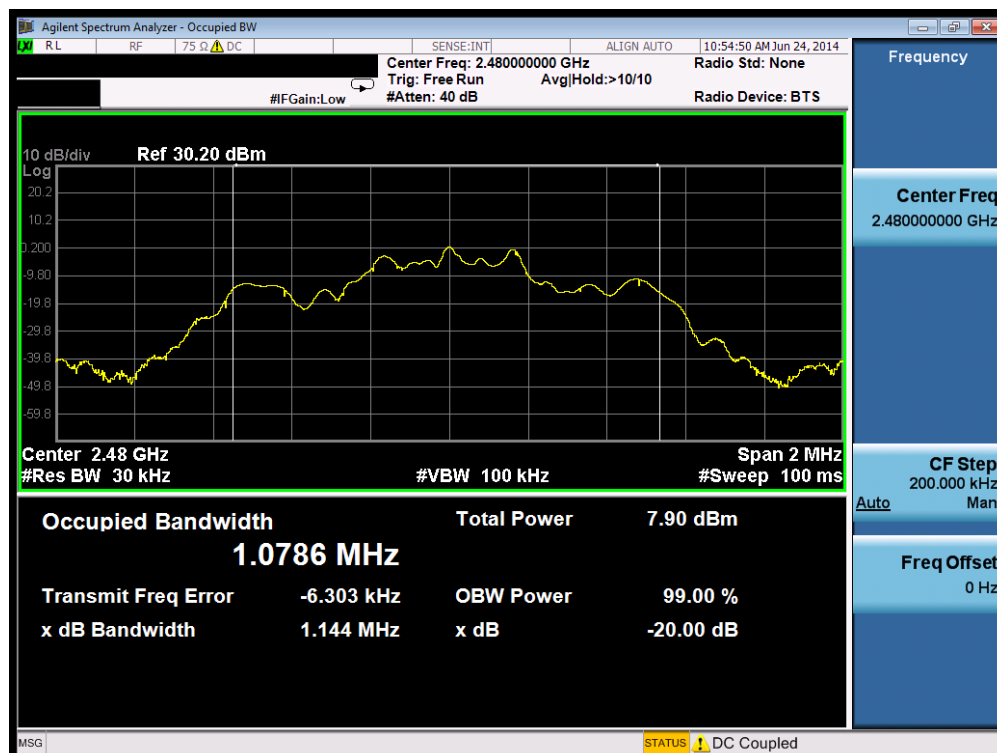
2.7. TM3-3DH5-Ch0



2.8. TM3-3DH5-Ch39



2.9. TM3-3DH5-Ch78



Appendix B: Carrier Frequency Separation

1. Result Table

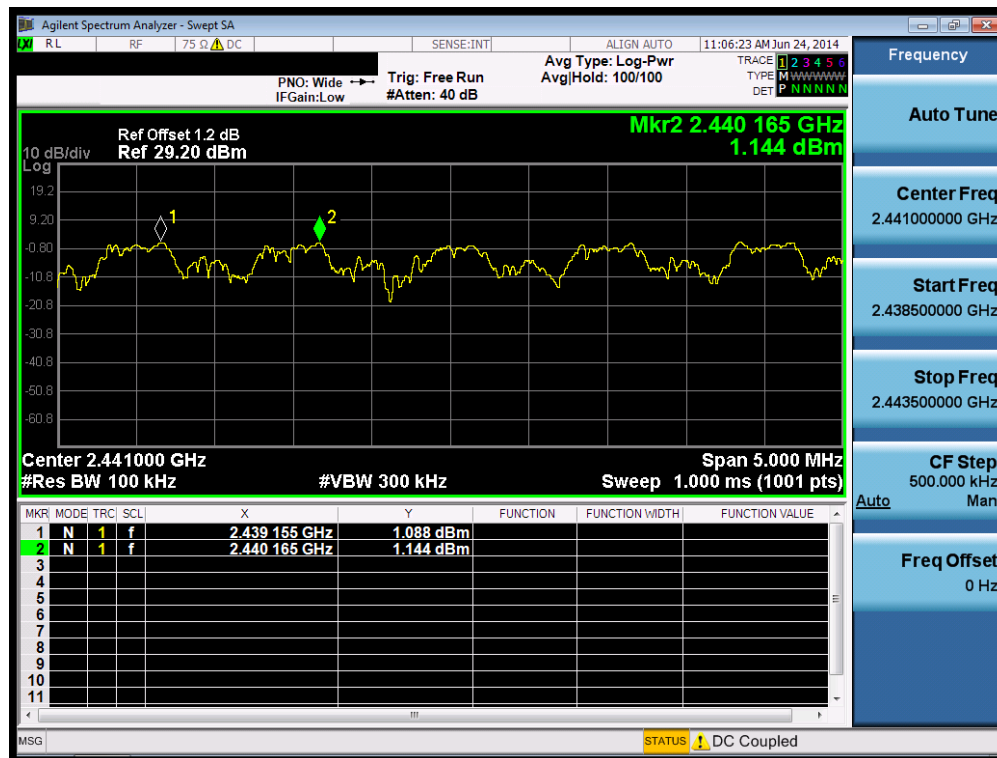
EUT Conf.	Carrier Frequency Separation [MHz]	Verdict
TM1-DH5-Hop	1.015	PASS
TM2-2DH5-Hop	1.010	PASS
TM3-3DH5-Hop	1.020	PASS

2. Test Plot

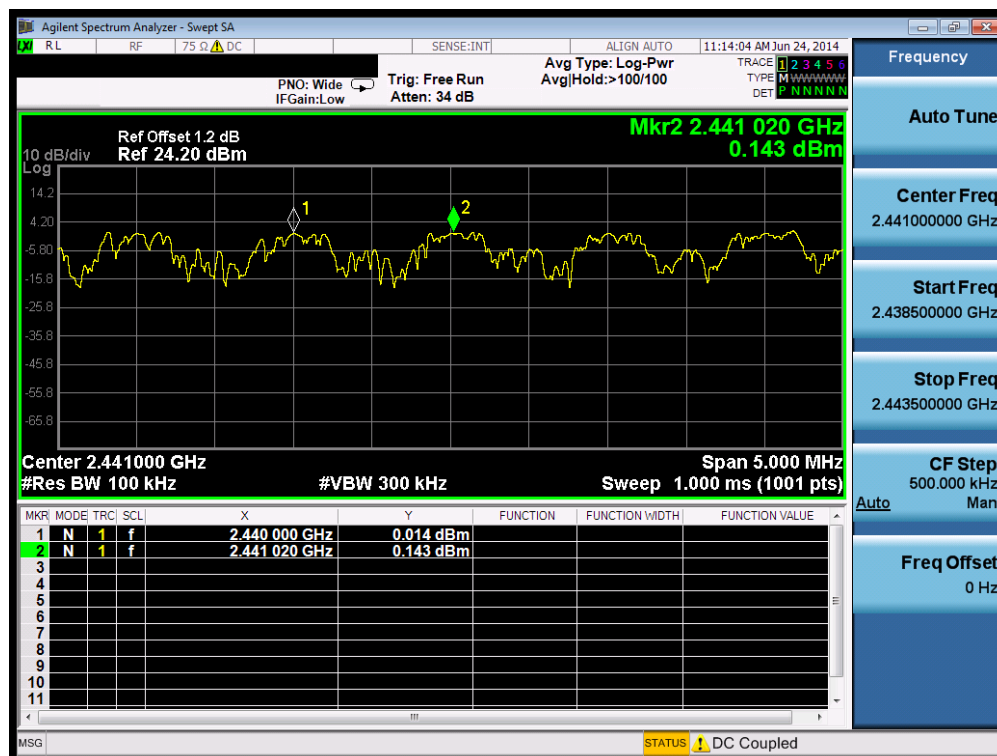
2.1. TM1-DH5-Hop



2.2. TM2-2DH5-Hop



2.3. TM3-3DH5-Hop



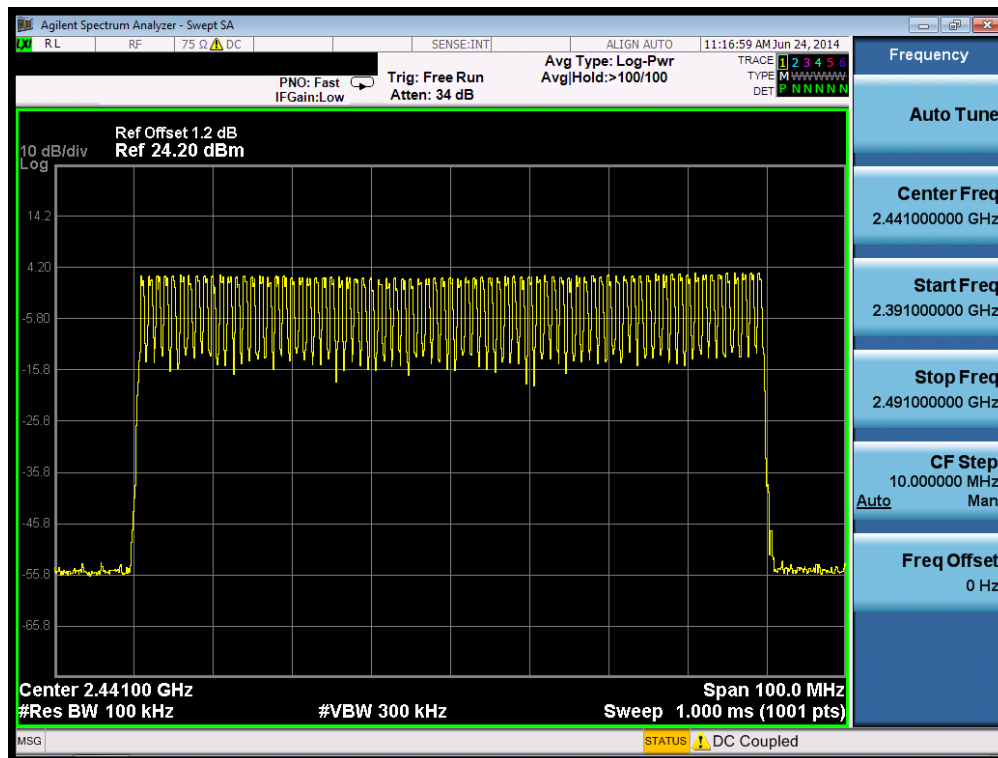
Appendix C: Number of Hopping Channel

1. Result Table

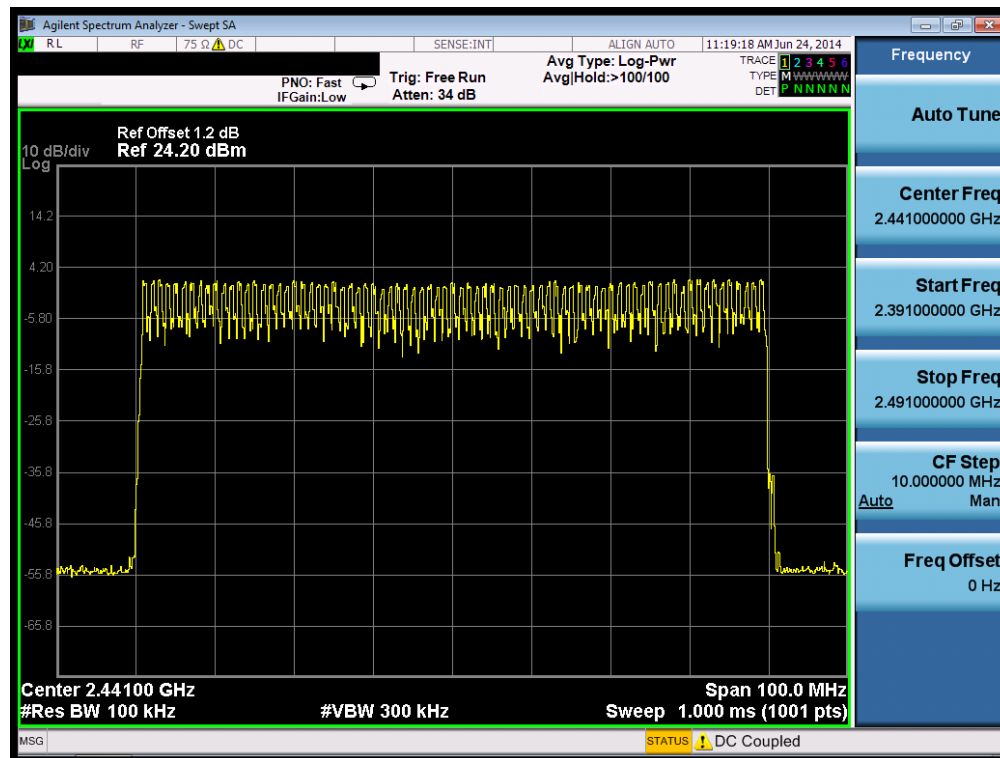
EUT Conf.	Number of Hopping Channel	Verdict
TM1-DH5-Hop	79	PASS
TM2-2DH5-Hop	79	PASS
TM3-3DH5-Hop	79	PASS

2. Test Plot

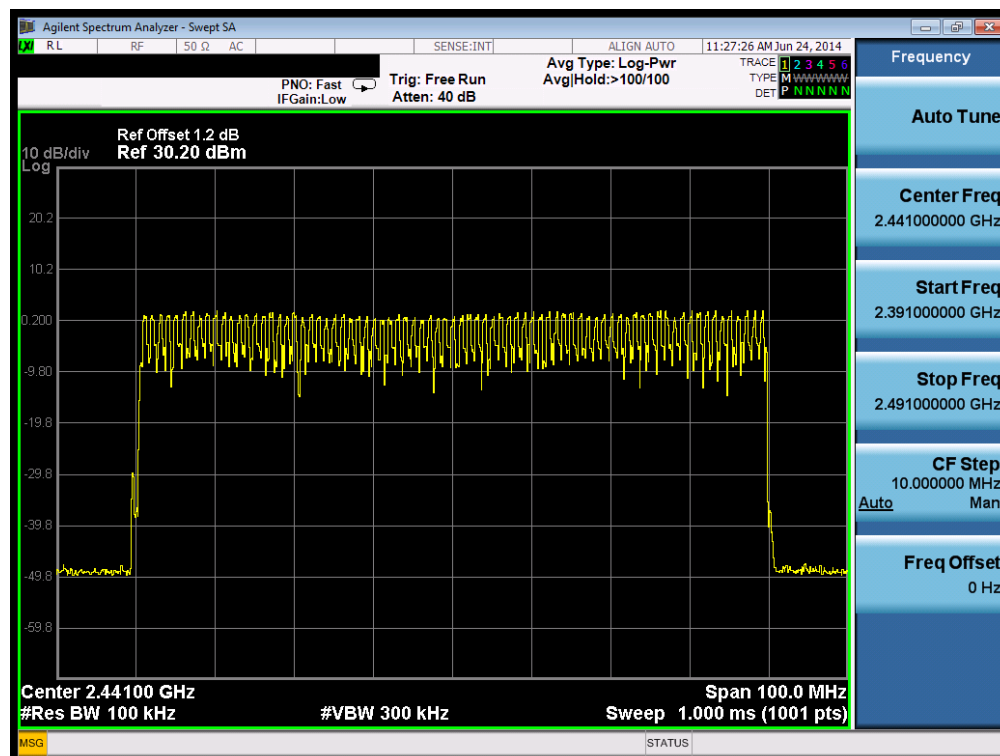
2.1. TM1-DH5-Hop



2.2. TM2-2DH5-Hop



2.3. TM3-3DH5-Hop



Appendix D: Time of Occupancy (Dwell Time)

1. Result Table

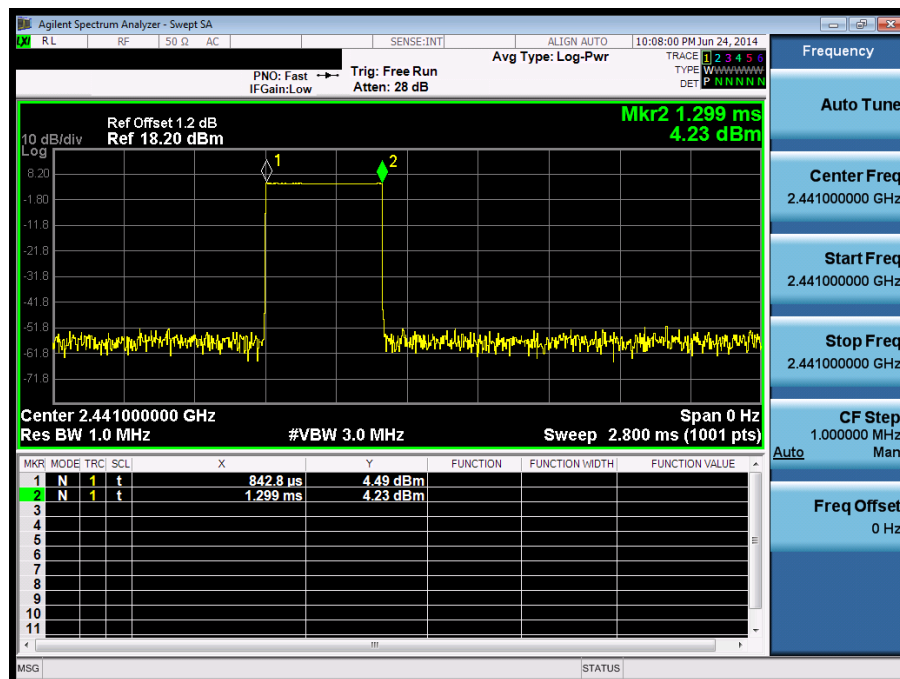
The Dwell Time=Burst Width*Total Hops. The detailed calculations are showed as follows:

- The duration for dwell time calculation: $0.4[s] * \text{hopping number} = 0.4[s] * 79[\text{ch}] = 31.6[s*ch]$;
- 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: $266.67 [\text{ch*hops/s}] / 79 [\text{ch}] = 3.38 [\text{hop/s}]$;
- The total hops for all channels within the dwell time calculation duration: $3.38 [\text{hop/s}] * 31.6[s*ch] = 106.67$ [hop*ch];
- The dwell time for all channels hopping: $106.67 [\text{hop*ch}] * \text{Burst Width} [\text{ms/hop/ch}]$.

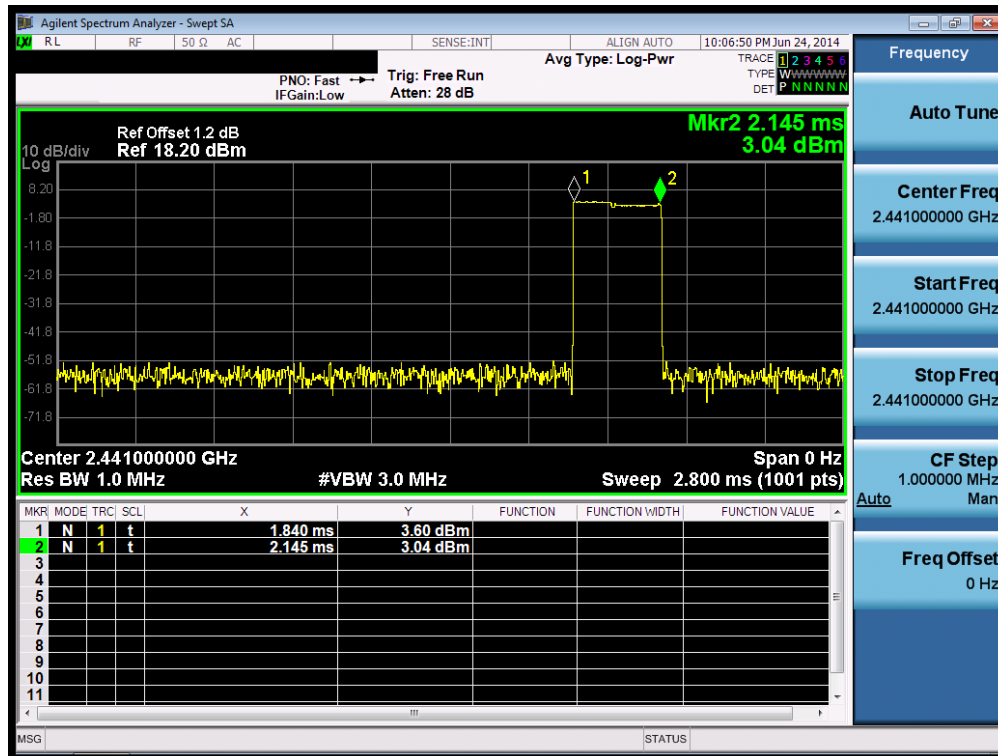
EUT Conf.	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Verdict
TM1-DH5-Ch39	0.4562	106.67	0.049	PASS
TM2-2DH5-Ch39	0.305	106.67	0.033	PASS
TM3-3DH5-Ch39	0.252	106.67	0.027	PASS

2. Test Plot

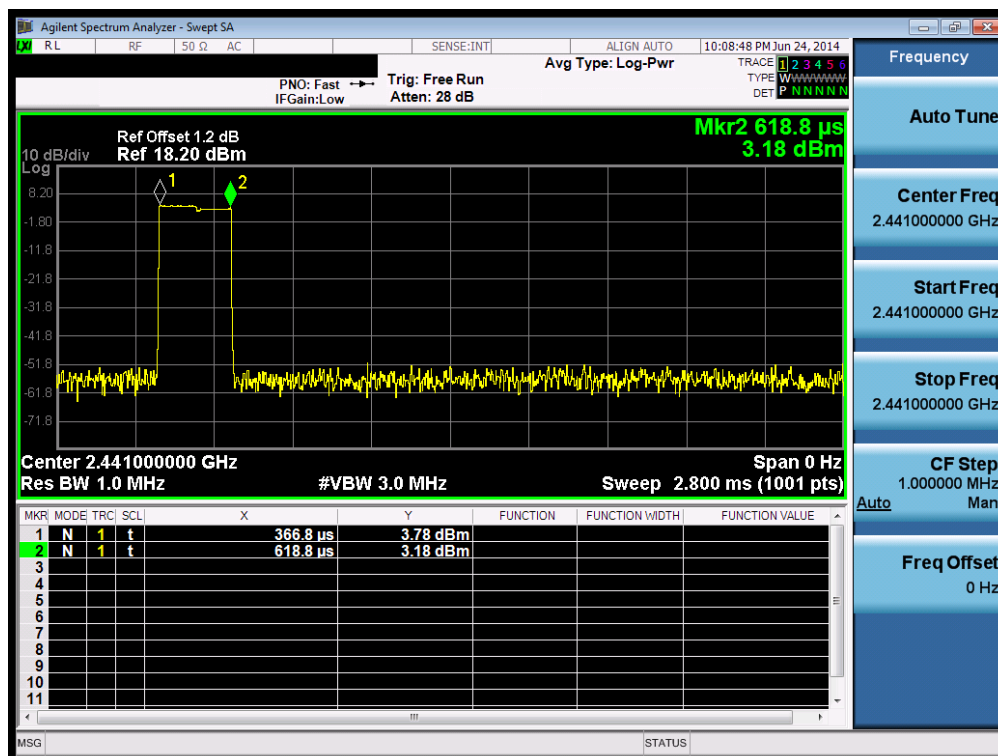
2.1. TM1-DH5-Ch39



2.2. TM2-2DH5-Ch39



2.3. TM3-3DH5-Ch39



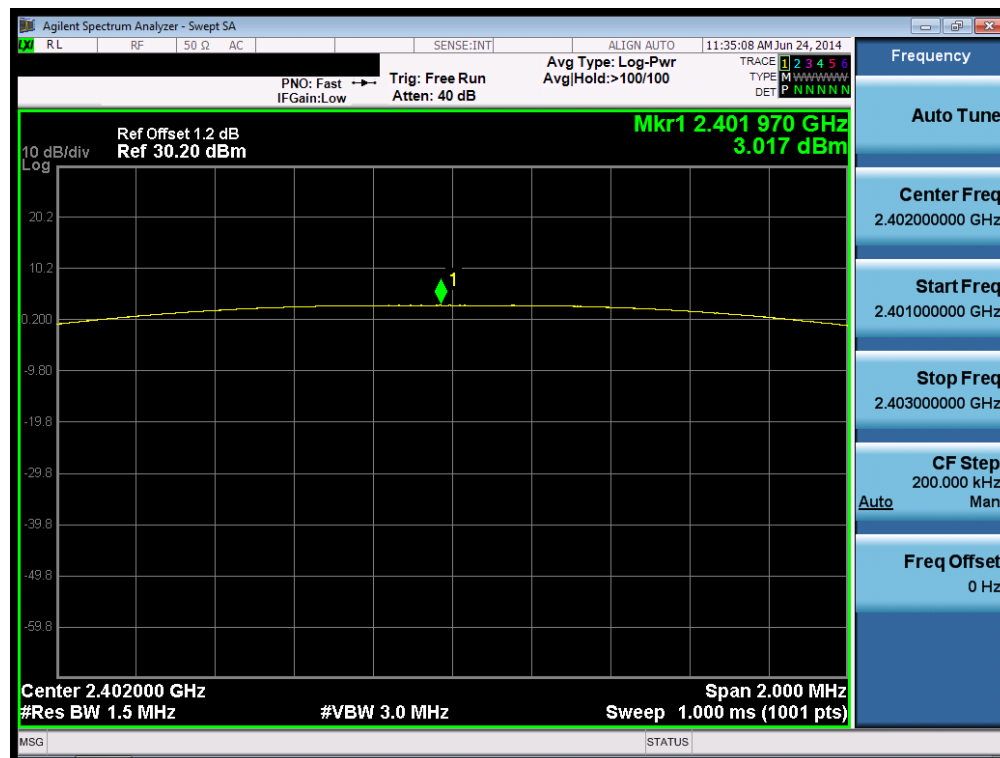
Appendix E: Maximum Peak Conducted Output Power

1. Result Table

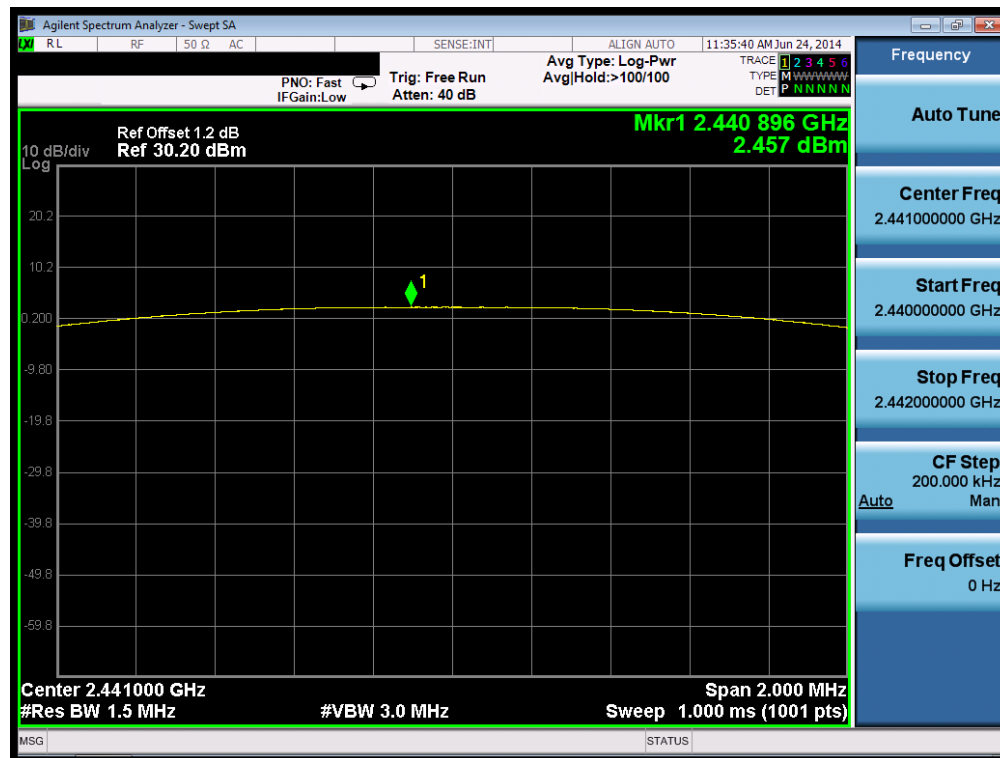
EUT Conf.	Maximum Peak Output Power [dBm]	Verdict
TM1-DH5-Ch0	3.017	PASS
TM1-DH5-Ch39	2.457	PASS
TM1-DH5-Ch78	3.285	PASS
TM2-2DH5-Ch0	2.475	PASS
TM2-2DH5-Ch39	1.770	PASS
TM2-2DH5-Ch78	2.466	PASS
TM3-3DH5-Ch0	2.441	PASS
TM3-3DH5-Ch39	1.758	PASS
TM3-3DH5-Ch78	2.481	PASS

2. Test Plot

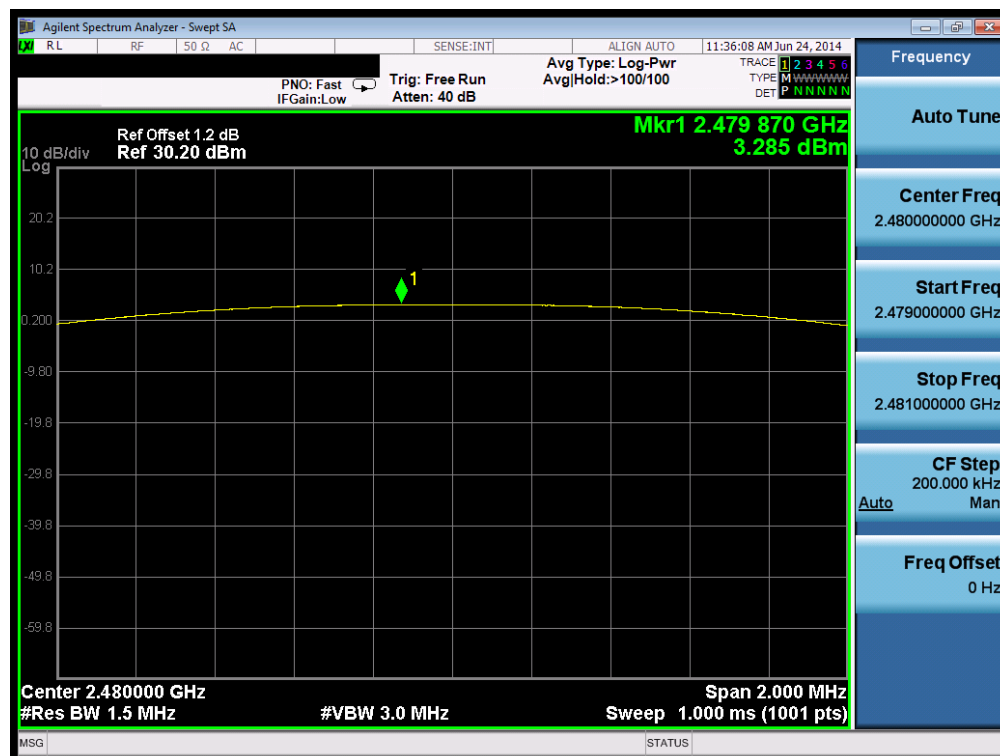
2.1. TM1-DH5-Ch0



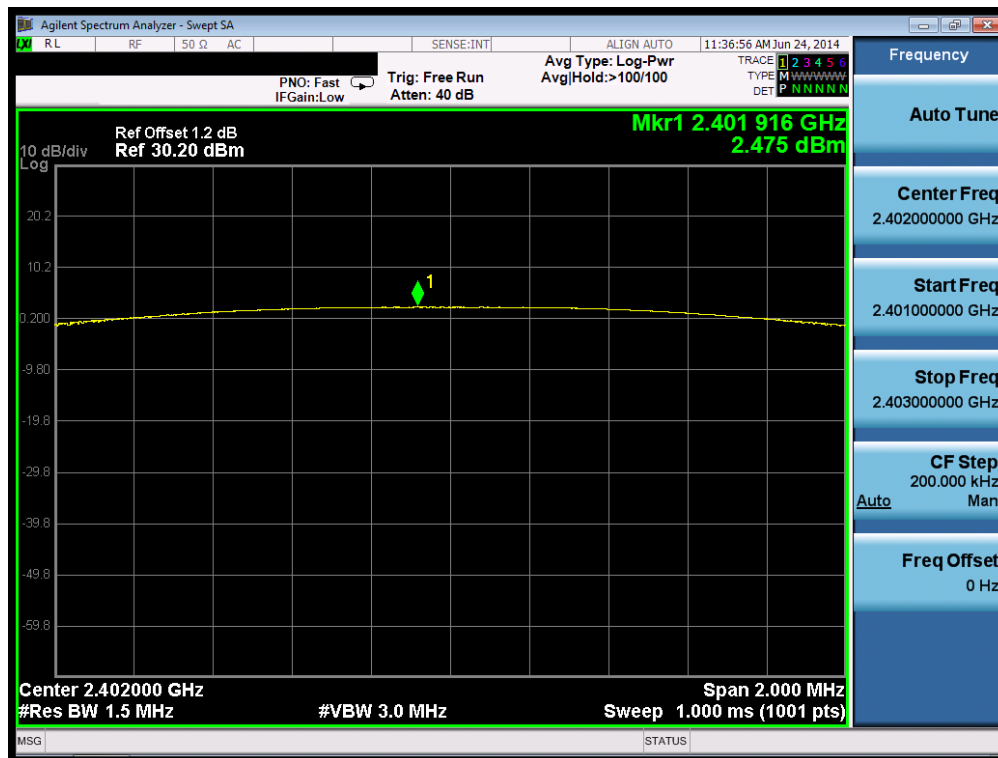
2.2. TM1-DH5-Ch39



2.3. TM1-DH5-Ch78



2.4. TM2-2DH5-Ch0



2.5. TM2-2DH5-Ch39



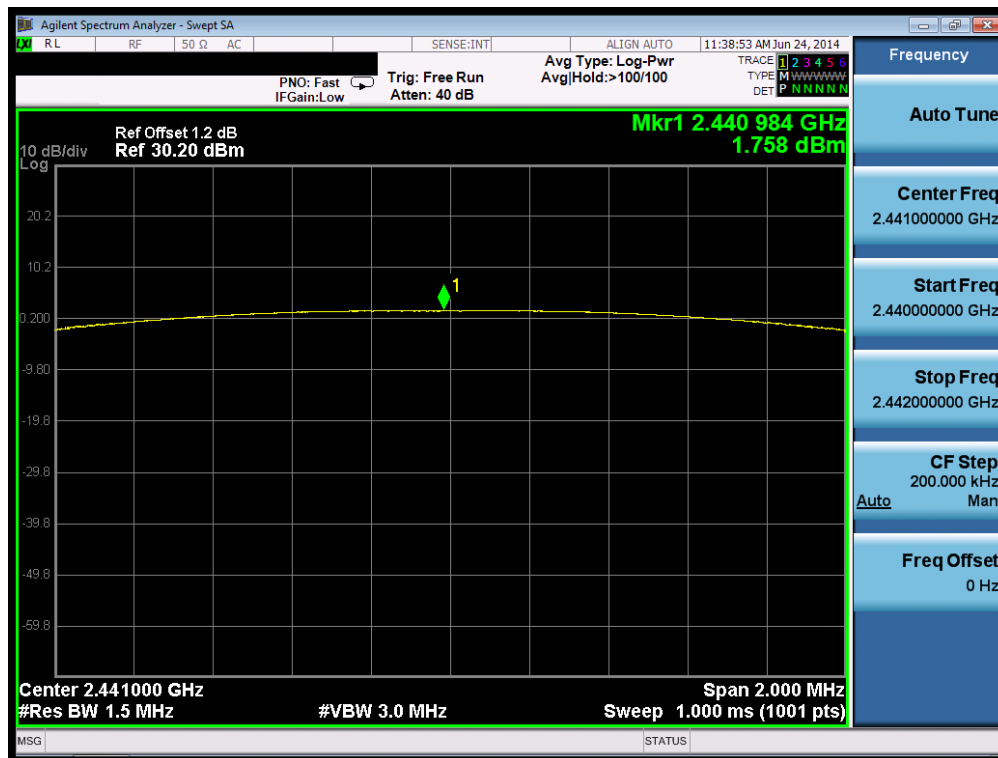
2.6. TM2-2DH5-Ch78



2.7. TM3-3DH5-Ch0



2.8. TM3-3DH5-Ch39



2.9. TM3-3DH5-Ch78



Appendix F: Band Edge Spurious Emission

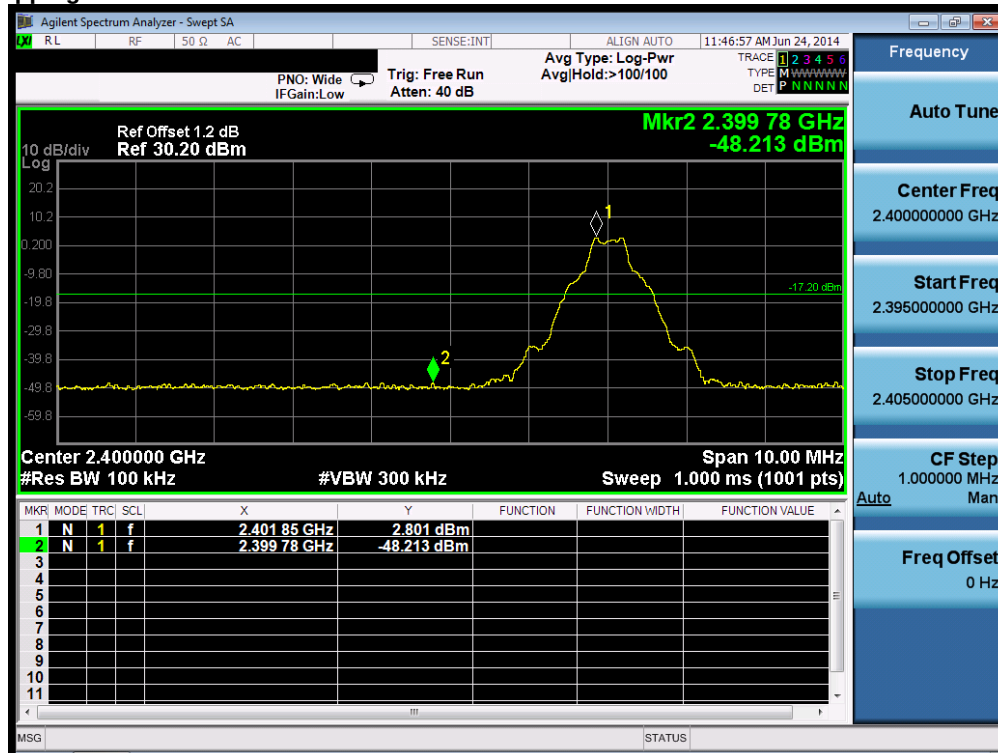
1. Result Table

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

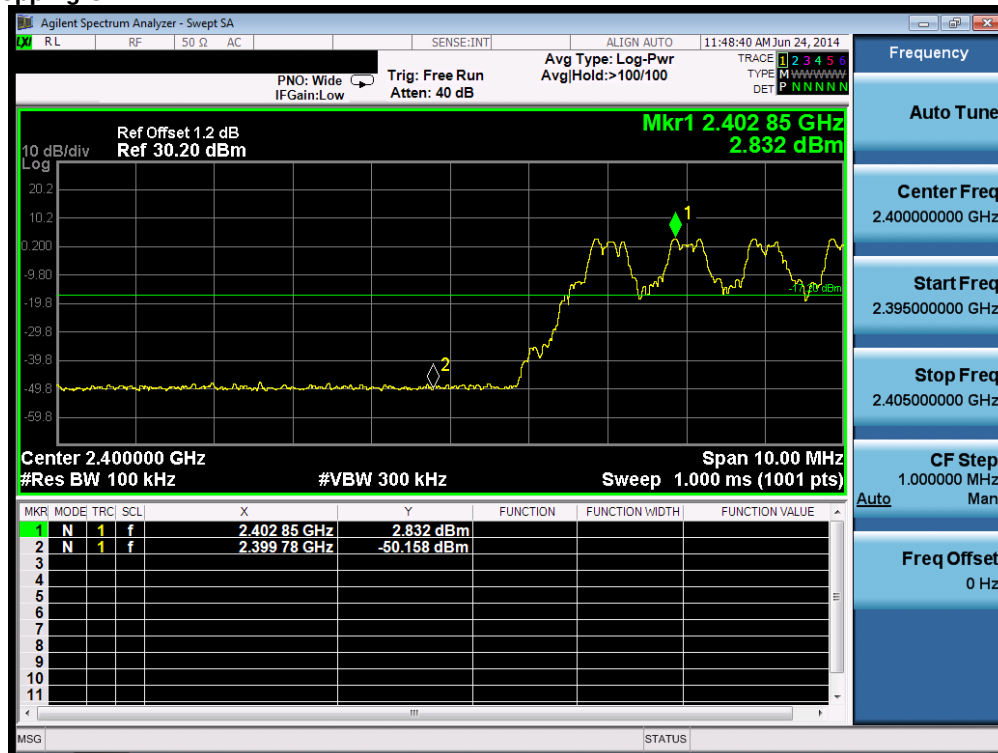
2.1. TM1-DH5-Ch0

Hopping Off



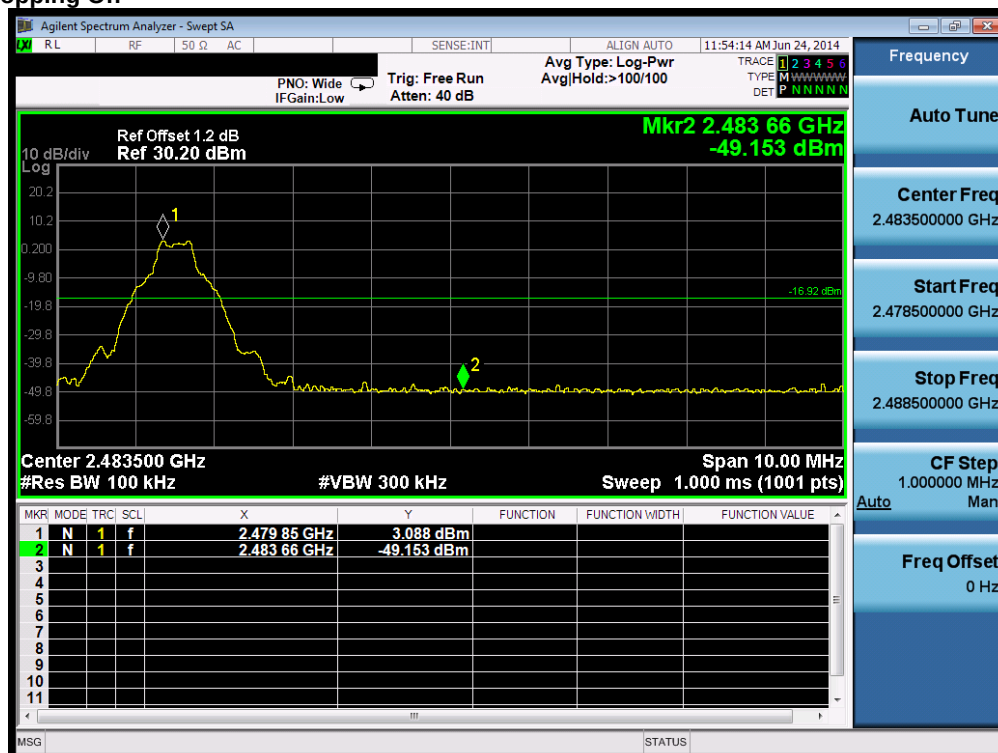


Hopping On



2.2. TM1-DH5-Ch78

Hopping Off



Hopping On



2.3. TM2-2DH5-Ch0

Hopping Off



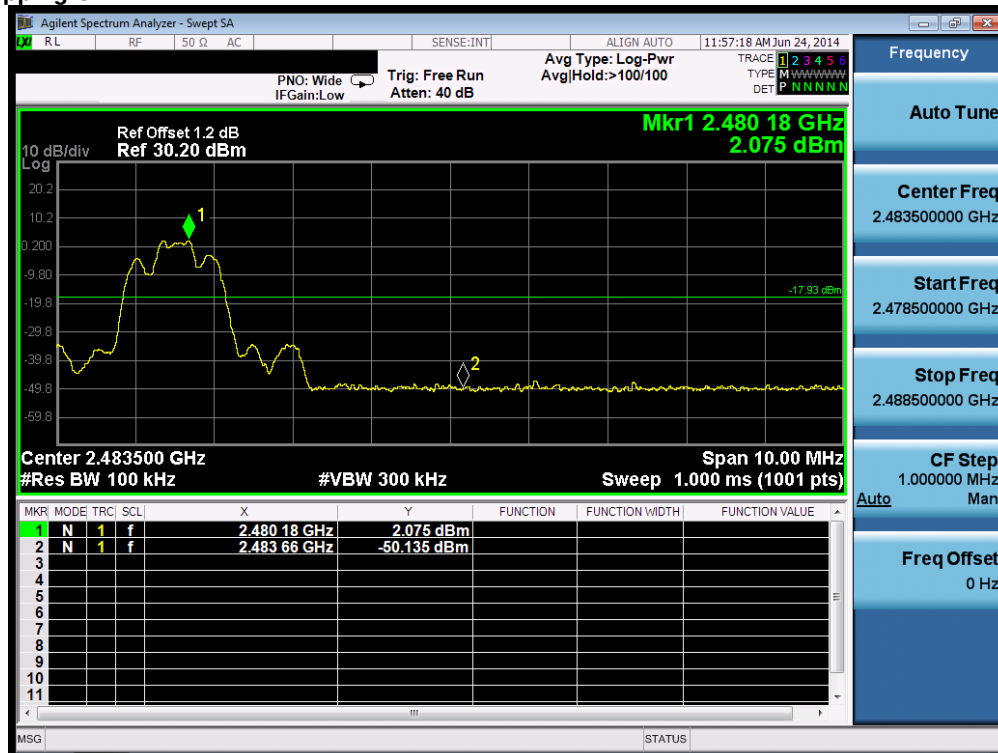


Hopping On



2.4. TM2-2DH5-Ch78

Hopping Off

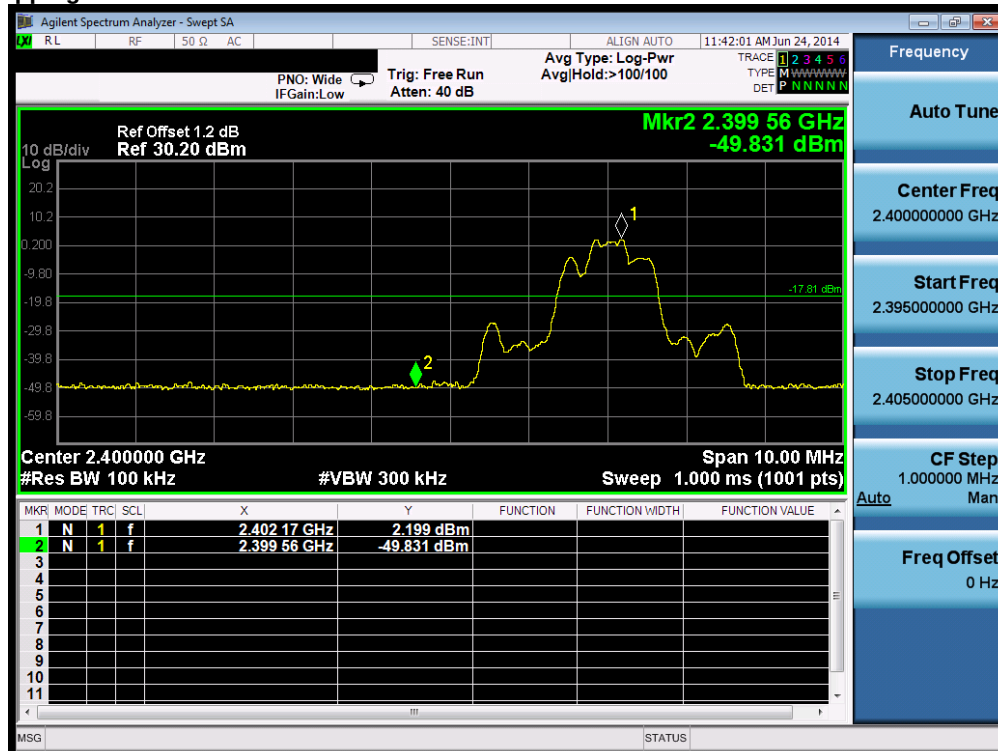


Hopping On



2.5. TM3-3DH5-Ch0

Hopping Off



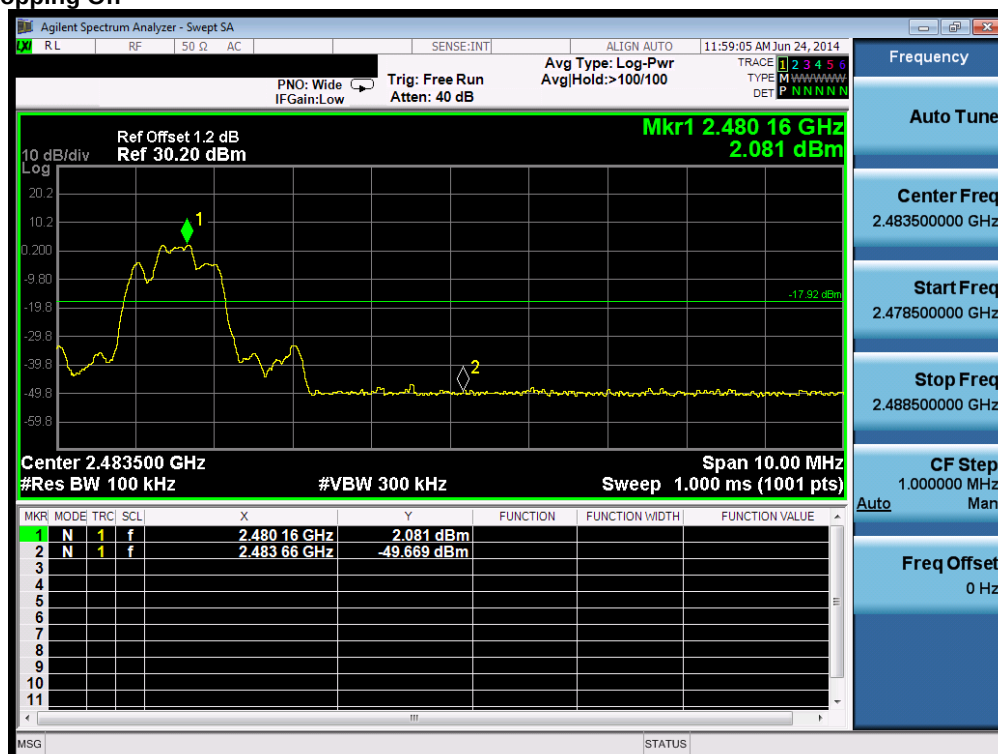


Hopping On



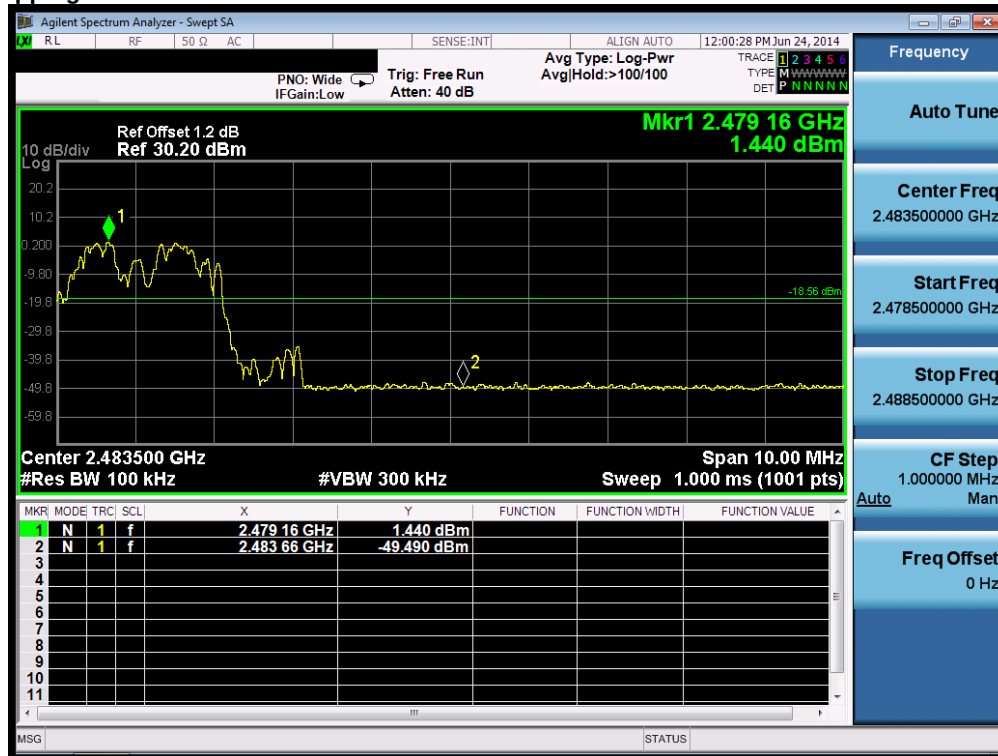
2.6. TM3-3DH5-Ch78

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

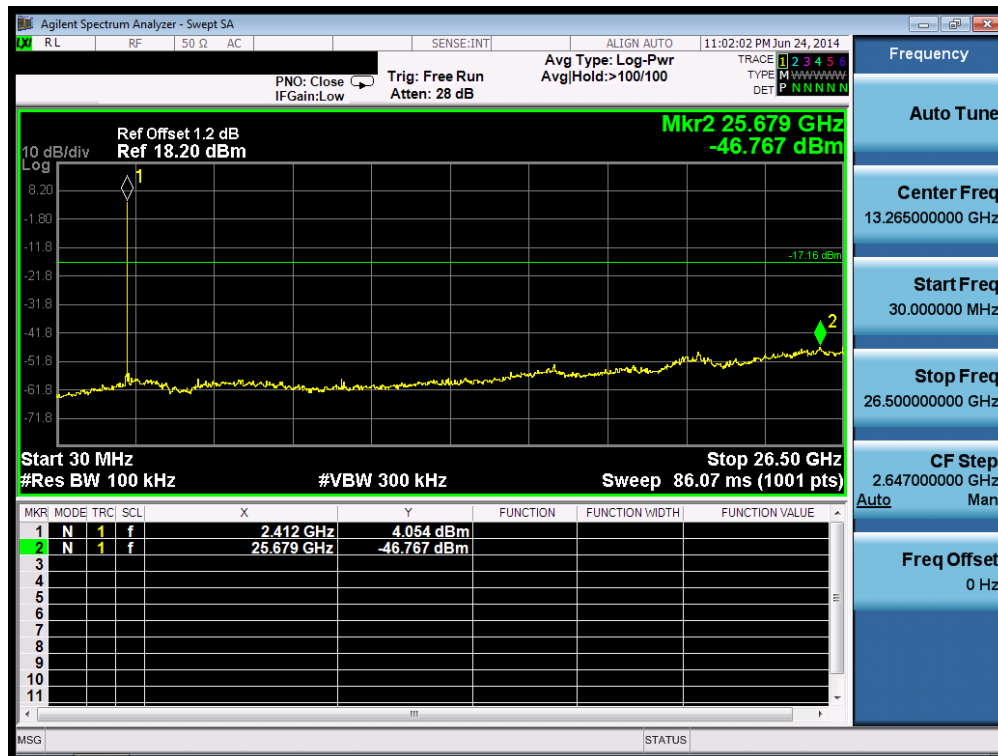
2. Test Plot

2.1. TM1-DH5-Ch0

Pref:



PUW:



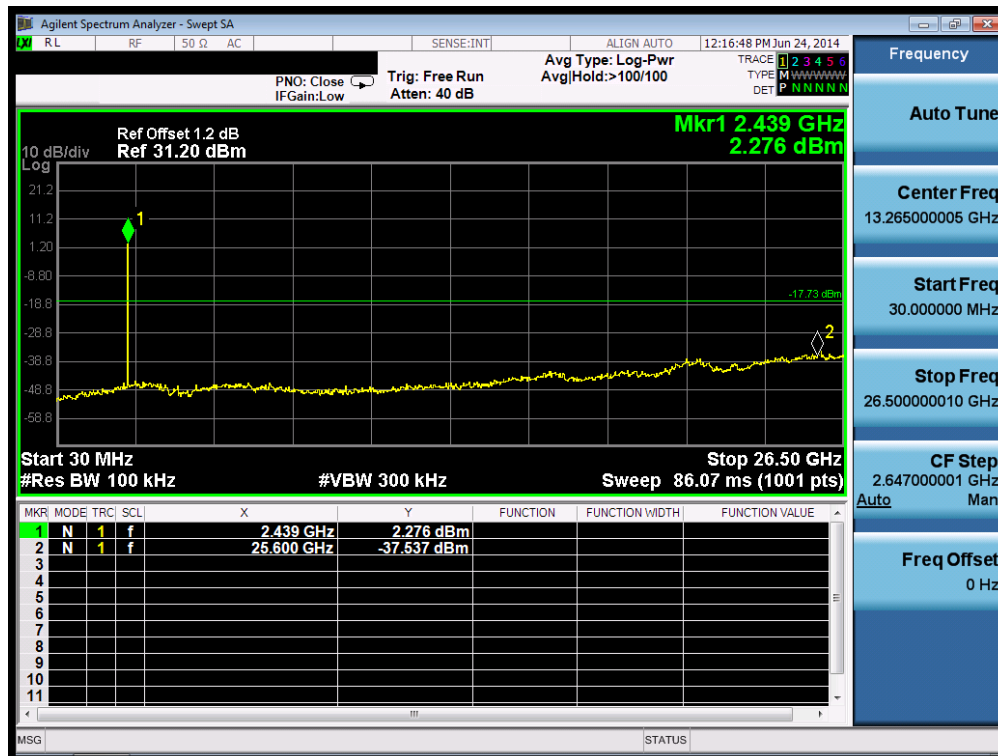
2.2. TM1-DH5-Ch39

Pref:





PUW:

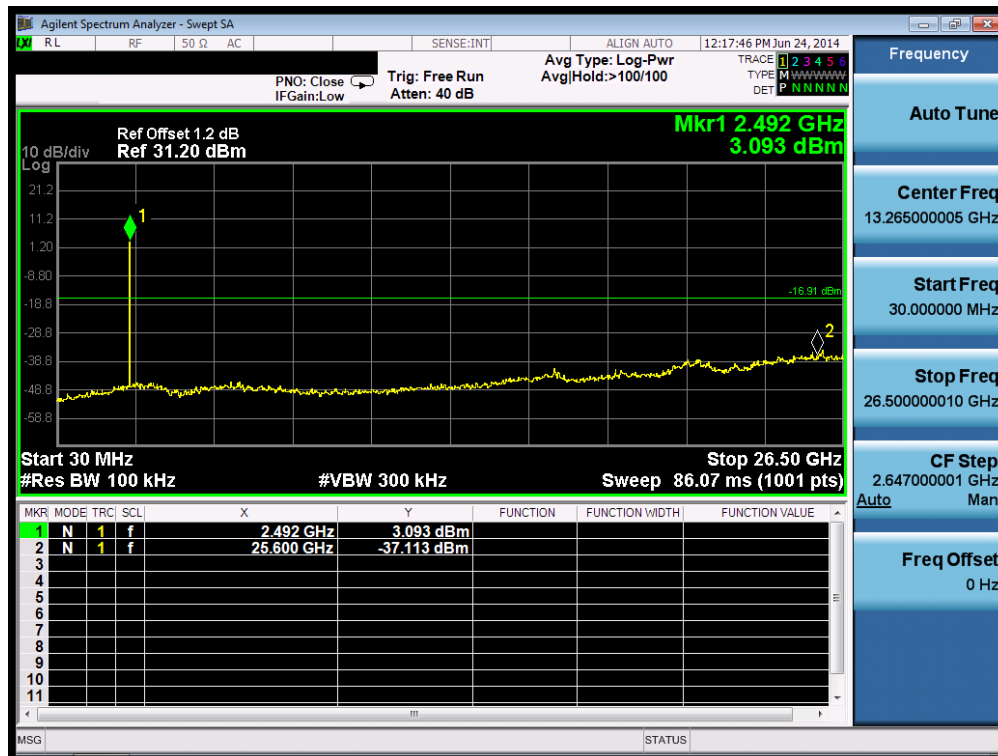


2.3. TM1-DH5-Ch78

Pref:



PUW:



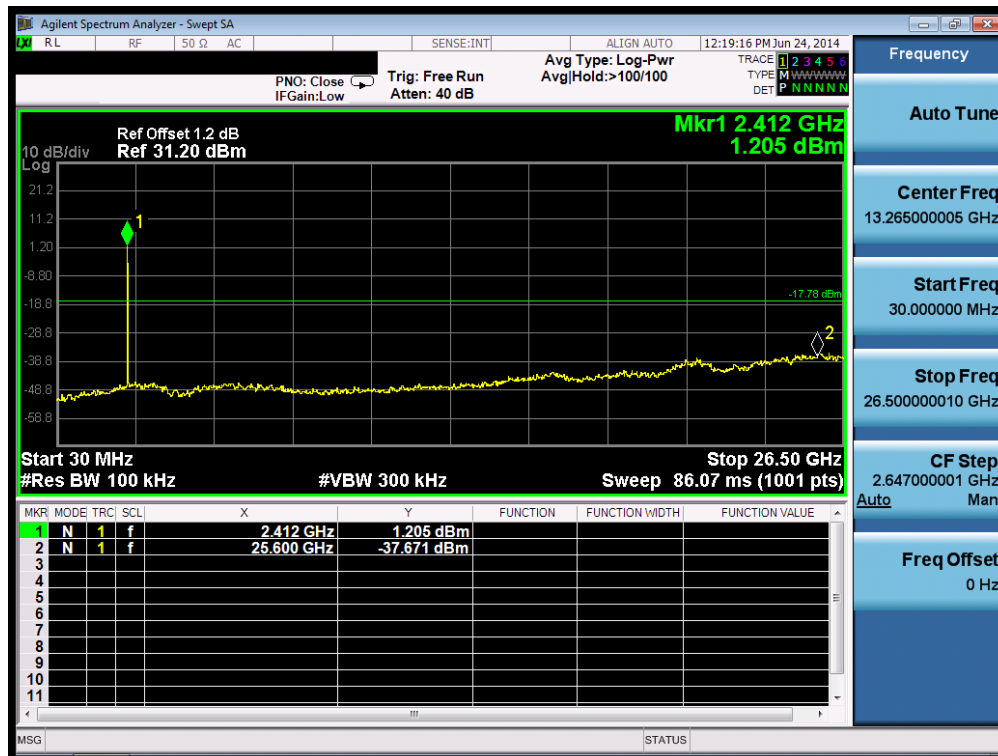
2.4. TM2-2DH5-Ch0

Pref:





PUW:



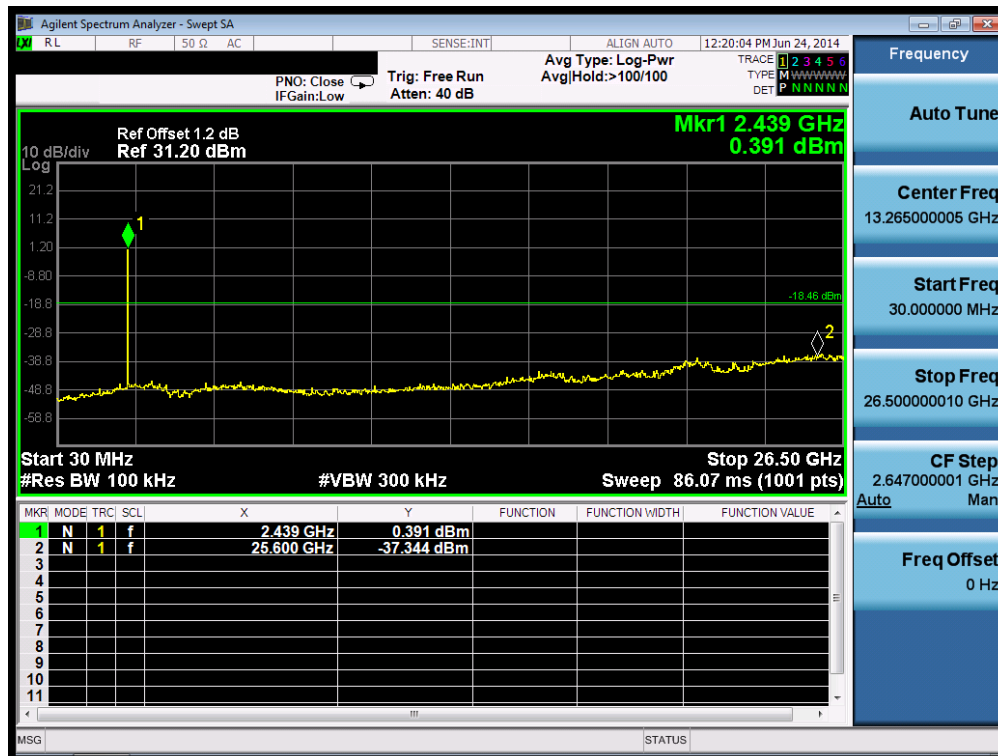
2.5. TM2-2DH5-Ch39

Pref:





PUW:



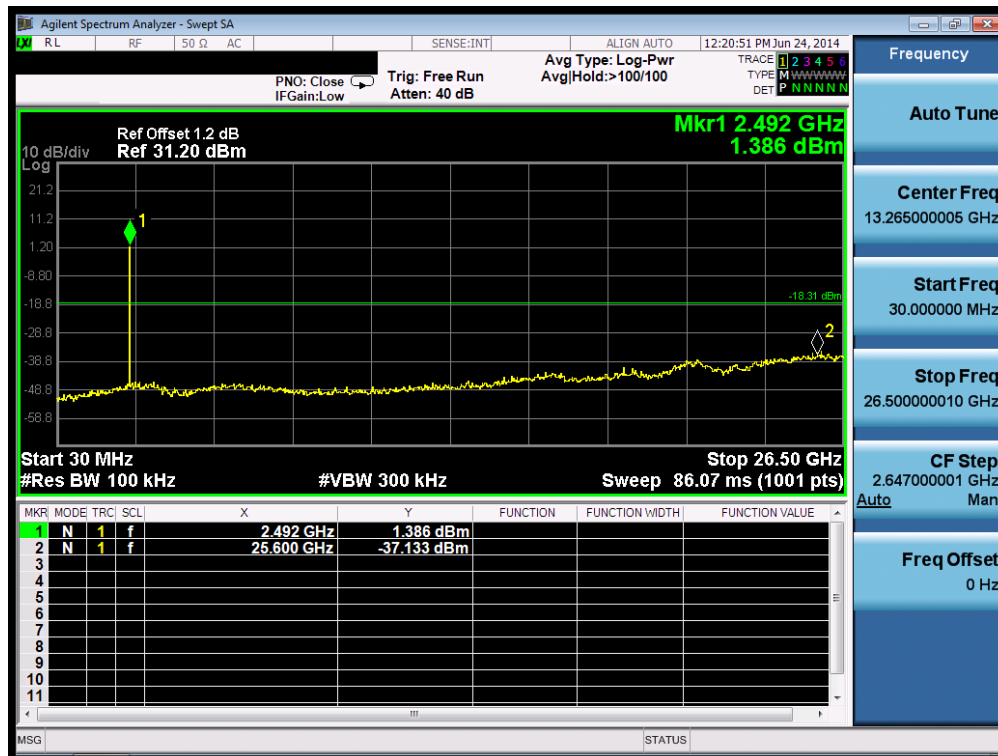
2.6. TM2-2DH5-Ch78

Pref:





PUW:



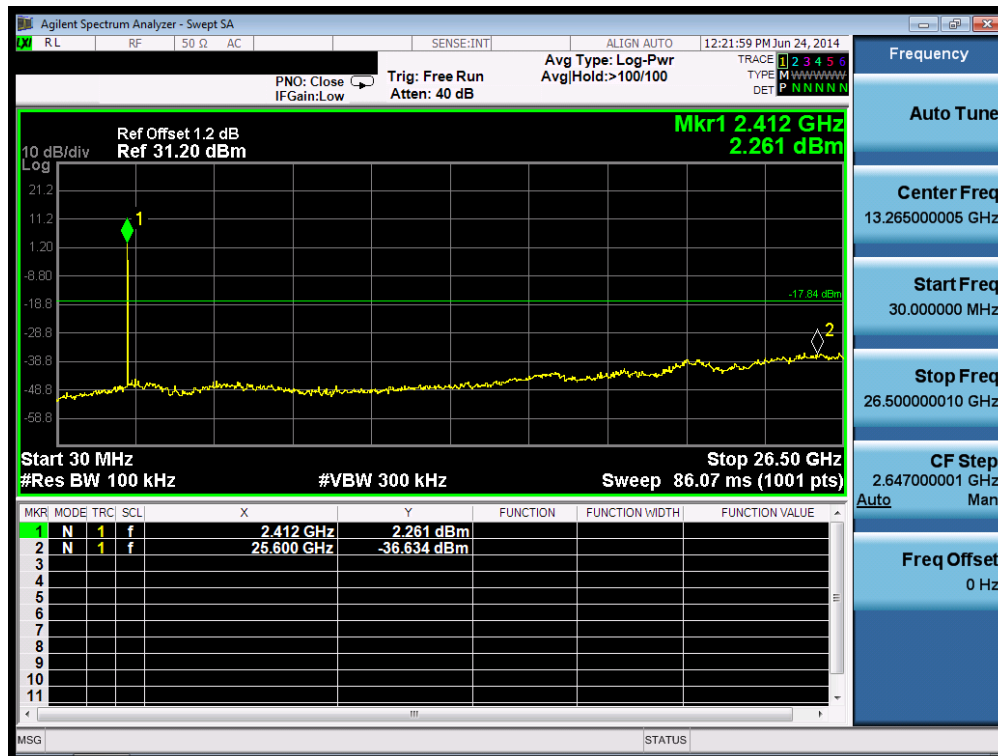
2.7. TM3-3DH5-Ch0

Pref:





PUW:

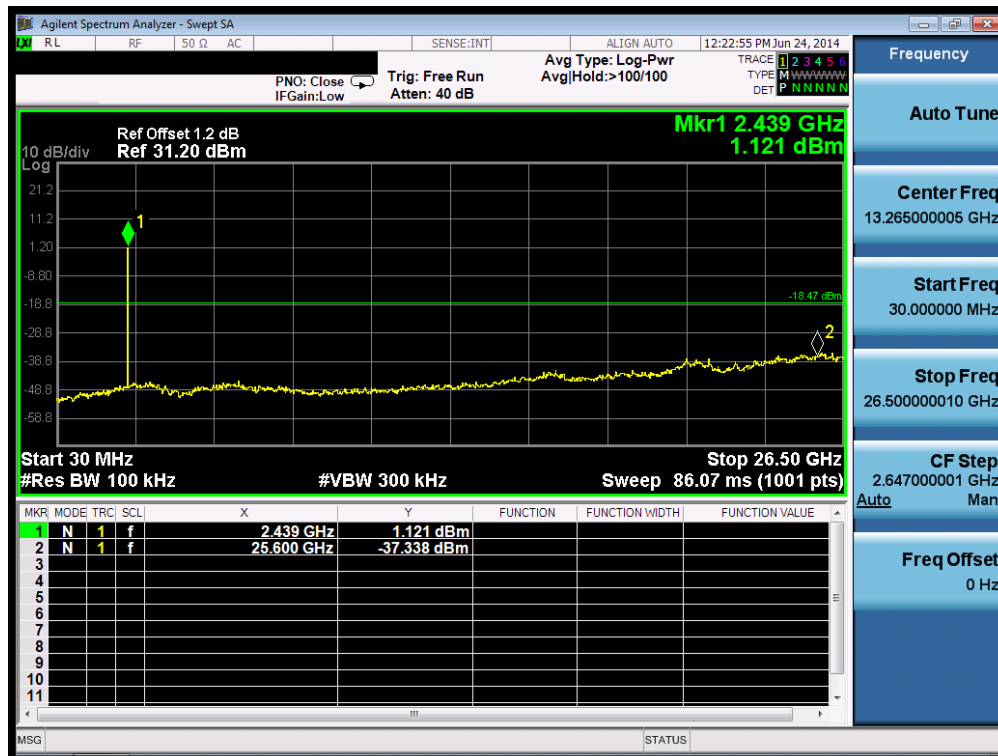


2.8. TM3-3DH5-Ch39

Pref:



PUW:



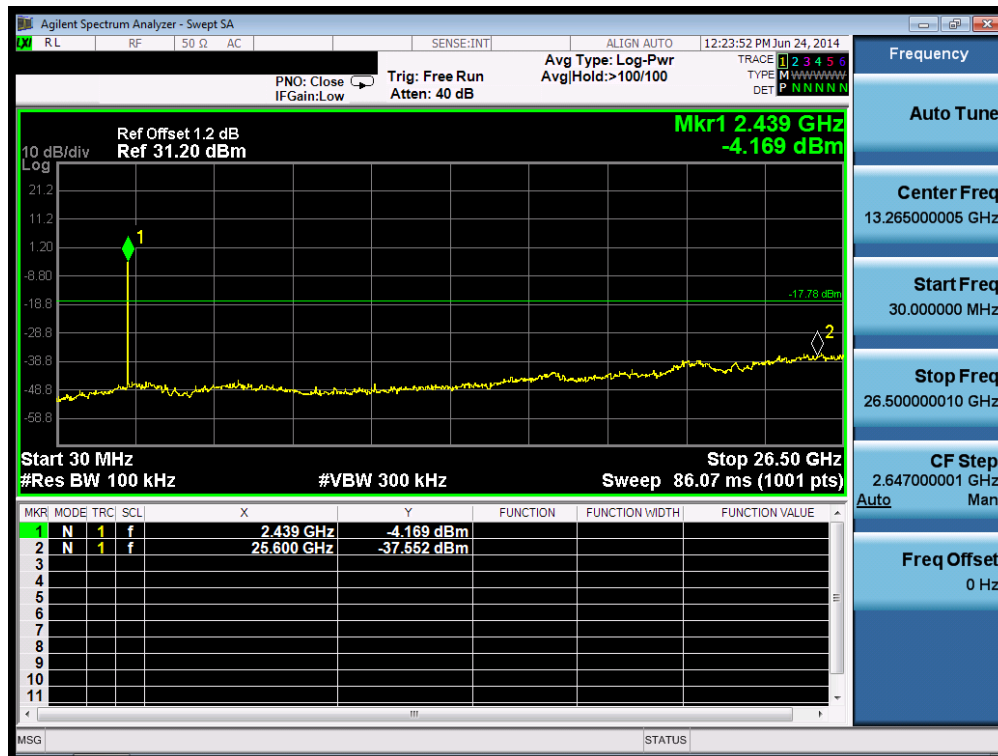
2.9. TM3-3DH5-Ch78

Pref:





PUW:



Appendix H: Radiated Emissions in the Restricted Bands

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

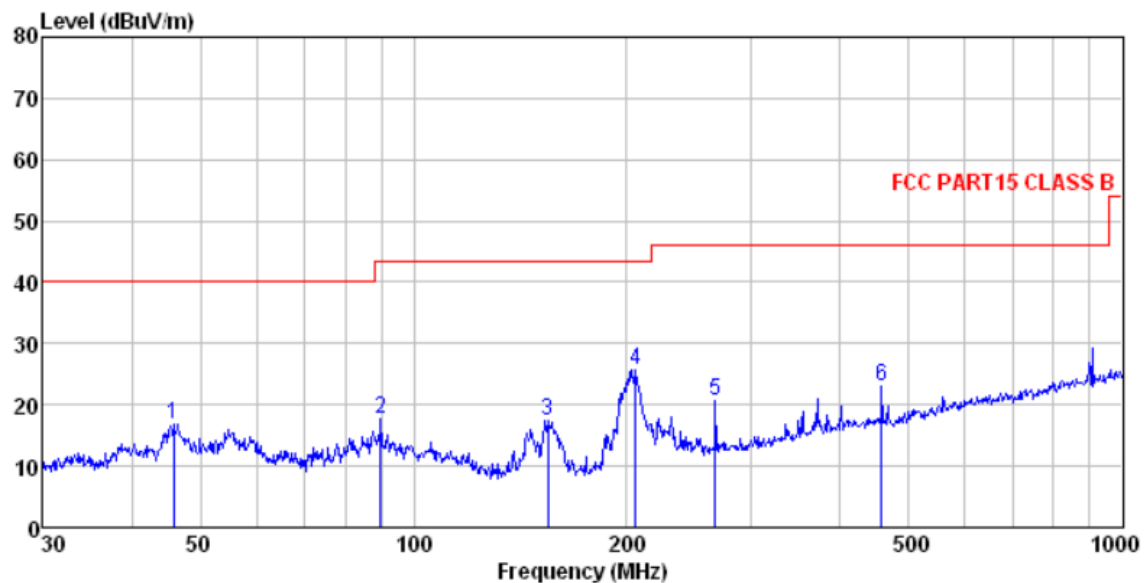
Note 1: The test for testing range of “9kHz to 30MHz” is measured with a loop antenna. This range will not be presented for each Test Mode and each Channel.

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.

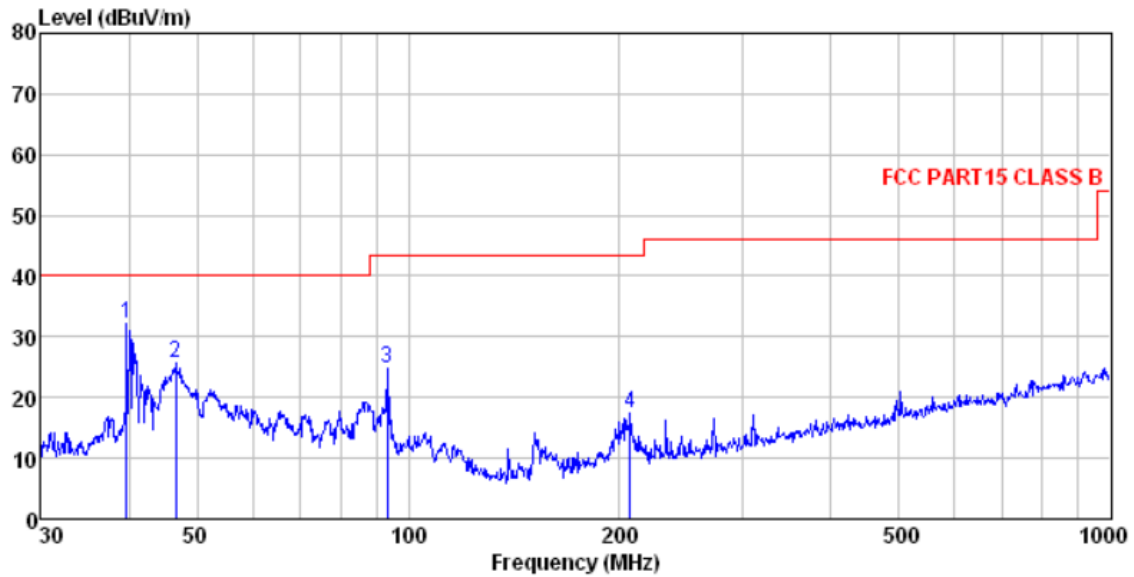
30MHz~1GHz(Horizontal)



MEASUREMENT RESULT: QP Detector

	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	Remark
	MHz	Level	Factor	Loss	Factor	Line	Limit	
		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-scan the GFSK, $\pi/4$ -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	--

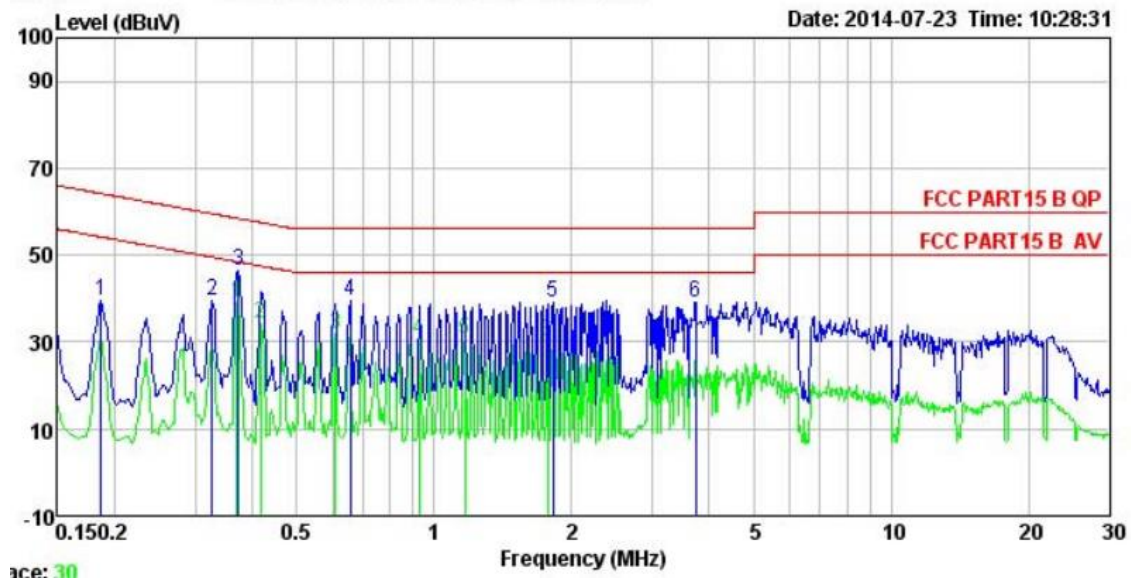
High channel

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

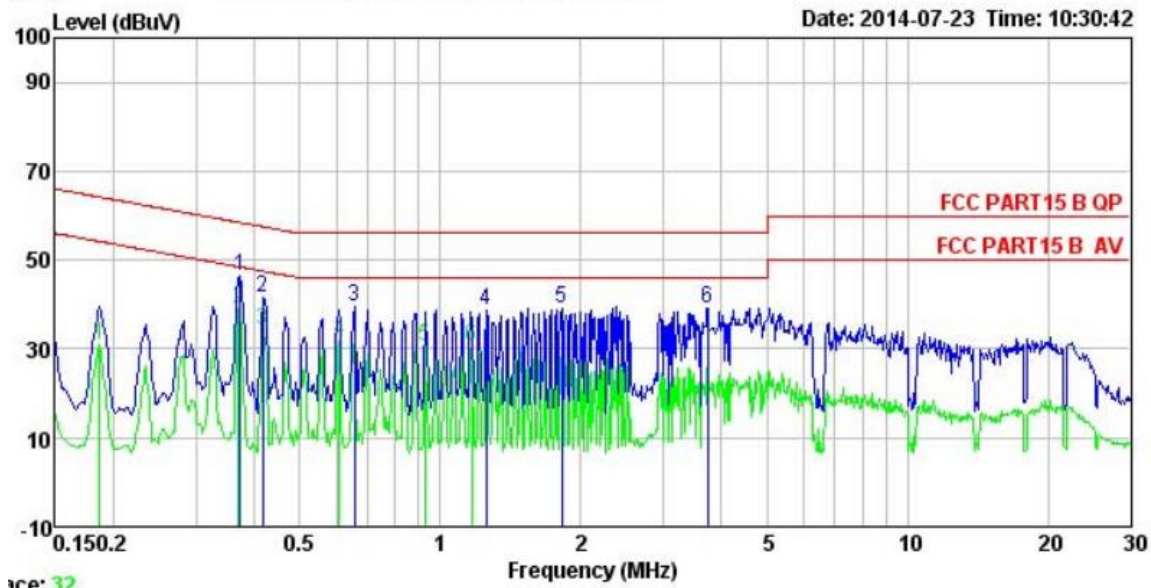
Channel 39

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



	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-----