

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 5.0Q
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,
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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 5.0Q
FCC ID : 2ABOSGC140603
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



(Manager)

(Murphy Wang)

Reviewed By



(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 9kHz to 40GHz.

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	TestResult	Verdict (NOTE)
20dB Emission Bandwidth (EBW)	15.247(a)(1)	No limit.	Appendix A	Pass
Carrier Frequency Separation	15.247(a)(1)	$\geq \text{MAX}\{25\text{kHz}, \text{IF}\{\text{output power} \leq 125\text{mW}, 2/3 * 20\text{dB EBW}, 20\text{dB EBW}\}\}$.	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 5.0Q
Applicant	Sky Phone LLC 1348 Washington Av., Miami Beach
Manufacturer	Shenzhen Malata Mobile Communication CO.,LTD 25/F,Malata Technology Building,NO9998 ShennanRd,Hi-techPark,Nanshan,Shenzhen,P.R. China 518057.
FCC ID	2ABOSGC140603
Frequency Range	2402 ~ 2480 MHz
Modulation Type	GFSK for 1Mbps
	$\pi/4$ -DQPSK for 2Mbps
	8DPSK for 3Mbps
Antenna Type	Internal
Antenna Gain	0dBi
RF Output Power (Conducted)	GFSK for 1Mbps : 2.36 dBm / 1.72 mW
	$\pi/4$ -DQPSK for 2Mbps : 1.61 dBm / 1.45 mW
	8DPSK for 3Mbps : 1.58 dBm / 1.44 mW

NOTE: Only Bluetooth test data included in this report.

3.2 EUT Identity

IMEI No.	
SIM 1	868817019960176
SIM 2	868817019960034

NOTE: Unless otherwise noted in the report, the functional boards installed in the unit 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 stringer than the declared.

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

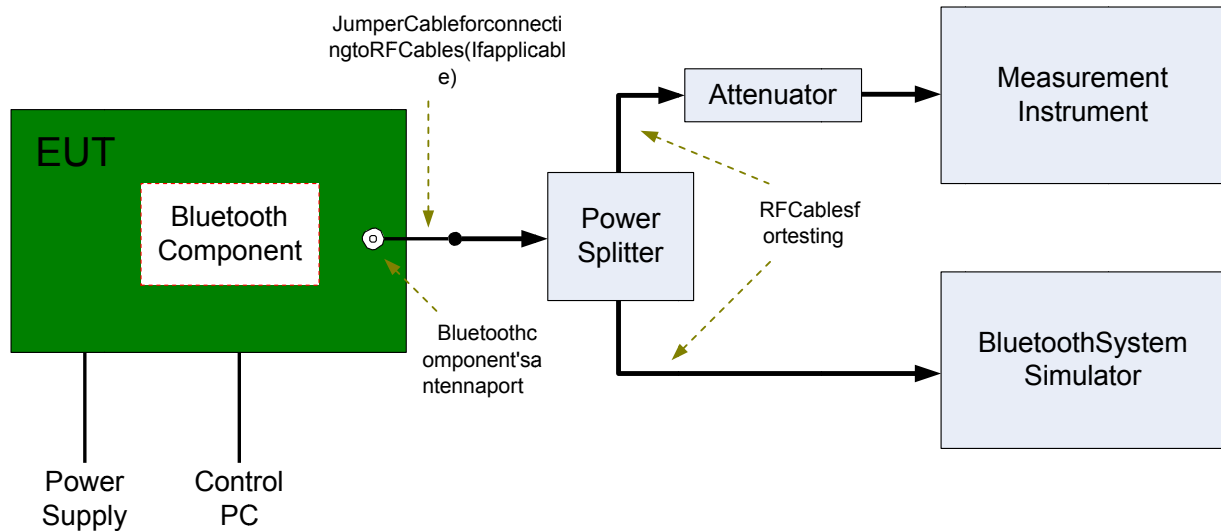
4.3 Measurement Uncertainty

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

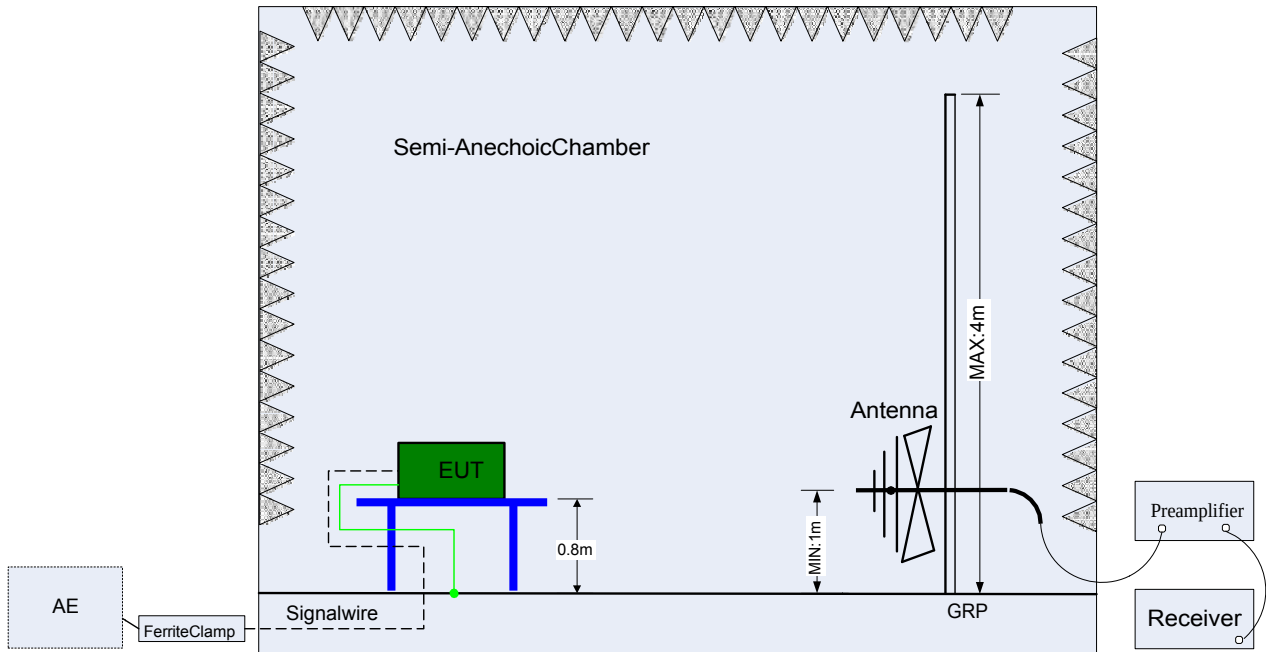
The Bluetooth component's antenna port(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by Bluetooth System Simulator and/or PC/software to emit the specified signals for the purpose of measurements.



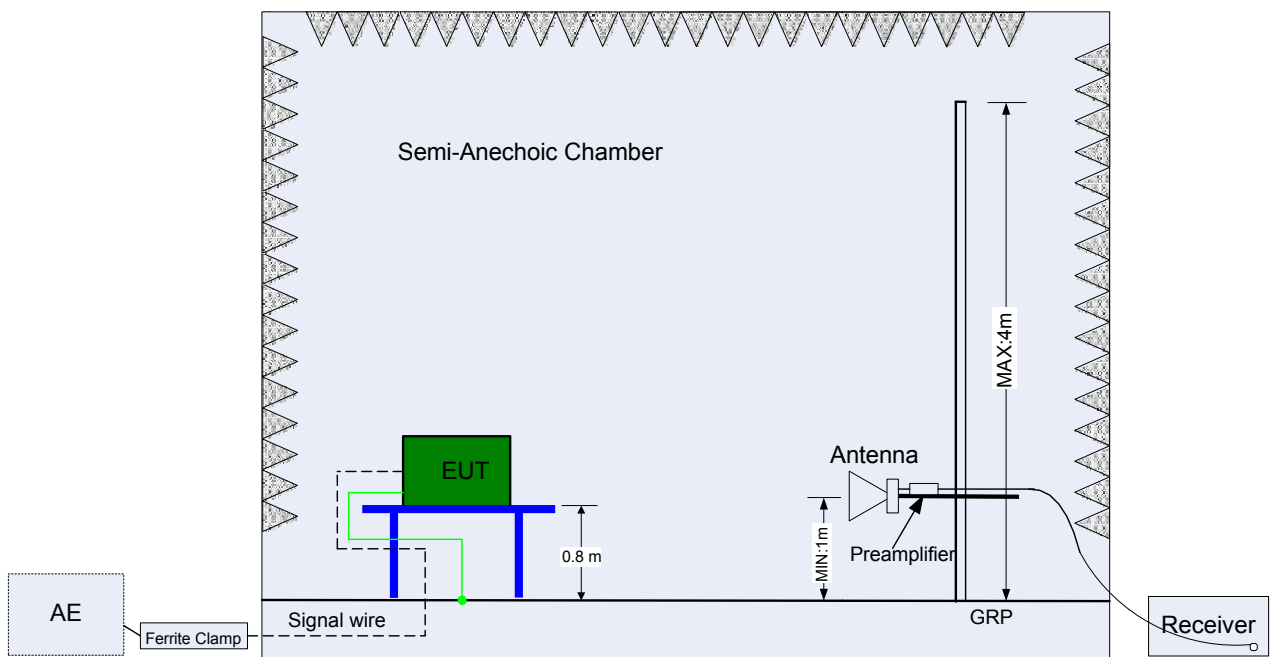
4.3.2 Test Setup 2

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB 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 CISPR22.

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



(Below 1 GHz)

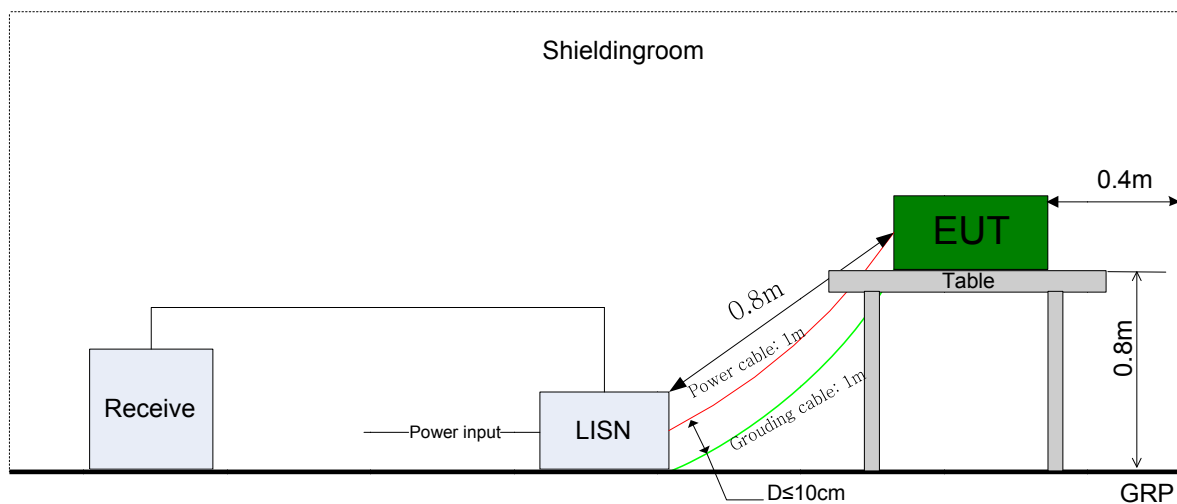


(Above 1 GHz)

4.3.3 TestSetup 3

The mains cable of the EUT (maybe AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8m 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 point 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 0.1m.





4.5 Test Conditions

Test Case	TestConditions	
	Configuration	Description
20dB EmissionBandwid th (EBW)	Meas.Method	DA 00-705
	TestEnv.	NTNV
	Test Setup	Test Setup1
	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_C h39,TM3_3DH5_Ch78, TM4_DH5_Ch0,TM4_DH5_Ch19,TM4_DH5_Ch39.
Carrier FrequencySepara tion	Meas.Method	DA 00-705
	TestEnv.	NTNV
	Test Setup	Test Setup1
	EUTConf.	TM1_DH5_Hop,TM2_2DH5_Hop , TM3_3DH5_Hop,
Numberof HoppingChannel	Meas.Method	DA 00-705
	TestEnv.	NTNV
	Test Setup	Test Setup1
	EUTConf.	TM1_DH5_Hop,TM2_2DH5_Hop , TM3_3DH5_Hop,
Time of Occupancy(DwellTim e)	Meas.Method	DA 00-705
	TestEnv.	NTNV
	Test Setup	Test Setup1
	EUTConf.	TM1_DH5_Ch39,T M2_2DH5_Ch39, TM3_3DH5_Ch39.
MaximumPeakCond uctedOutputPower	Meas.Method	DA 00-705
	TestEnv.	NTNV
	Test Setup	Test Setup1
	EUTConf.	TM1_DH5_Ch0,TM1_DH5_Ch39,TM1_DH5_Ch78,TM2_2DH5_Ch0, TM2_2DH5_Ch39,TM2_2DH5_Ch78,TM3_3DH5_Ch0,TM3_3DH5_C h39,TM3_3DH5_Ch78, TM4_DH5_Ch0,TM4_DH5_Ch19,TM4_DH5_Ch39.
Bandedgespuriose mission	Meas.Method	DA 00-705
	TestEnv.	NTNV
	Test Setup	Test Setup1
	EUTConf.	TM1_DH5_Ch0,TM1_DH5_Ch78,TM 2_2DH5_Ch0,TM2_2DH5_Ch78, TM3_3DH5_Ch0,TM3_3DH5_Ch78.



Test Case	TestConditions	
	Configuration	Description
		TM4_DH5_Ch0,TM4_DH5_Ch39.
Conducted RFSpuriousEmissi on	Meas.Method	DA 00-705
	TestEnv.	NTNV
	Test Setup	Test Setup1
	EUTConf.	TM1_DH5_Ch0,TM1_DH5_Ch39,TM1_DH5_Ch78,TM2_2DH5_Ch0, TM2_2DH5_Ch39,TM2_2DH5_Ch78,TM3_3DH5_Ch0,TM3_3DH5_C h39,TM3_3DH5_Ch78. TM4_DH5_Ch0,TM4_DH5_Ch19,TM4_DH5_Ch39.
RadiatedEmissionsi n theRestrictedBands	Meas.Method	DA 00-705,C63.4,C63.10. (1) 30 MHz to 1 GHz: Pre: RBW=100kHz;VBW=300kHz; Det. = Peak.Final:RBW=120kHz; Det. = CISPR Quasi-Peak. (2) 1 GHzto 26.5GHz: Average:RBW=1 MHz;VBW= 10Hz; Det. = Peak; Sweep-time= Auto;Trace = Single. Peak: RBW=1 MHz;VBW= 3 MHz;Det. = Peak; Sweep-time= Auto; Trace≥ MaxHold * 100.
	TestEnv.	NTNV
	Test Setup	Test Setup2
	EUTConf.	30 MHz-1GHz
		TM1_DH5_Ch0 (Worst Conf.).
		1-3 GHz
		TM1_DH5_Ch0,TM1_DH5_Ch39,TM1_DH5_Ch78,T M2_2DH5_Ch0,TM2_2DH5_Ch39,TM2_2DH5_Ch7 8, TM3_3DH5_Ch0,TM3_3DH5_Ch39, TM3_3DH5_Ch78. TM4_DH5_Ch0,TM4_DH5_Ch19,TM4_DH5_Ch39.
		3-18GHz
		TM1_DH5_Ch0 (WorseConf.),TM1_DH5_Ch39(WorseConf.),TM1_DH5_Ch78(WorseConf.).
		18-26.5GHz
		TM1_DH5_Ch0 (Worst Conf.).
AC Power LineConducte dEmissions	Meas.Method	AC mains conducted. Pre: RBW=10kHz; Det. = Peak. Final: RBW=9 kHz;Det. =CISPRQuasi-Peak&Average.
	TestEnv.	NTNV
	Test Setup	Test Setup3
	EUTConf.	TM1_DH5_Ch39.

Note: For RadiatedEmissions, 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	0.8258	0.83756	PASS
TM1-DH5-Ch39	0.8171	0.81779	PASS
TM1-DH5-Ch78	0.8029	0.82040	PASS
TM2-2DH5-Ch0	1.1262	1.08107	PASS
TM2-2DH5-Ch39	1.1318	1.07784	PASS
TM2-2DH5-Ch78	1.1366	1.07510	PASS
TM3-3DH5-Ch0	1.1406	1.08166	PASS
TM3-3DH5-Ch39	1.1395	1.08092	PASS
TM3-3DH5-Ch78	1.1327	1.07748	PASS

2. Test Plot

2.1. TM1-DH5-Ch0





2.2. TM1-DH5-Ch39



2.3. TM1-DH5-Ch78

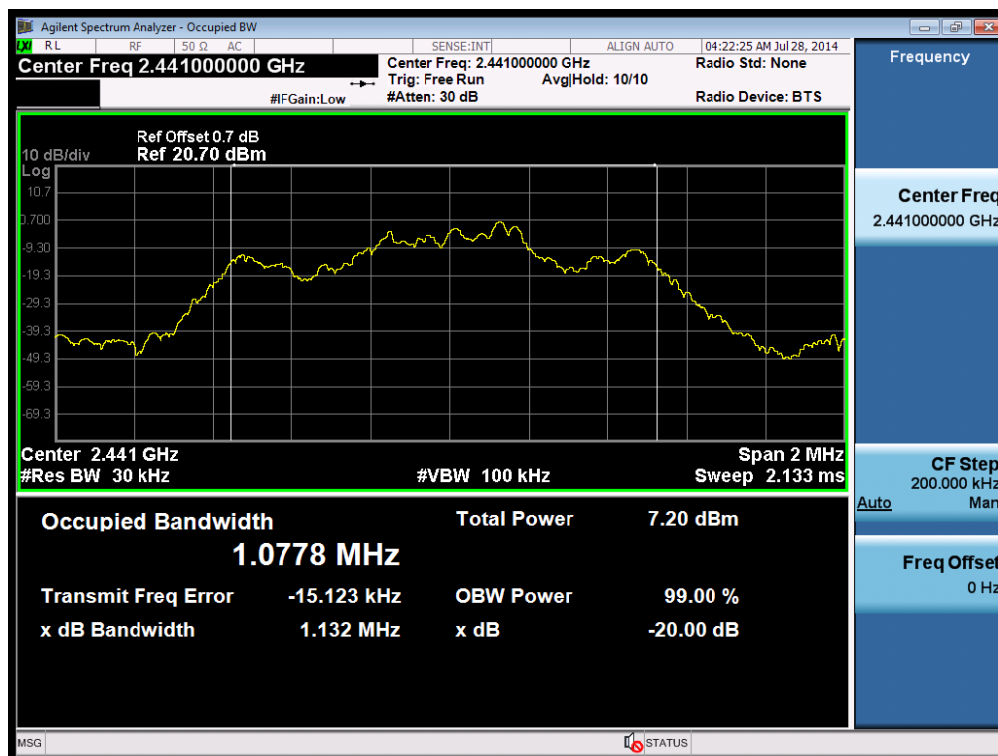




2.4. TM2-2DH5-Ch0



2.5. TM2-2DH5-Ch39





2.6. TM2-2DH5-Ch78

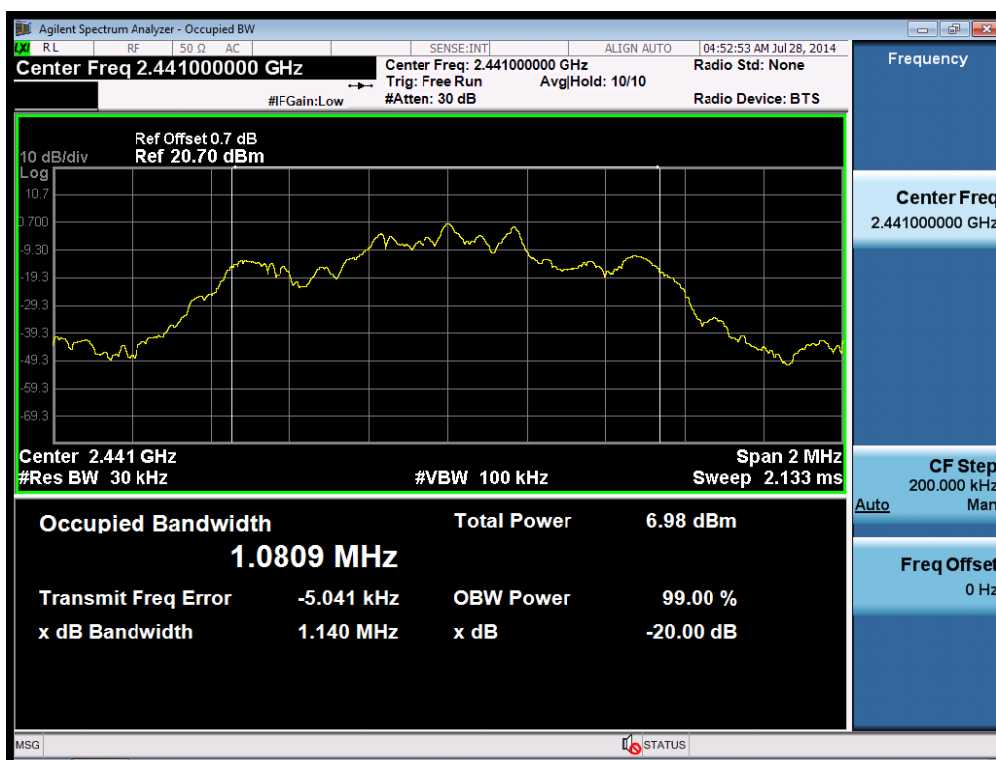


2.7. TM3-3DH5-Ch0





2.8. TM3-3DH5-Ch39



2.9. TM3-3DH5-Ch78



Appendix B: Carrier Frequency Separation

1. Result Table

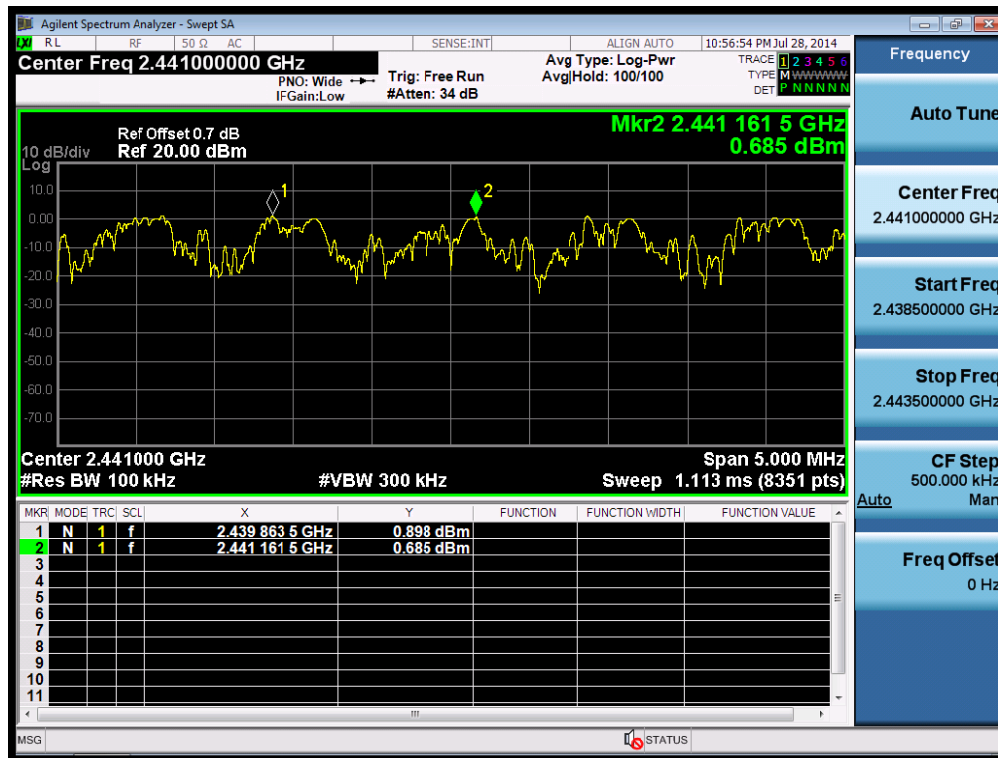
EUT Conf.	Carrier Frequency Separation [MHz]	Verdict
TM1-DH5-Hop	2.26	PASS
TM2-2DH5-Hop	0.69	PASS
TM3-3DH5-Hop	0.06	PASS

2. Test Plot

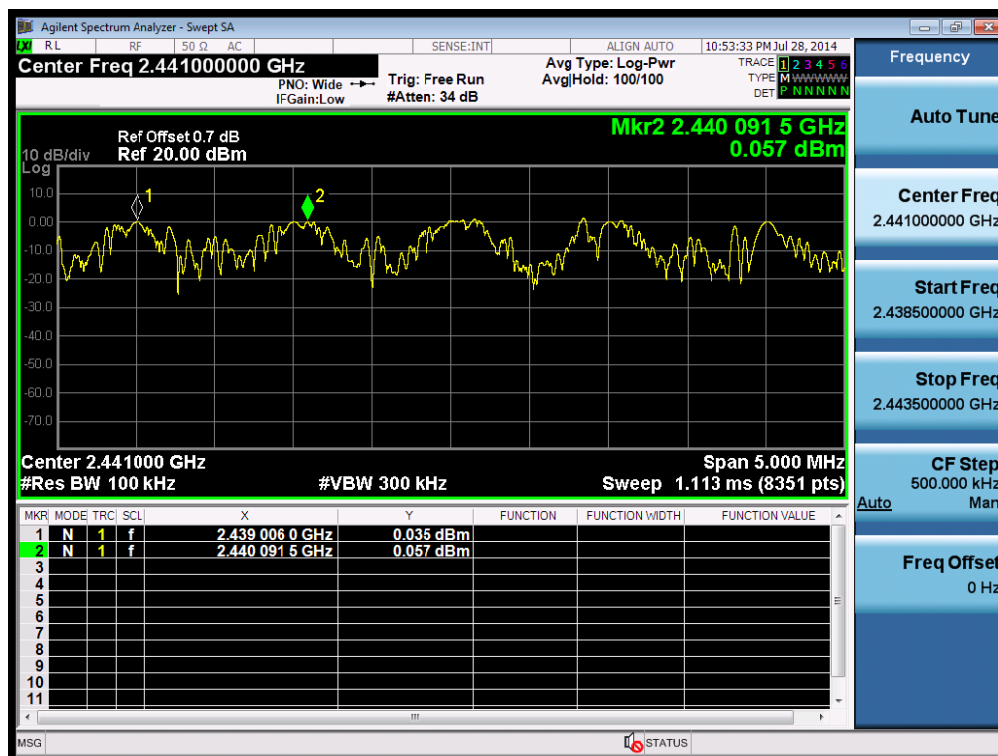
2.1. TM1-DH5-Hop



2.2. TM2-2DH5-Hop



2.3. TM3-3DH5-Hop





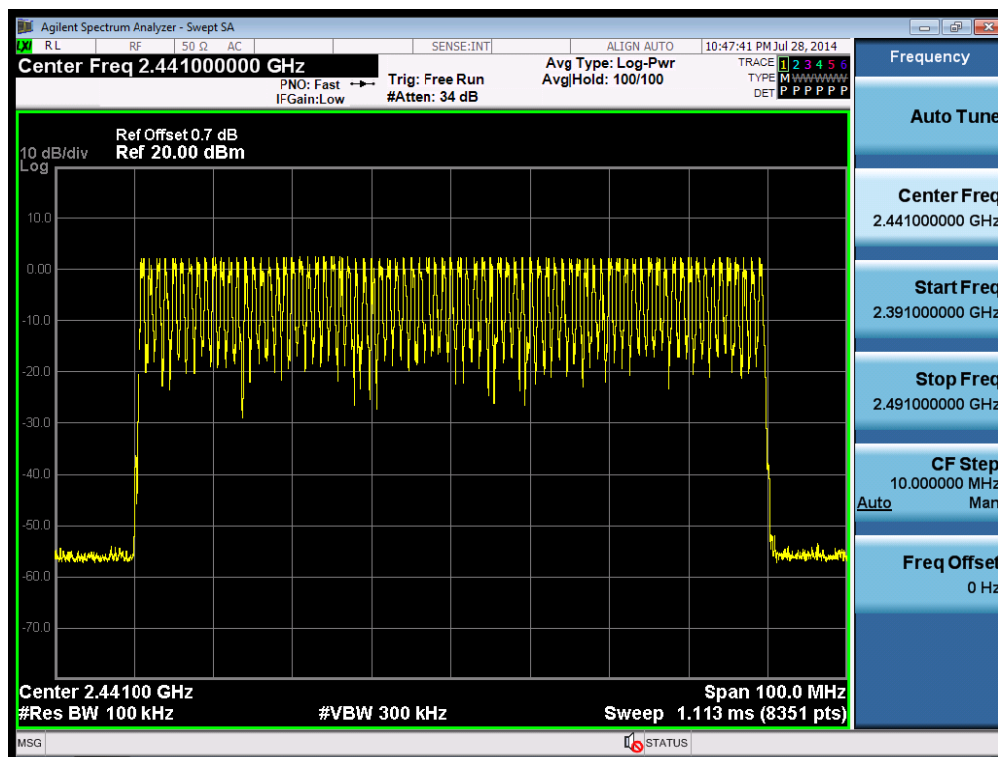
Appendix C: Number of Hopping Channel

1. Result Table

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

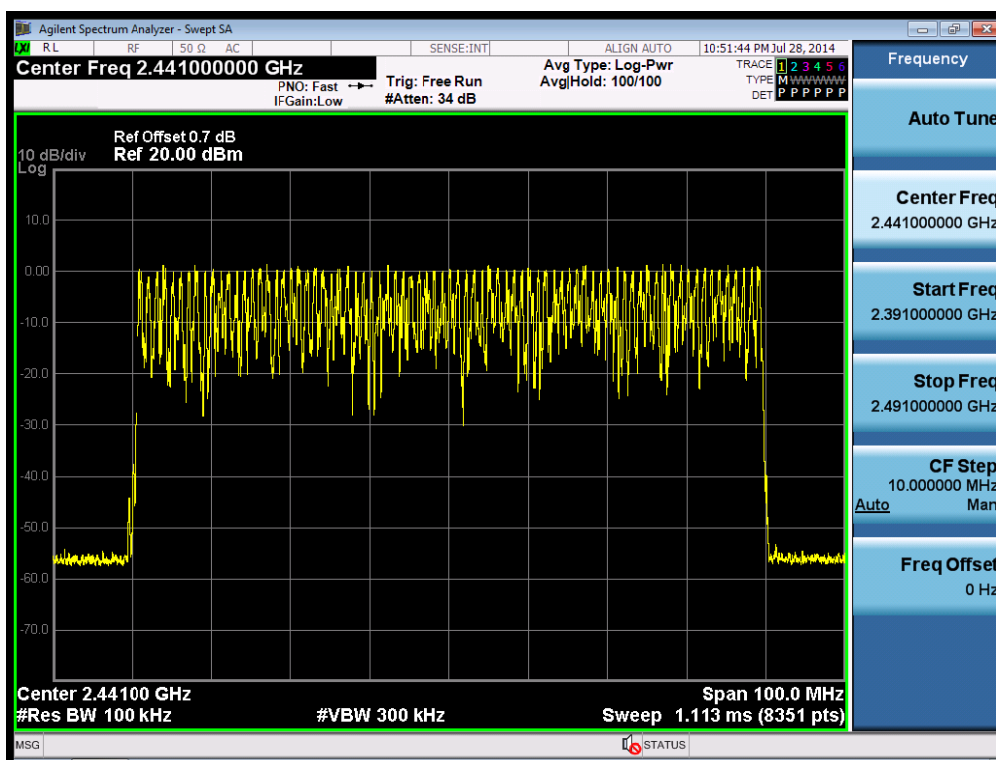
2. Test Plot

2.1. TM1-DH5-Hop

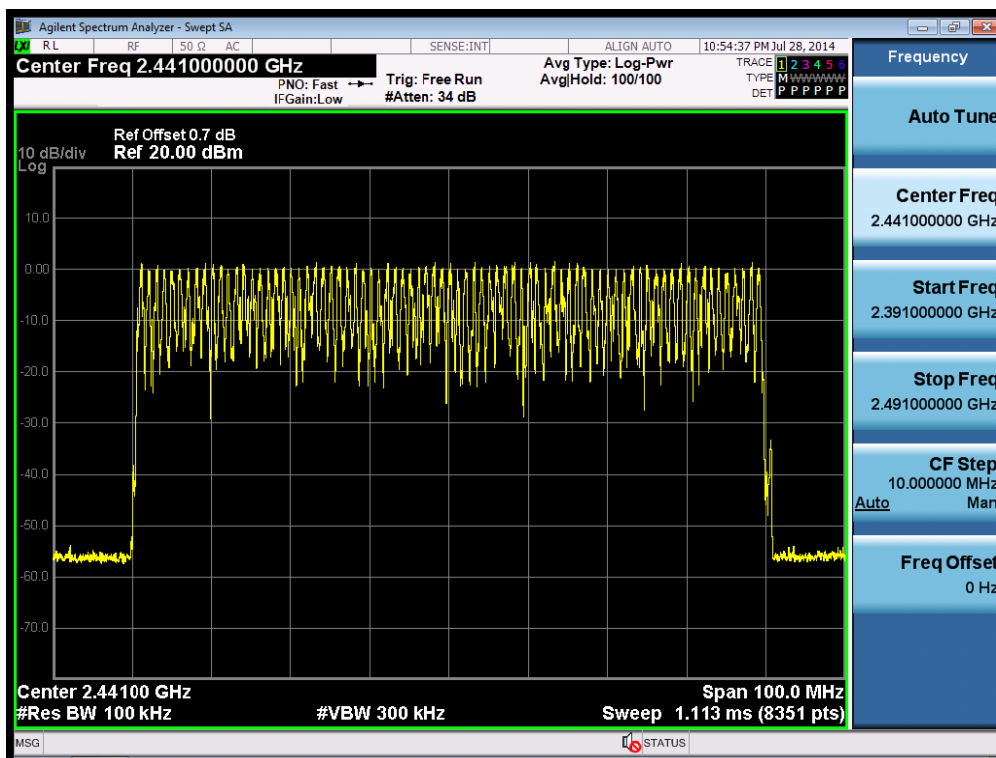




2.2. TM2-2DH5-Hop



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:

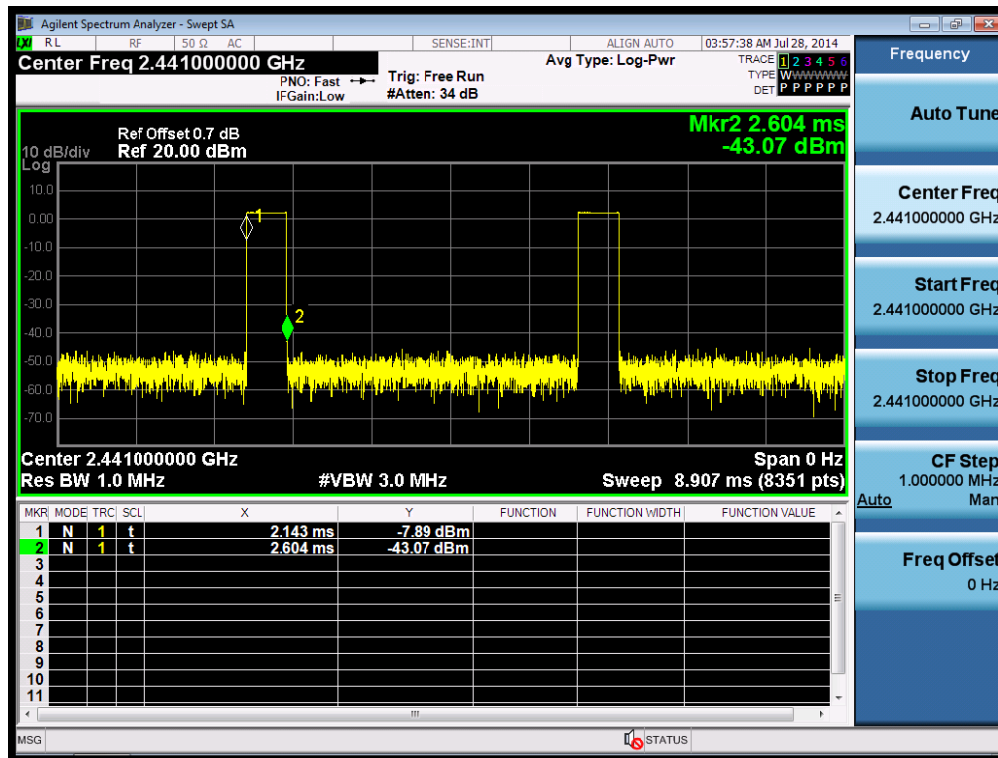
- The duration for dwell time calculation: $0.4[s] * \text{hopping number} = 0.4[s] * 79[\text{ch}] = 31.6[s * \text{ch}]$;
- The burst width [ms/hop/ch], which is directly measured, refers to the duration on one channel hop.
- The hops per second for all channels: The selected EUT Conf uses a slot type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

EUT Conf.	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Verdict
TM1-DH5-Ch39	0.461	106.67	49.17487	PASS
TM2-2DH5-Ch39	0.311	106.67	33.17437	PASS
TM3-3DH5-Ch39	0.257	106.67	27.41419	PASS

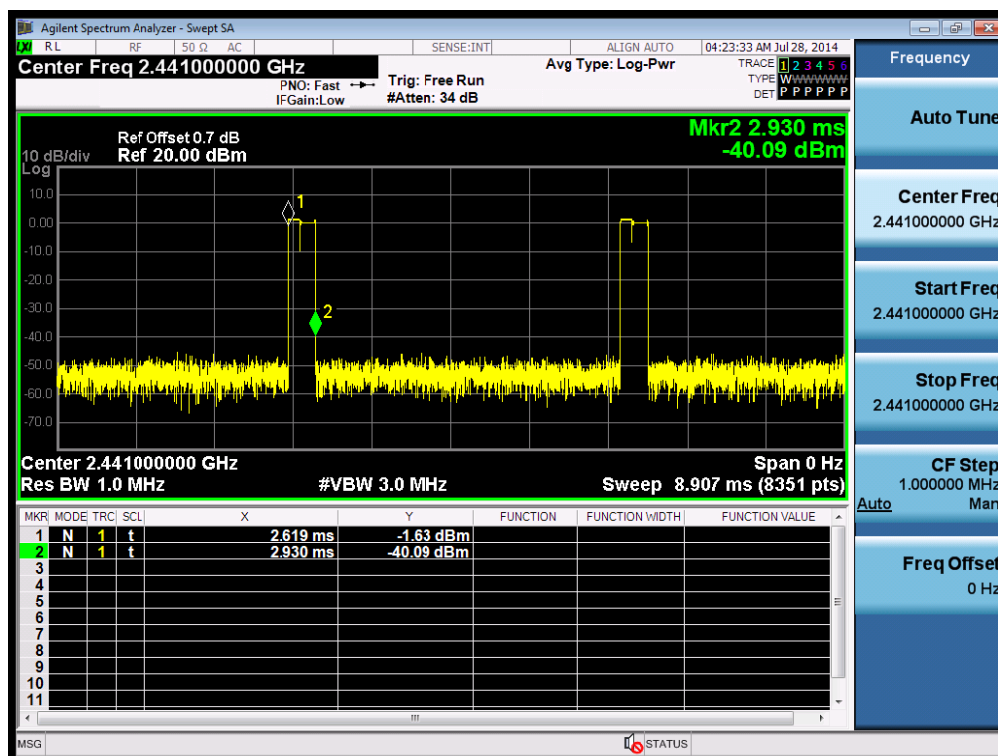


2. Test Plot

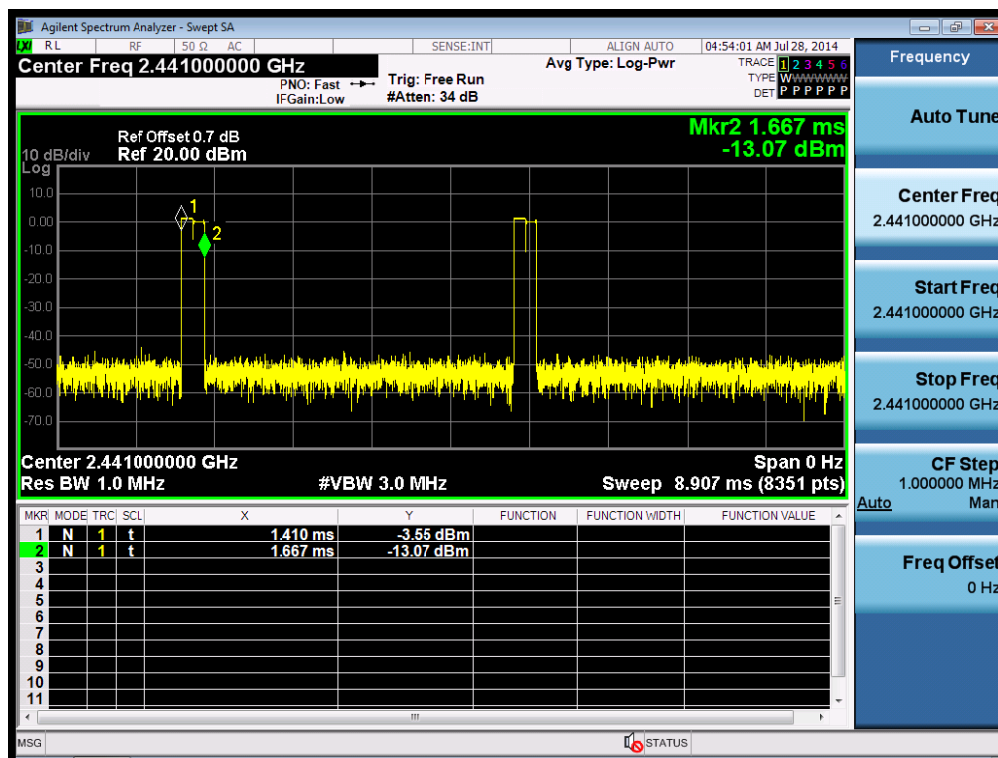
2.1. TM1-DH5-Ch39



2.2. TM2-2DH5-Ch39



~~2.3. TM3-3DH5-Ch39~~





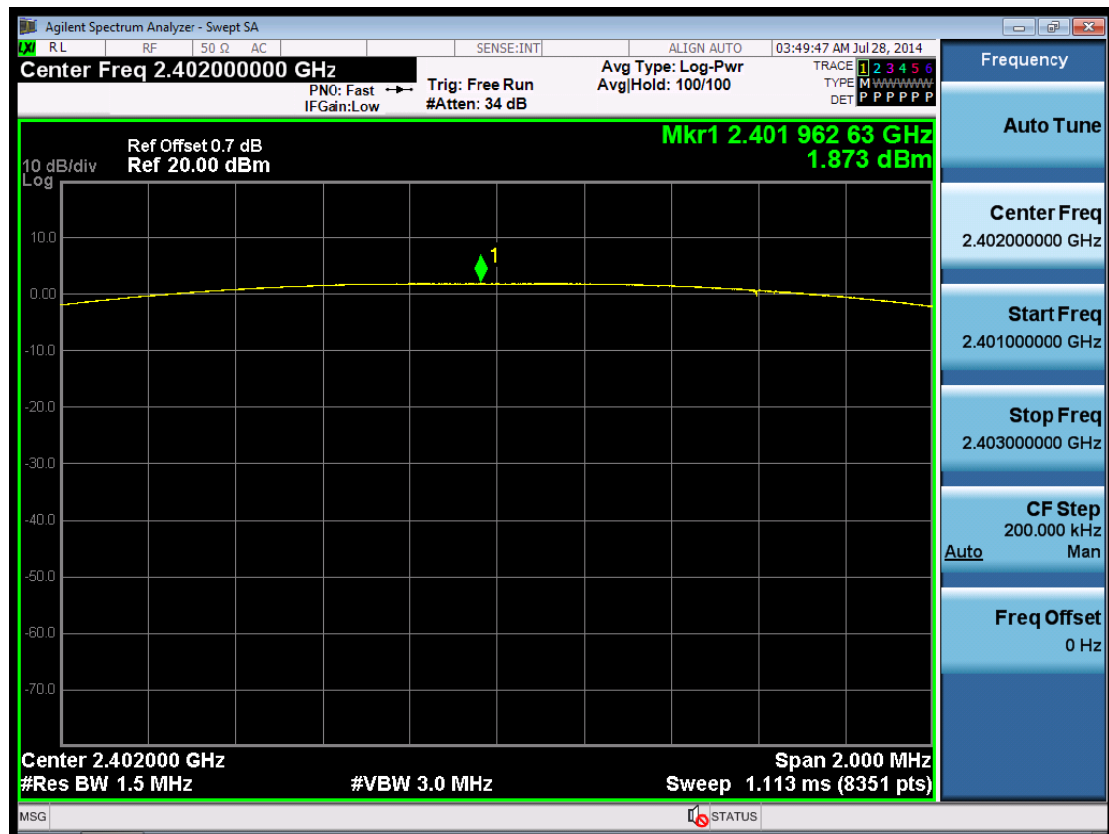
Appendix E: Maximum Peak Conducted Output Power

1. Result Table

EUT Conf.	Maximum Peak Output Power [dBm]	Verdict
TM1-DH5-Ch0	1.87	PASS
TM1-DH5-Ch39	2.36	PASS
TM1-DH5-Ch78	2.36	PASS
TM2-2DH5-Ch0	1.34	PASS
TM2-2DH5-Ch39	1.61	PASS
TM2-2DH5-Ch78	1.61	PASS
TM3-3DH5-Ch0	1.33	PASS
TM3-3DH5-Ch39	1.53	PASS
TM3-3DH5-Ch78	1.58	PASS

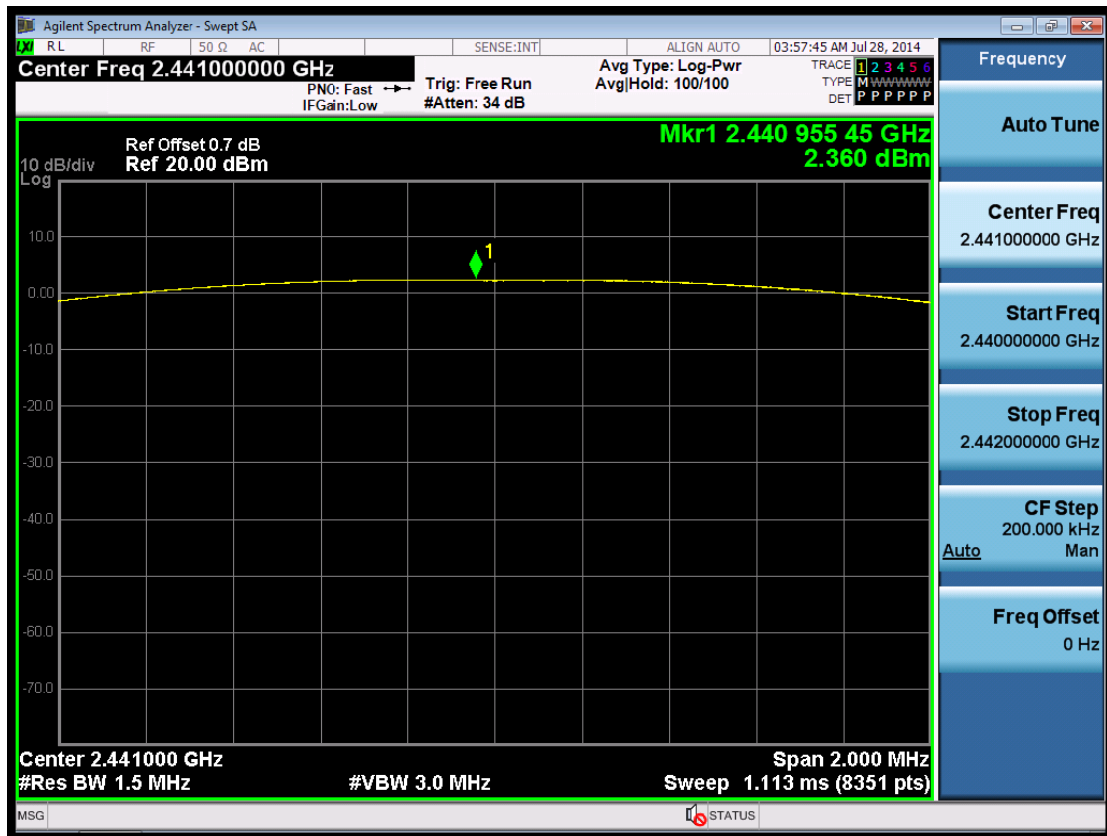
2. Test Plot

2.1. TM1-DH5-Ch0

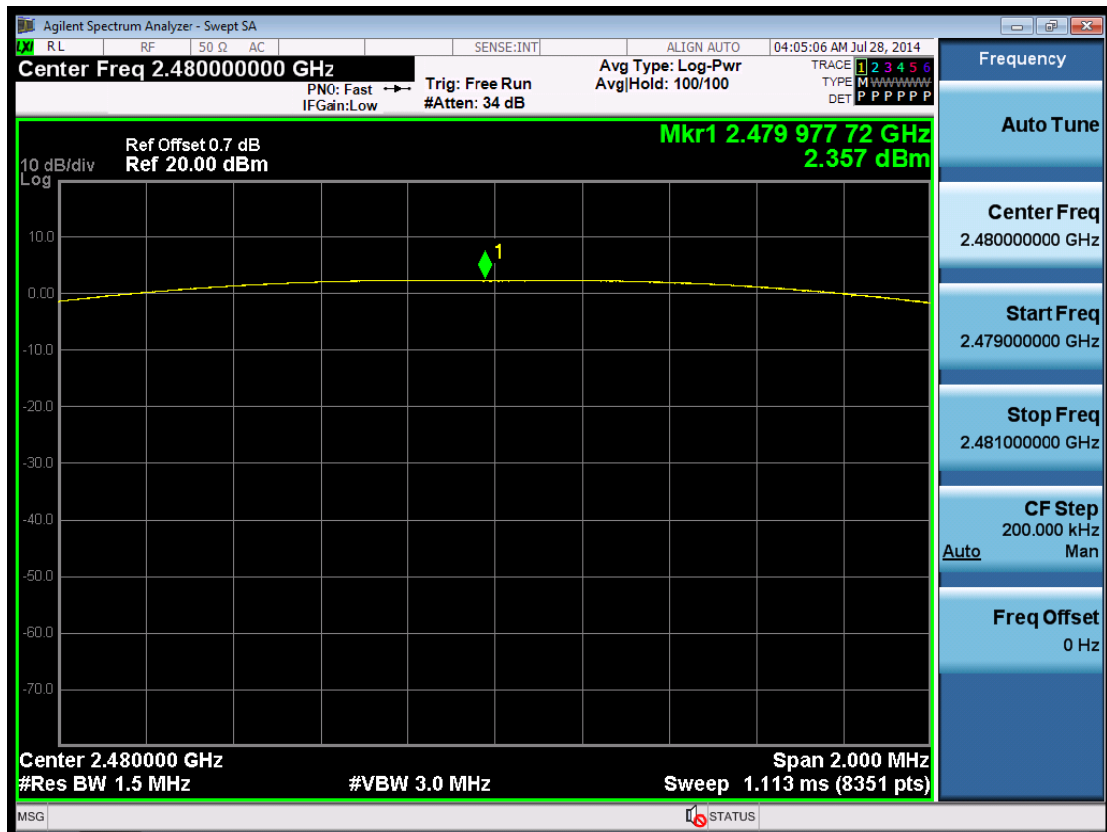




2.2. TM1-DH5-Ch39

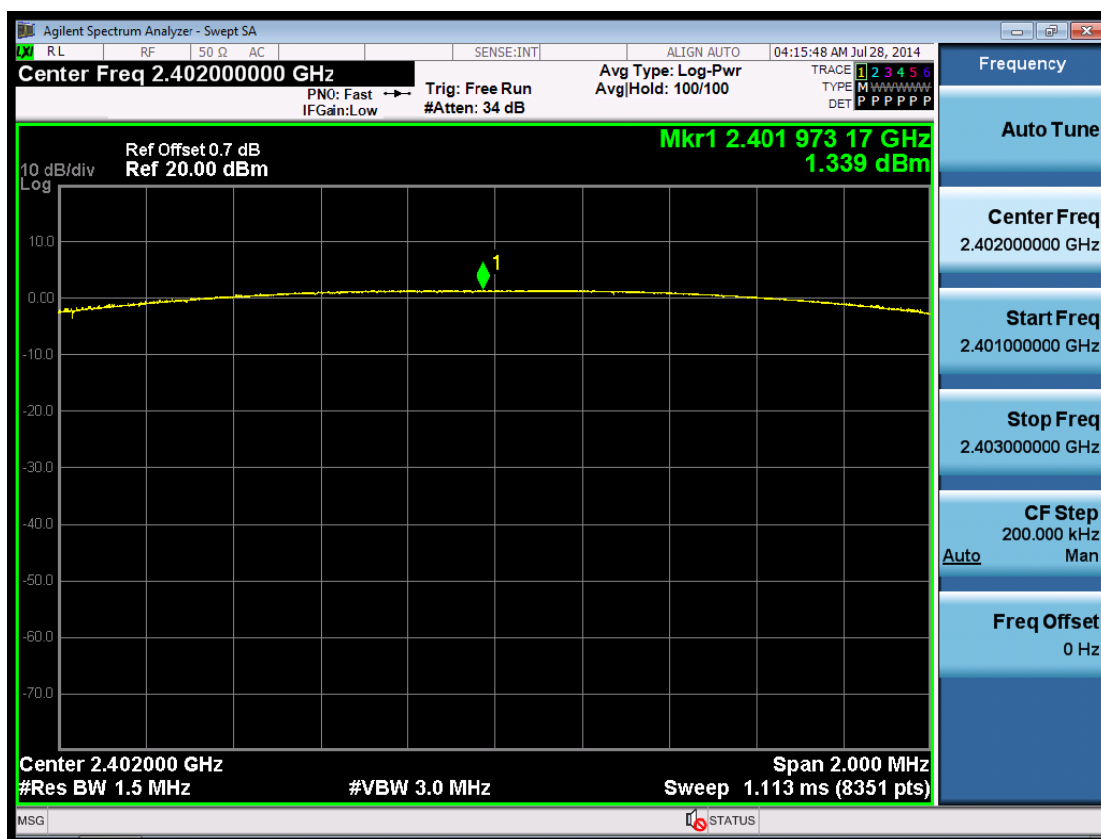


2.3. TM1-DH5-Ch78

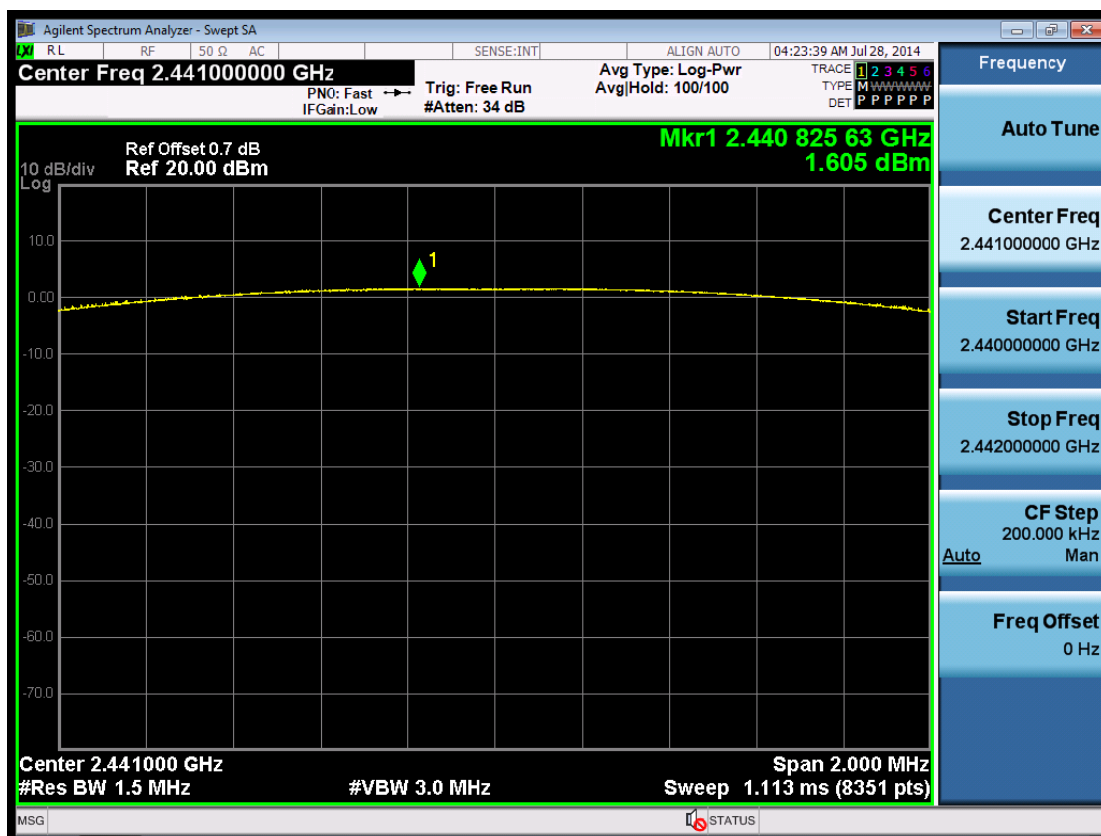




2.4. TM2-2DH5-Ch0

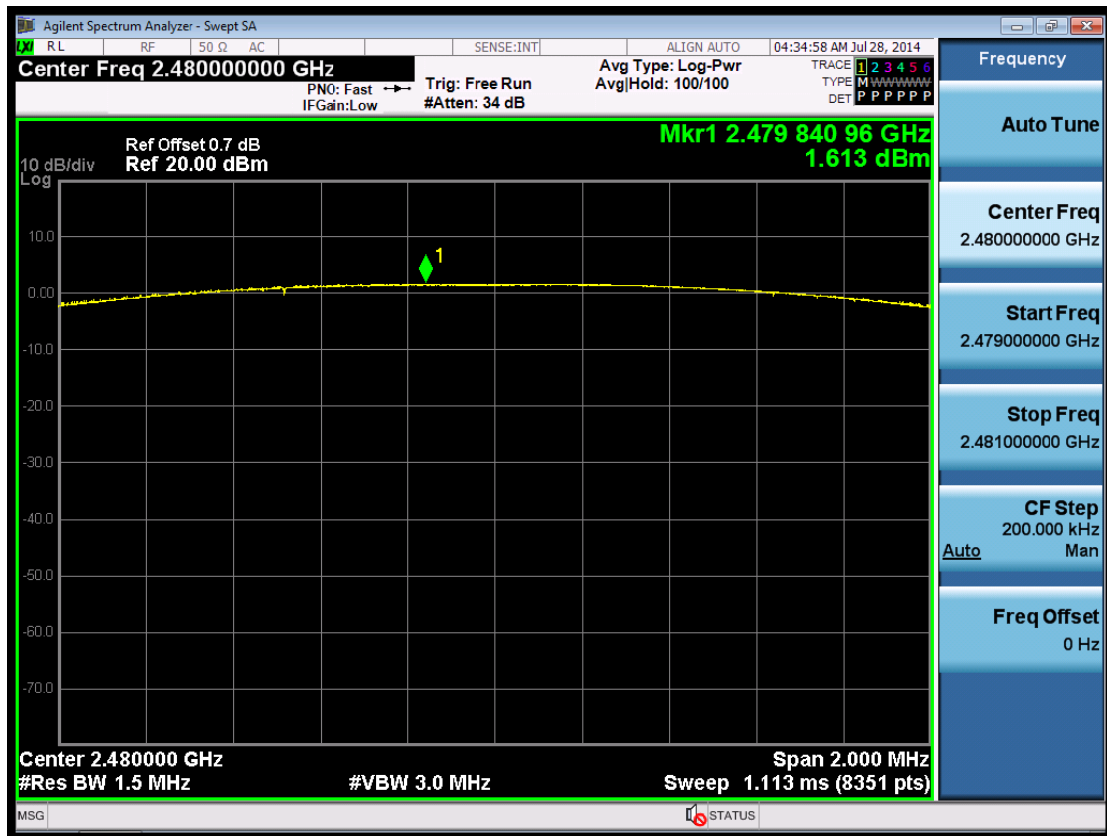


2.5. TM2-2DH5-Ch39





2.6. TM2-2DH5-Ch78

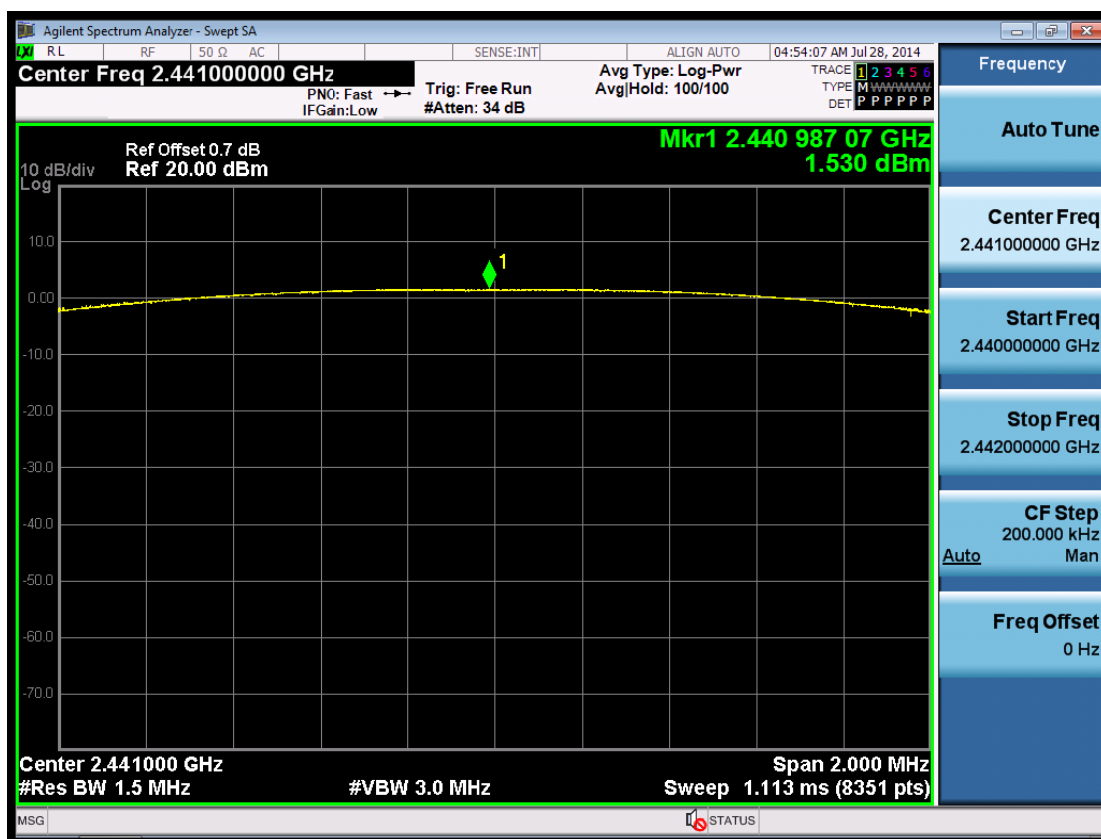


2.7. TM3-3DH5-Ch0

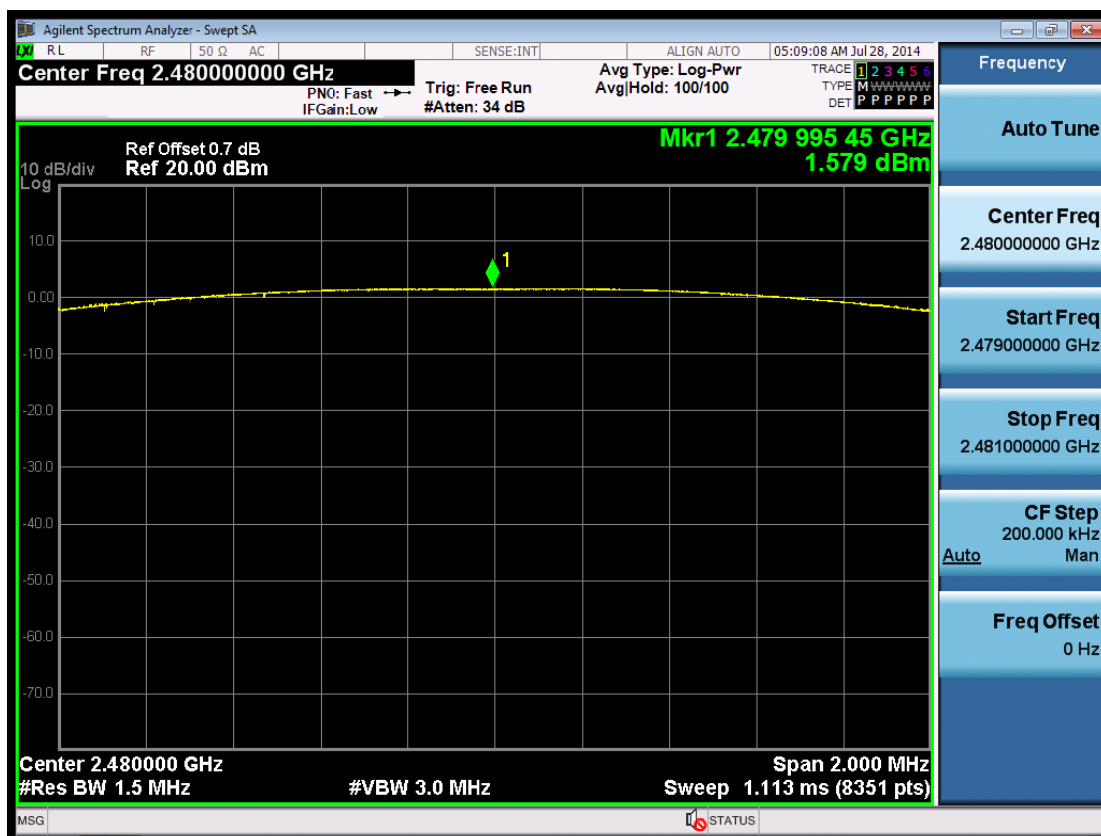




2.8. TM3-3DH5-Ch39



2.9. TM3-3DH5-Ch78





Appendix F: Band Edge Spurious Emission

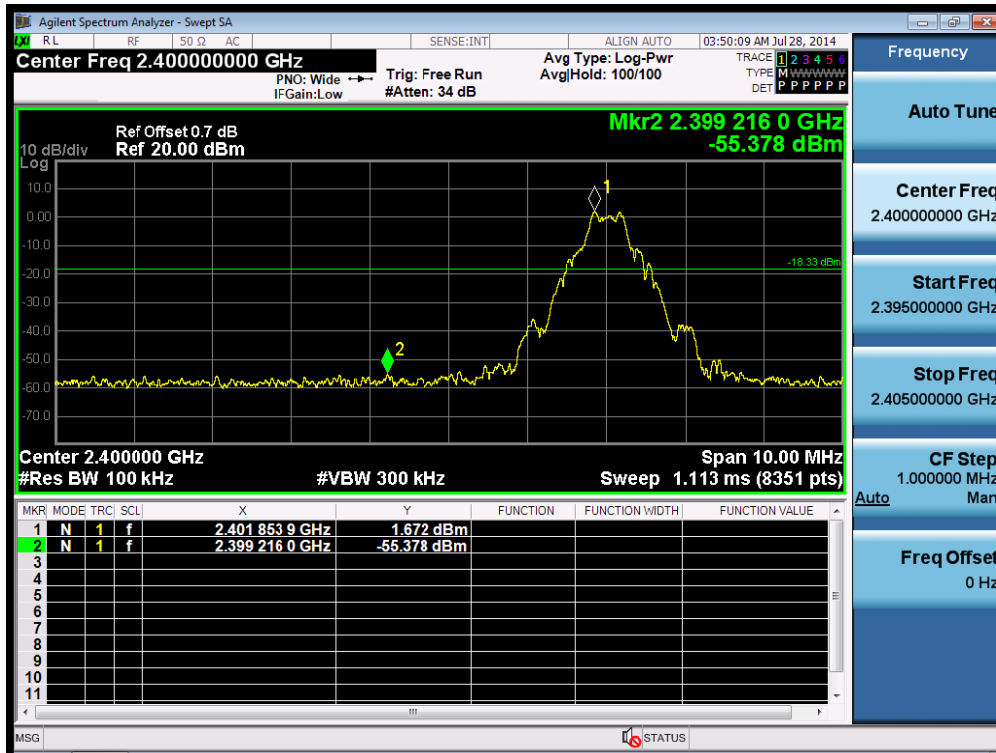
1. Result Table

EUT Conf.	Channel NO.	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
TM1-DH5-Ch0	0	2402	1.67	Off	-55.38	-18.33	PASS
			2.1	On	-54.83	-17.9	PASS
TM1-DH5-Ch78	78	2480	2.22	Off	-55.29	-17.78	PASS
			2.28	On	-54.27	-17.72	PASS
TM2-2DH5-Ch0	0	2402	0.97	Off	-54.53	-19.03	PASS
			-0.07	On	-54.46	-20.07	PASS
TM2-2DH5-Ch78	78	2480	0.65	Off	-55.15	-19.35	PASS
			1.2	On	-54.07	-18.8	PASS
TM3-3DH5-Ch0	0	2402	1.02	Off	-54.48	-18.98	PASS
			0.32	On	-54.98	-19.68	PASS
TM3-3DH5-Ch78	78	2480	3.60	Off	-49.32	-16.40	PASS
			3.73	On	-48.25	-16.27	PASS

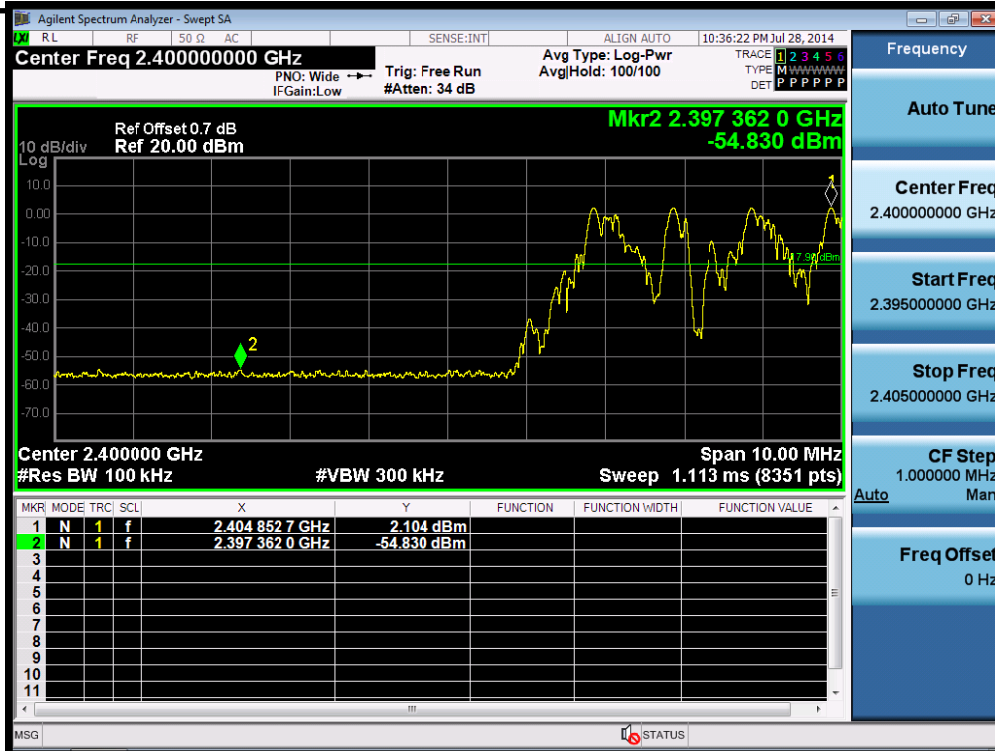
2. Test Plot

2.1. TM1-DH5-Ch0

Hopping Off

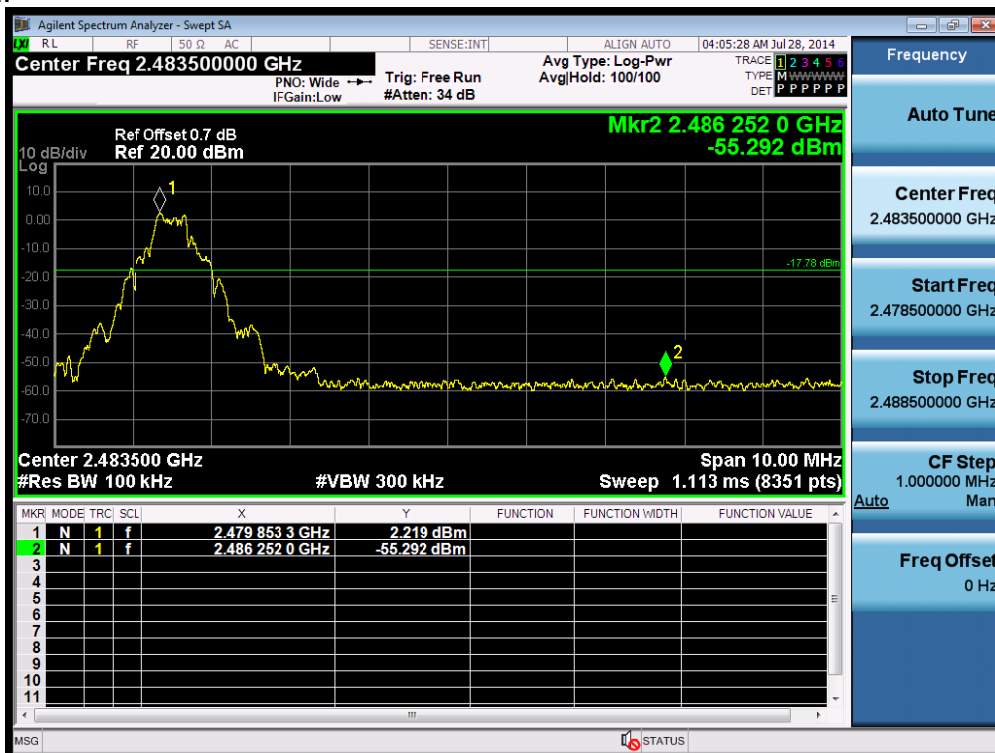


Hopping On



2.2. TM1-DH5-Ch78

Hopping Off



Hopping On

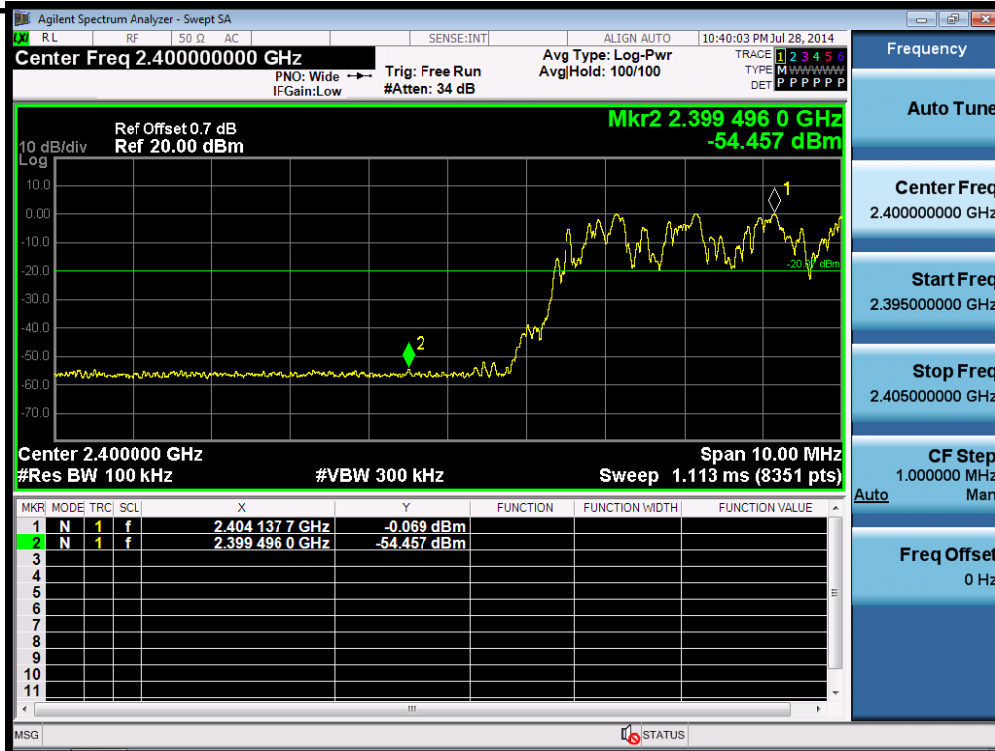


2.3. TM2-2DH5-Ch0

Hopping Off

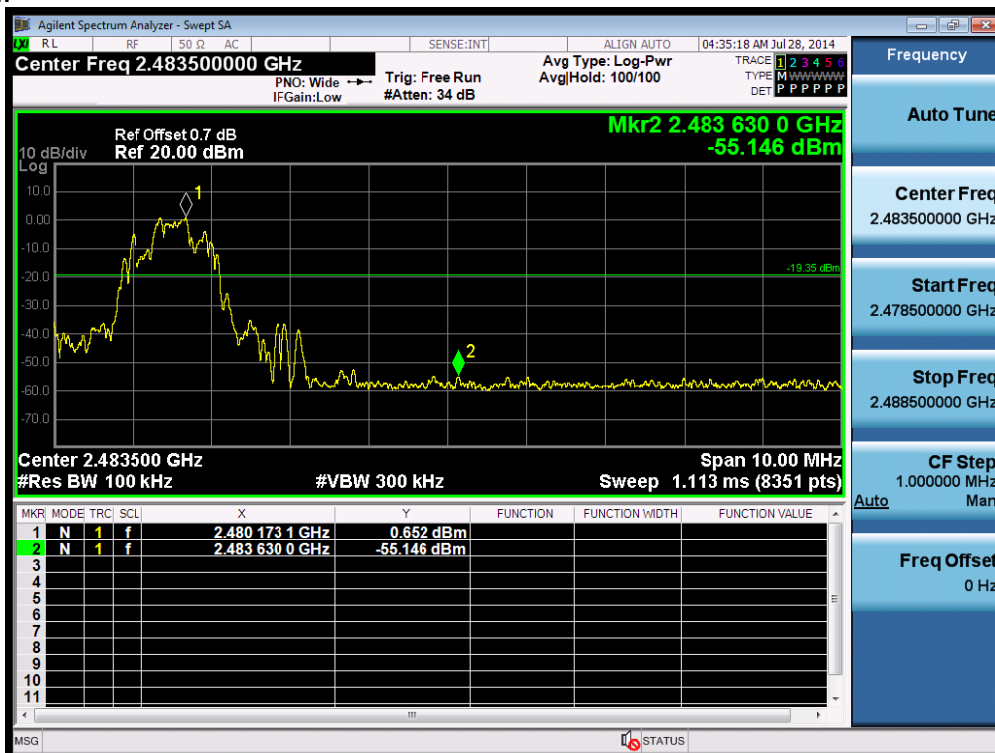


Hopping On



2.4. TM2-2DH5-Ch78

Hopping Off



Hopping On



2.5. TM3-3DH5-Ch0

Hopping Off

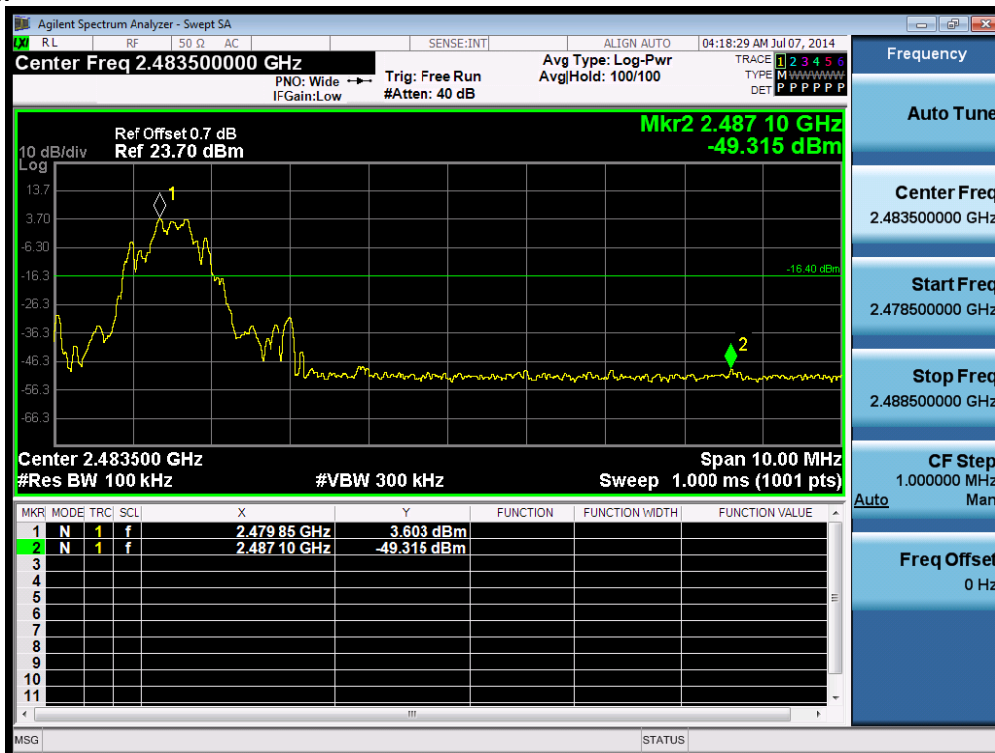


Hopping On

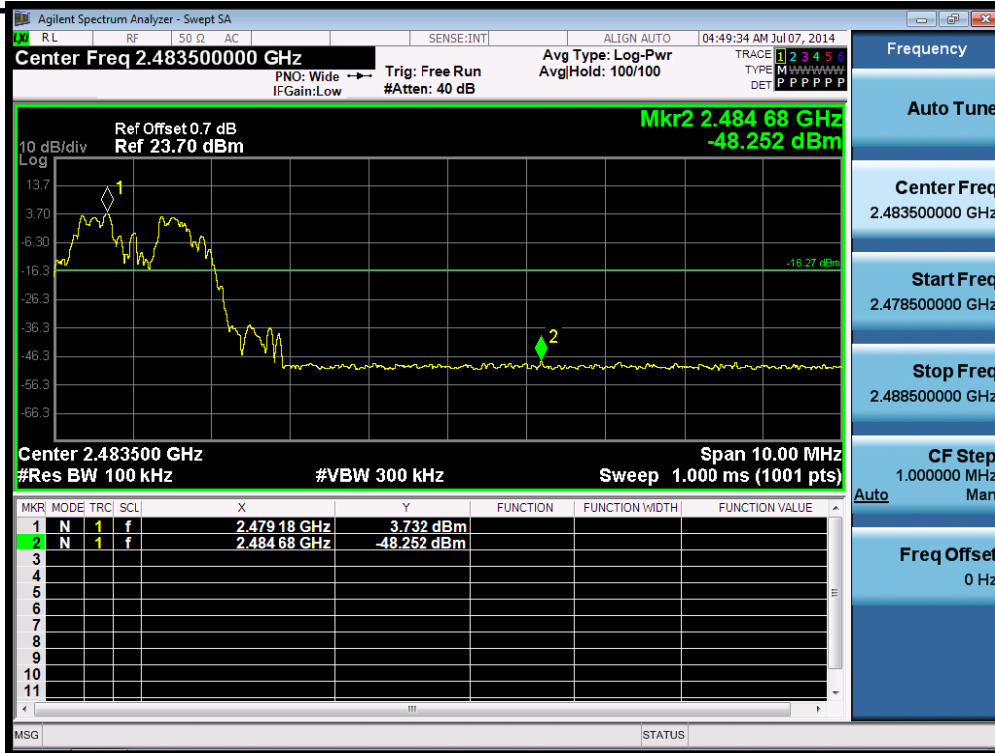


2.6. TM3-3DH5-Ch78

Hopping Off



Hopping On





Appendix G: Conducted RF Spurious Emission

1. Result Table

EUT Conf.	Pref [dBm]	Puw[dBm]	Verdict
TM1-DH5-Ch0	1.64	<Limit	PASS
TM1-DH5-Ch39	2.3	<Limit	PASS
TM1-DH5-Ch78	2.22	<Limit	PASS
TM2-2DH5-Ch0	0.94	<Limit	PASS
TM2-2DH5-Ch39	0.85	<Limit	PASS
TM2-2DH5-Ch78	1.3	<Limit	PASS
TM3-3DH5-Ch0	0.82	<Limit	PASS
TM3-3DH5-Ch39	1.43	<Limit	PASS
TM3-3DH5-Ch78	1.35	<Limit	PASS

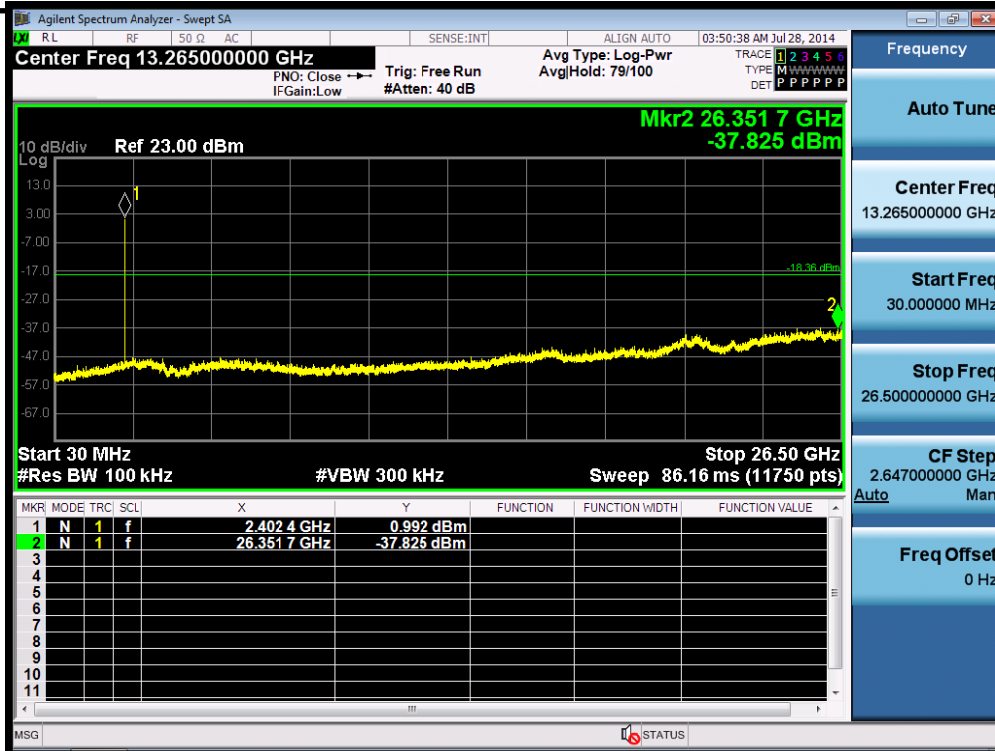
2. Test Plot

2.1. TM1-DH5-Ch0

Pref:

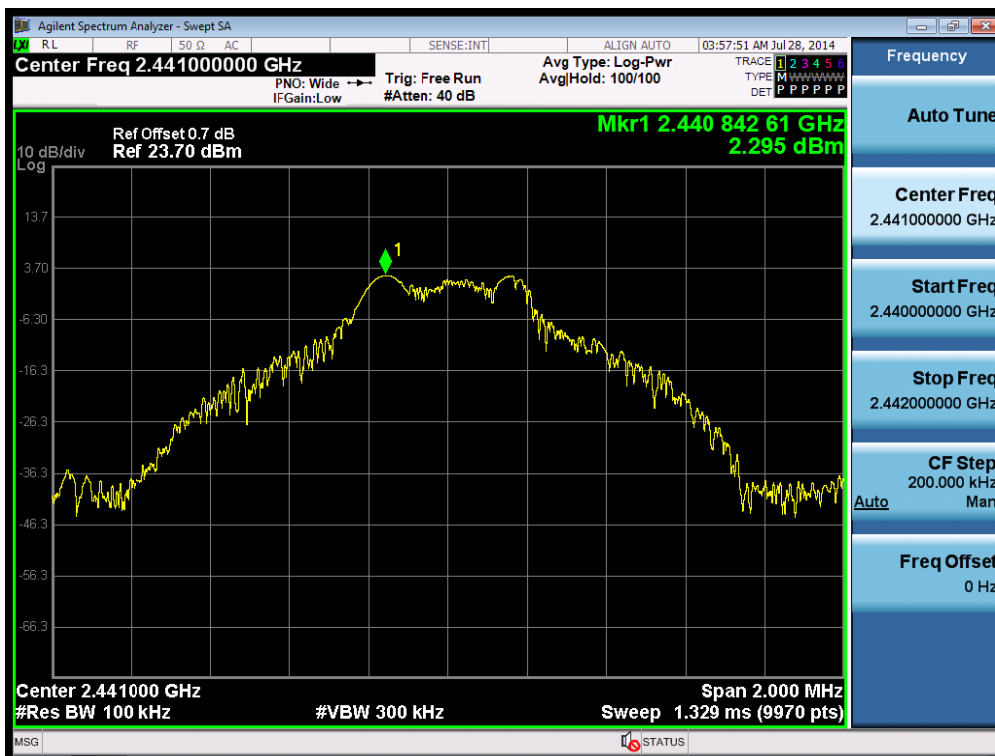


PUW:

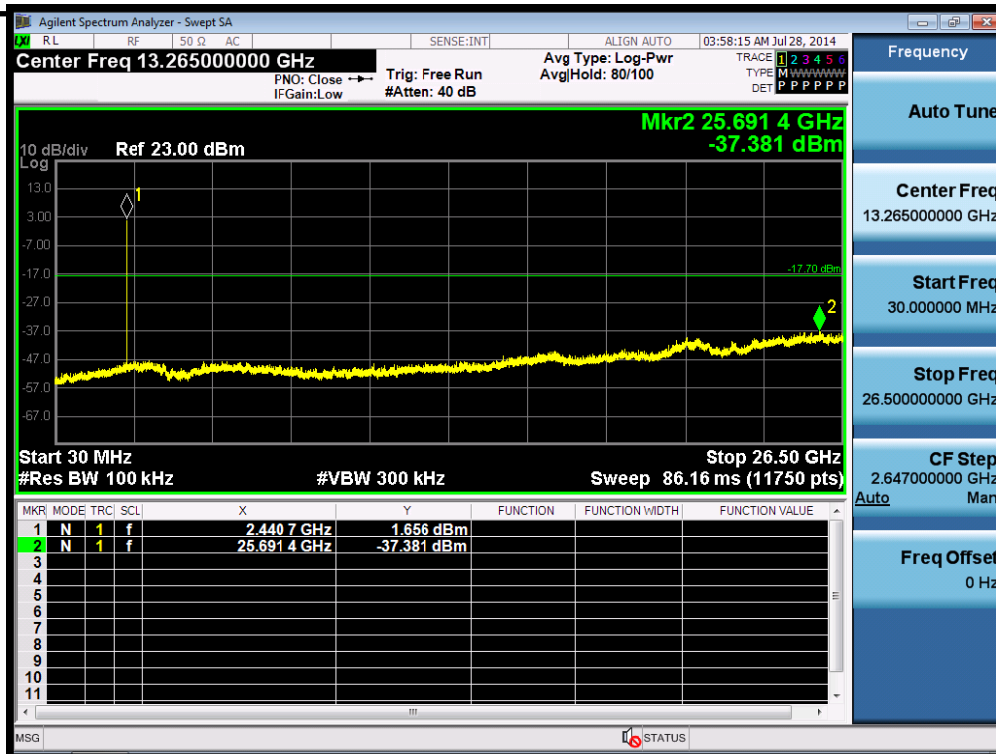


2.2. TM1-DH5-Ch39

Pref:



PUW:

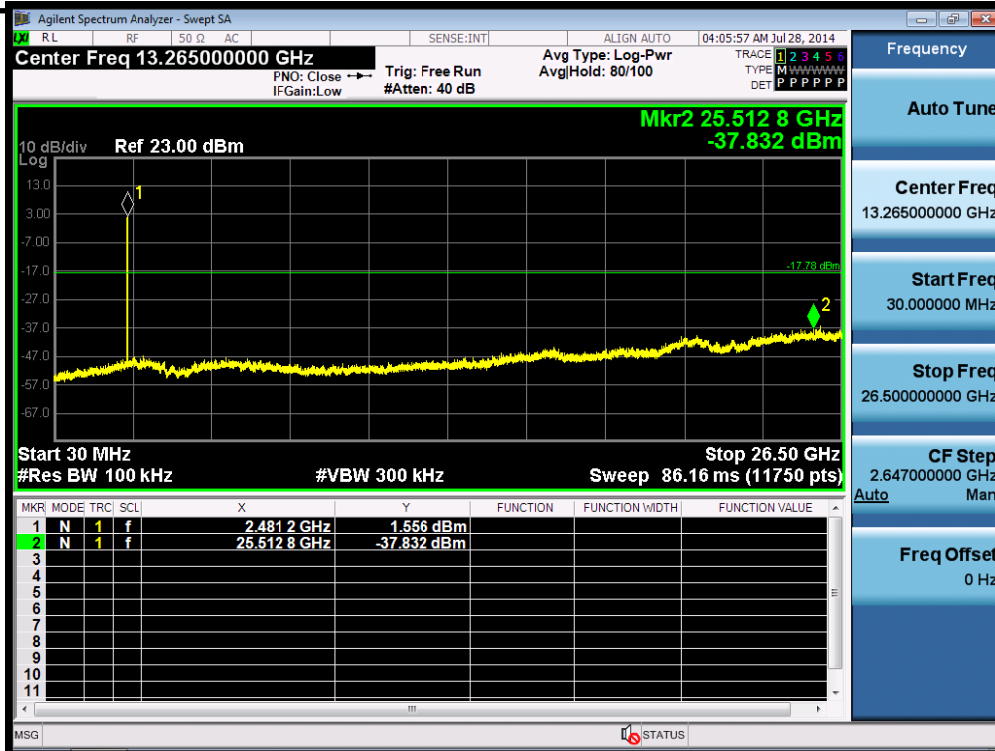


2.3. TM1-DH5-Ch78

Pref:



PUW:

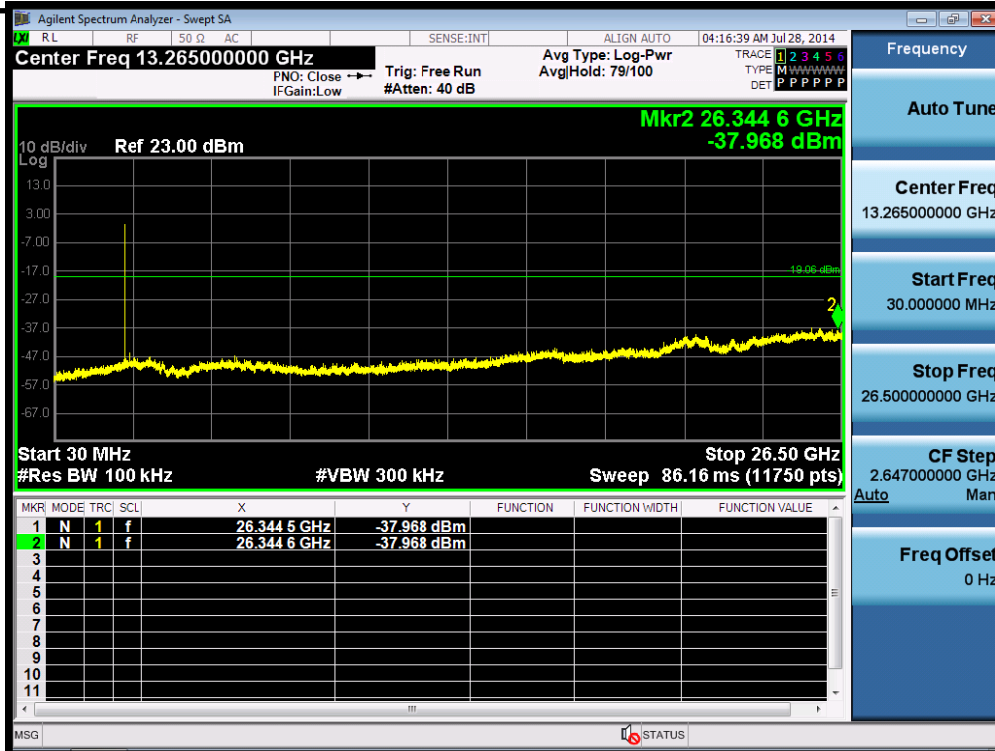


2.4. TM2-2DH5-Ch0

Pref:

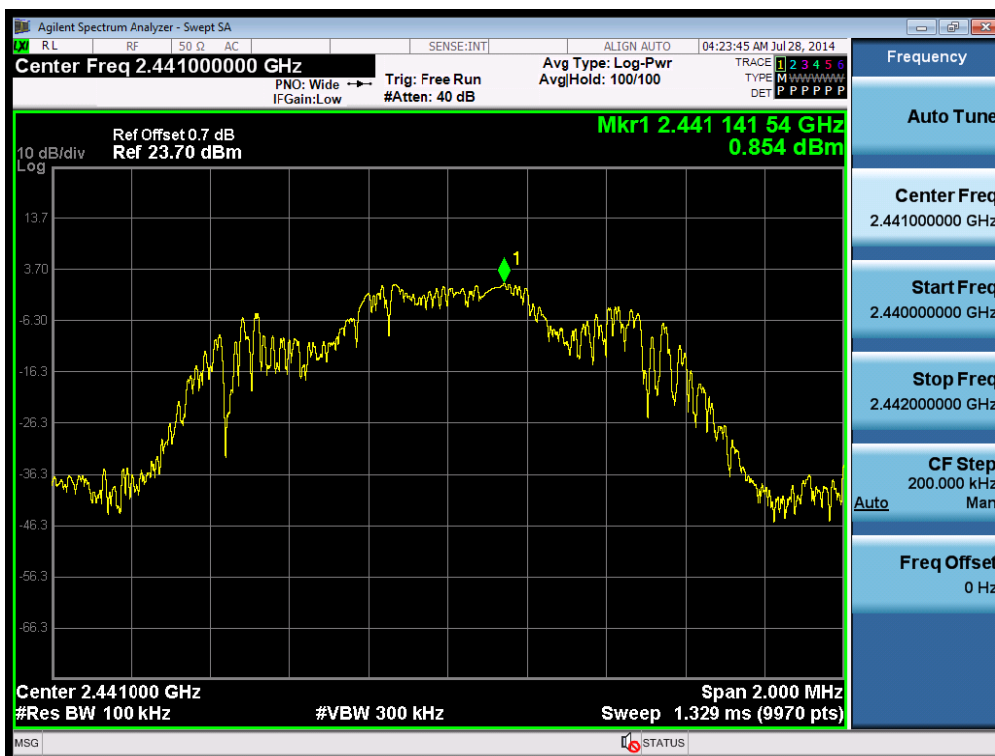


PUW:

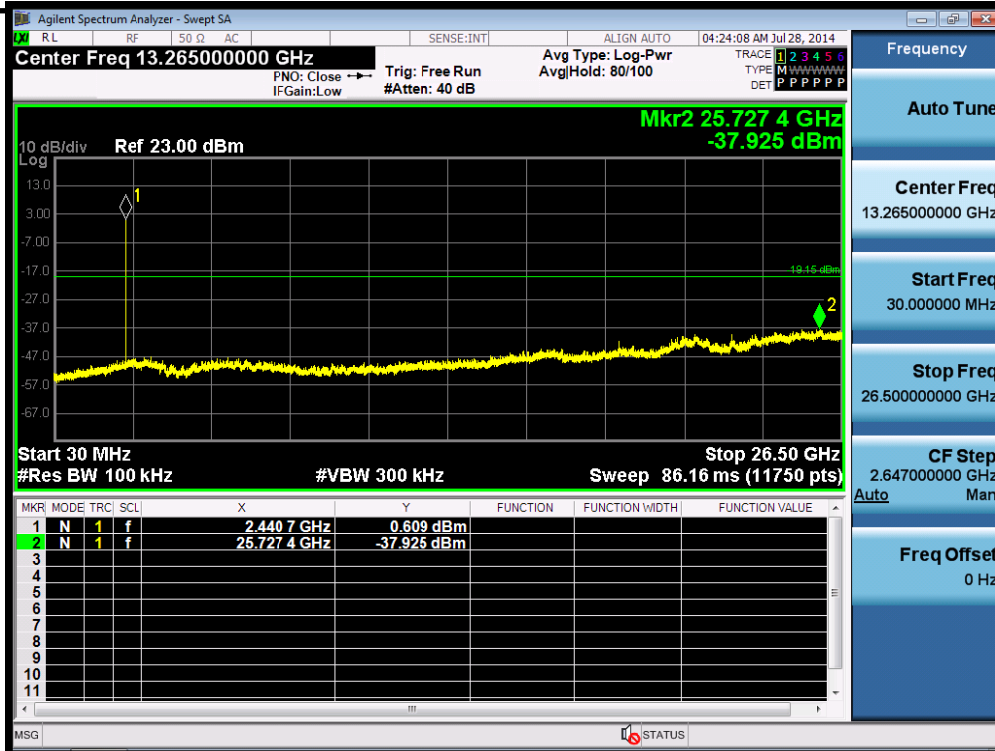


2.5. TM2-2DH5-Ch39

Pref:



PUW:

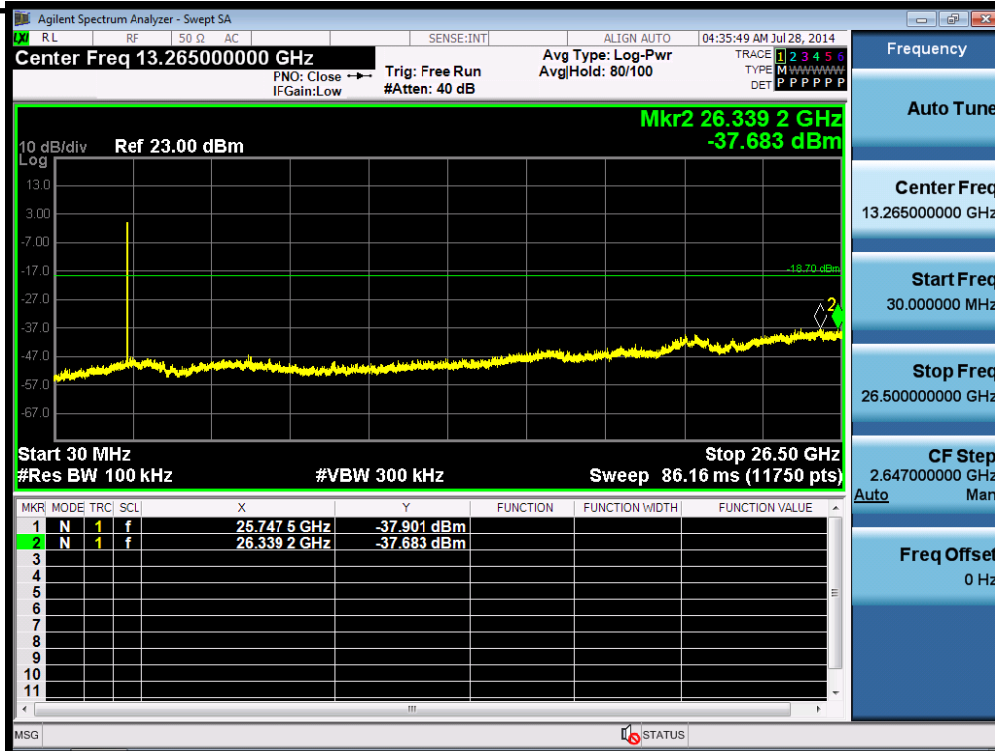


2.6. TM2-2DH5-Ch78

Pref:

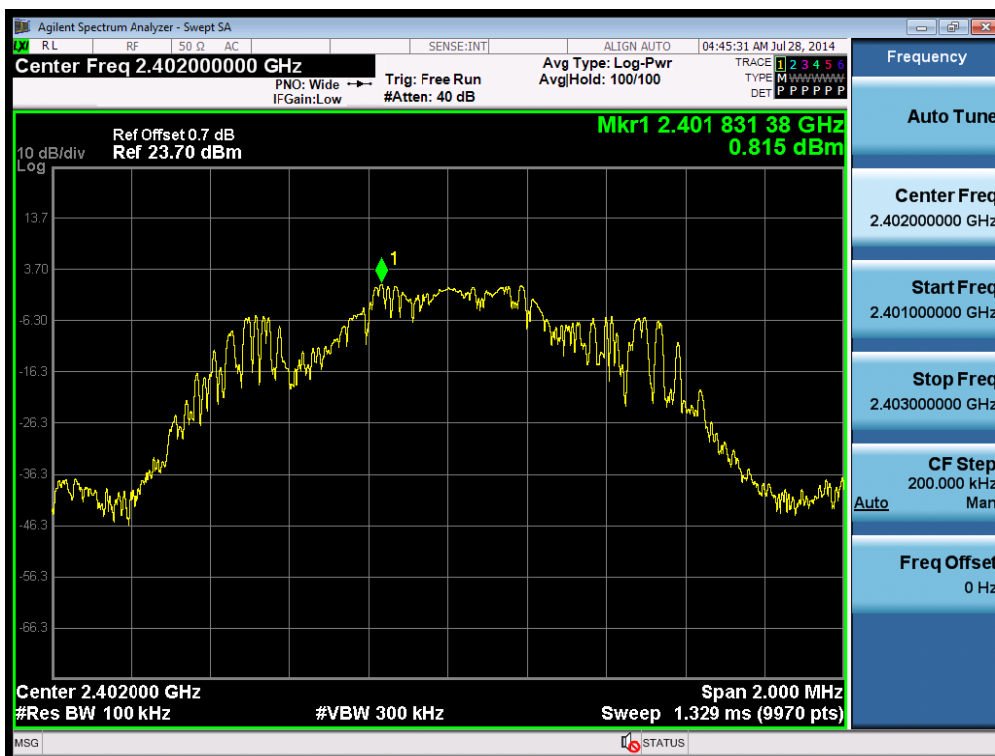


PUW:

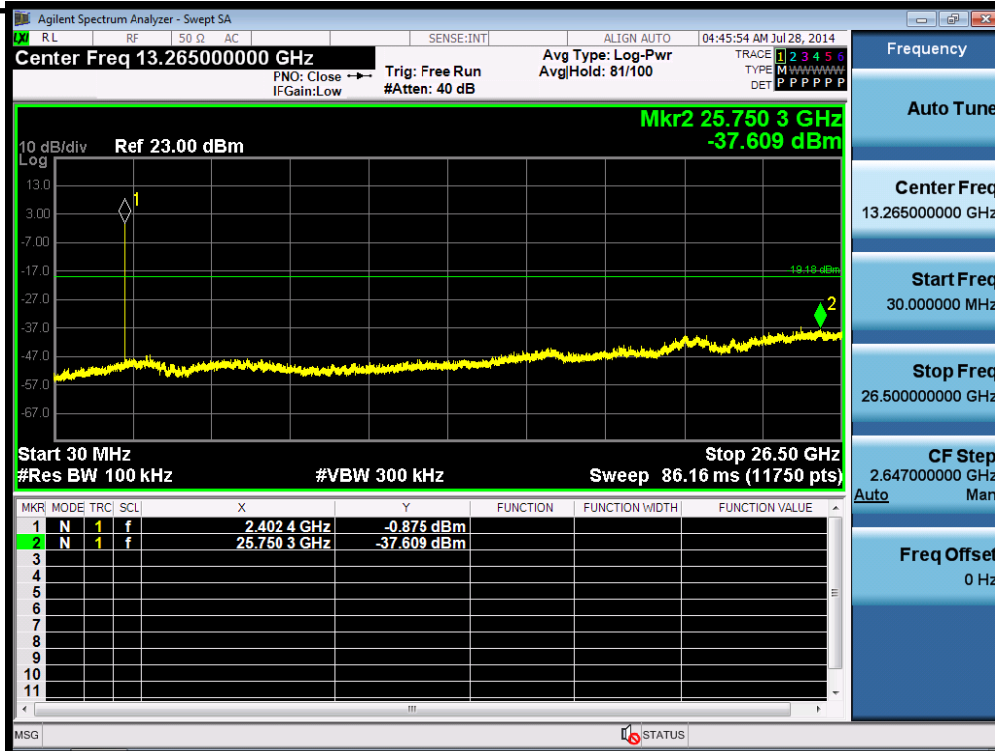


2.7. TM3-3DH5-Ch0

Pref:



PUW:

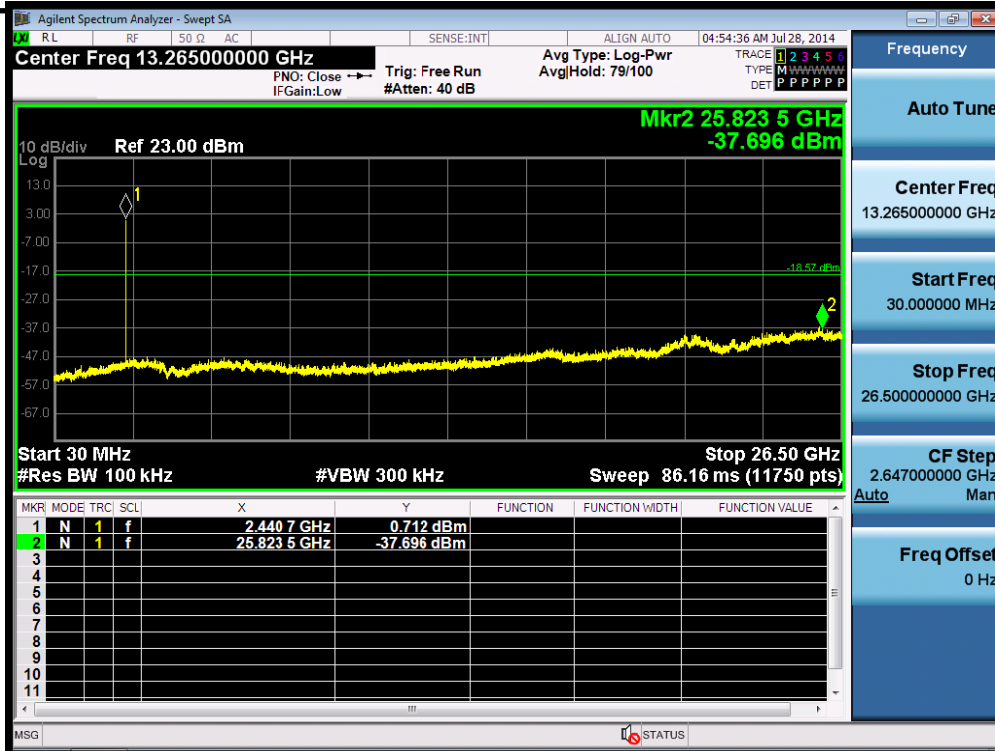


2.8. TM3-3DH5-Ch39

Pref:



PUW:



2.9. TM3-3DH5-Ch78

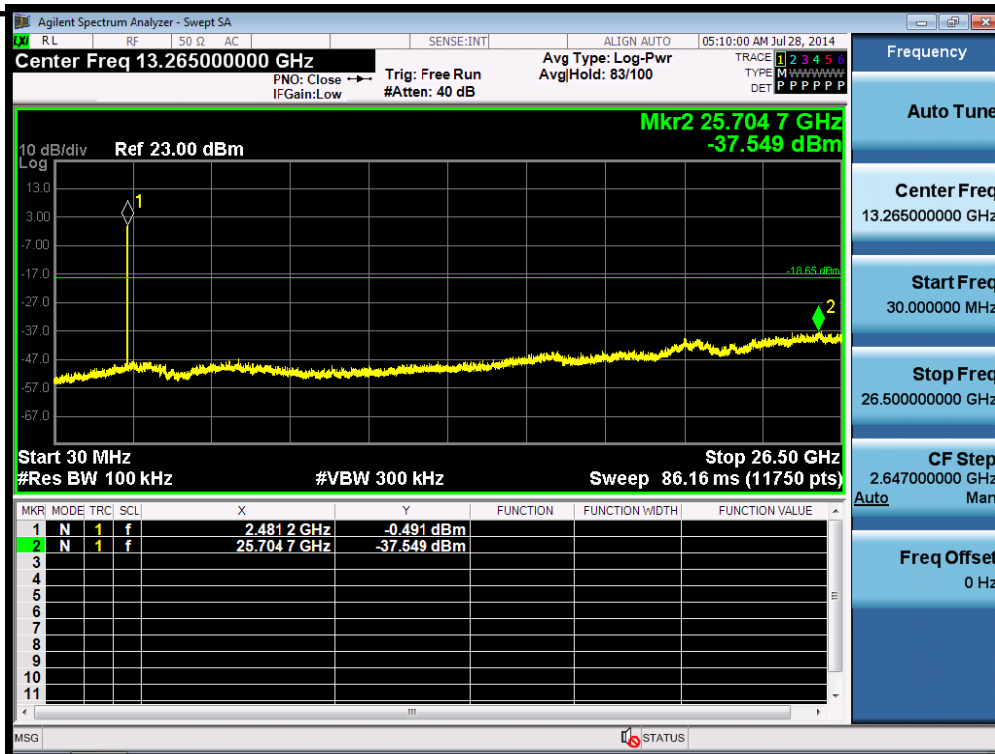
Pref:



PUW:



Report Number : 1407FR28





Appendix H: Radiated Emissions in the Restricted Bands

Part 1: Testing Range of "9kHz to 30MHz"

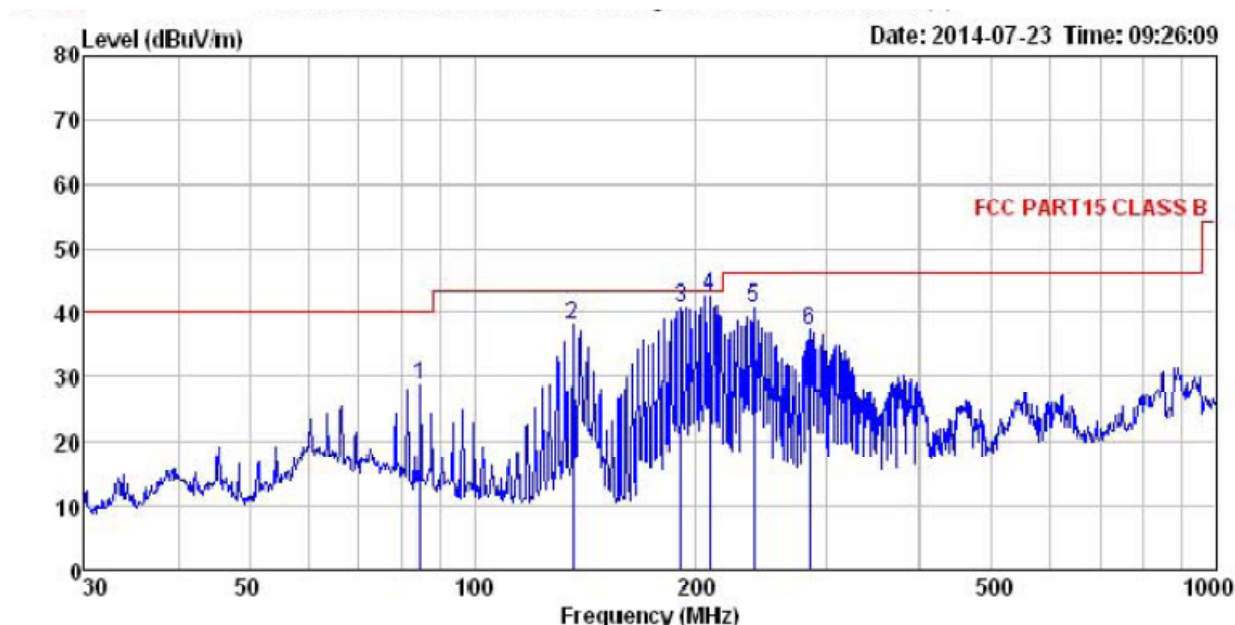
Note 1: The test for testing range of "9kHz to 30MHz" is measured with a loop antenna. This range will not be presented for each Test Mode and each Channel.

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 "30MHz to 1GHz"

Note 1: The test results and plot for testing range of "30MHz to 1GHz" 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)

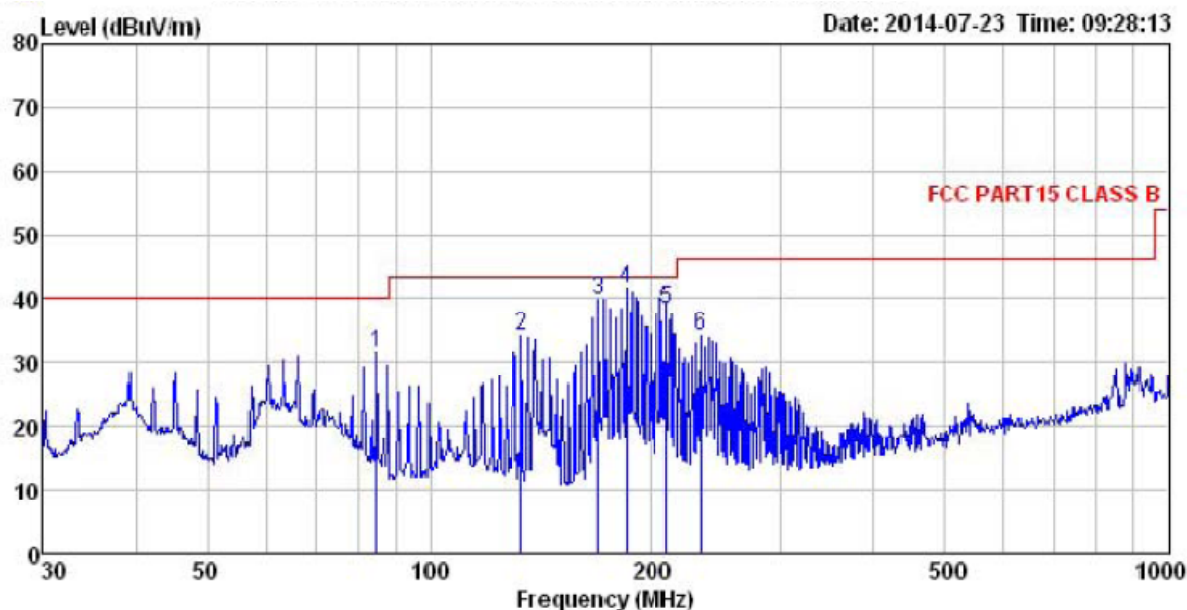


MEASUREMENT RESULT: QP Detector

	Freq	Read 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	84.702	47.08	10.16	0.88	29.60	28.52	40.00	-11.48	
2	135.982	57.75	8.45	1.23	29.29	38.14	43.50	-5.36	
3	190.405	57.59	10.56	1.37	28.90	40.62	43.50	-2.88	
4	208.580	59.05	10.84	1.42	28.78	42.53	43.50	-0.97	
5	239.147	55.66	12.04	1.57	28.60	40.67	46.00	-5.33	
6	284.977	51.07	12.75	1.73	28.48	37.07	46.00	-8.93	



30MHz~1GHz(Vertical)



MEASUREMENTRESULT:QPDetector

	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	84.702	50.20	10.16	0.88	29.60	31.64	40.00	-8.36
2	133.151	53.81	8.67	1.21	29.31	34.38	43.50	-9.12
3	169.599	58.60	8.95	1.35	29.05	39.85	43.50	-3.65
4	184.490	59.25	10.08	1.36	28.94	41.75	43.50	-1.75
5	209.313	54.79	10.87	1.43	28.77	38.32	43.50	-5.18
6	233.349	49.70	11.78	1.54	28.63	34.39	46.00	-11.61



Part3:TestingRangeof“1 GHz to25GHz”

Note1:Thetestresultsandplotfortestingrangeof“1GHzto25GHz”showedasbelowisthe**WORST**caseforall**TestModes**.After pre-sacn the GFSK, $\pi/4$ -DQPSK,8DPSK modulation, we found the GFSK modulation is the worst case, and choose it to performed full test.

Note2: Two

limitsarerequiredinthetestingrangeabove1GHz,thatisPeaklimit(74dB μ V/m)andAverageLimit(54dB 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	46.89	PK	0.19	74.0	27.11
7206	--	PK	--	74.0	--
9608	--	PK	--	74.0	--
4804	37.34	Ave.	0.19	54.0	16.66
7206	--	Ave.	--	54.0	--
9608	--	Ave.	--	54.0	--

Low channel

Frequency (MHz)	Corr.Amp. (dBμV/m)	Detector (PK/Ave.)	Corr. (dB)	Limit (dBμV/m)	Margin (dB)
4882	47.56	PK	0.41	74.0	26.44
7323	--	PK	--	74.0	--
9764	--	PK	--	74.0	--
4882	36.77	Ave.	0.41	54.0	17.23
7323	--	Ave.	--	54.0	--
9764	--	Ave.	--	54.0	--

Low channel

Frequency (MHz)	Corr.Amp. (dBμV/m)	Detector (PK/Ave.)	Corr. (dB)	Limit (dBμV/m)	Margin (dB)
4960	45.98	PK	0.74	74.0	28.02
7440	--	PK	--	74.0	--
9920	--	PK	--	74.0	--
4960	36.45	Ave.	0.74	54.0	17.55
7440	--	Ave.	--	54.0	--
9920	--	Ave.	--	54.0	--

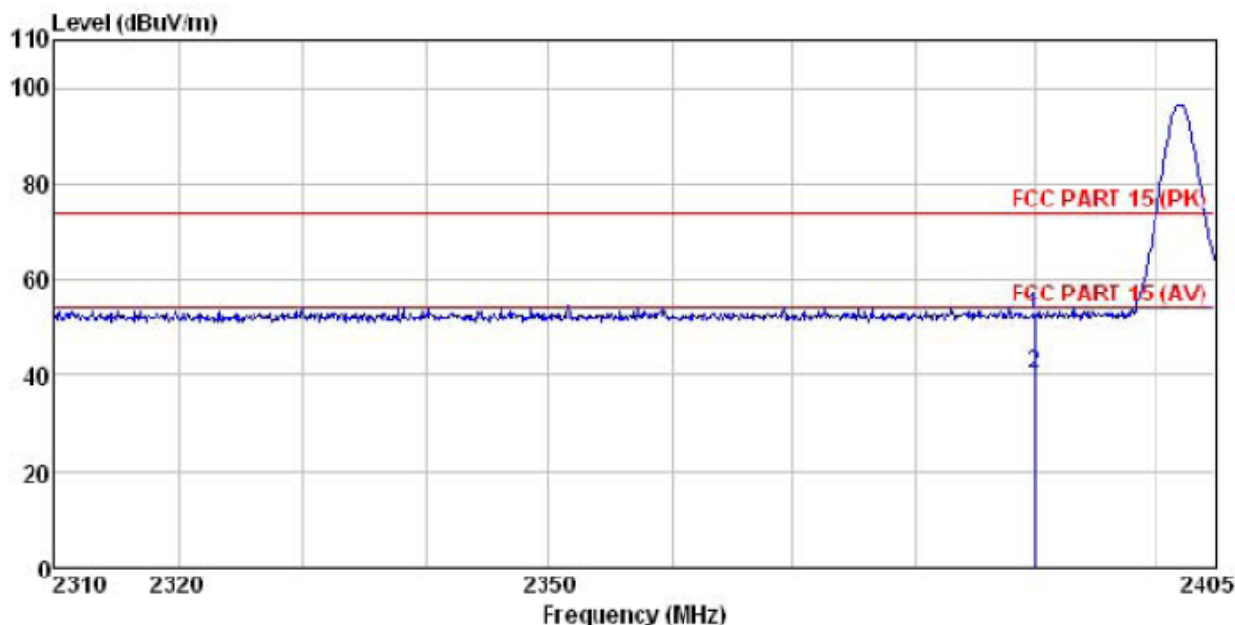
Part4: Radiated Bandedge spurious semission

Note1: After pre-sachn the GFSK, $\pi/4$ -DQPSK, 8DPSK modulation, we found the GFSK modulation is the worst case, and choose it to performed full test.

Note2: Two

limits are required in the testing range above 1 GHz, that is Peak limit (74 dBµV/m) and Average Limit (54 dBµV/m).

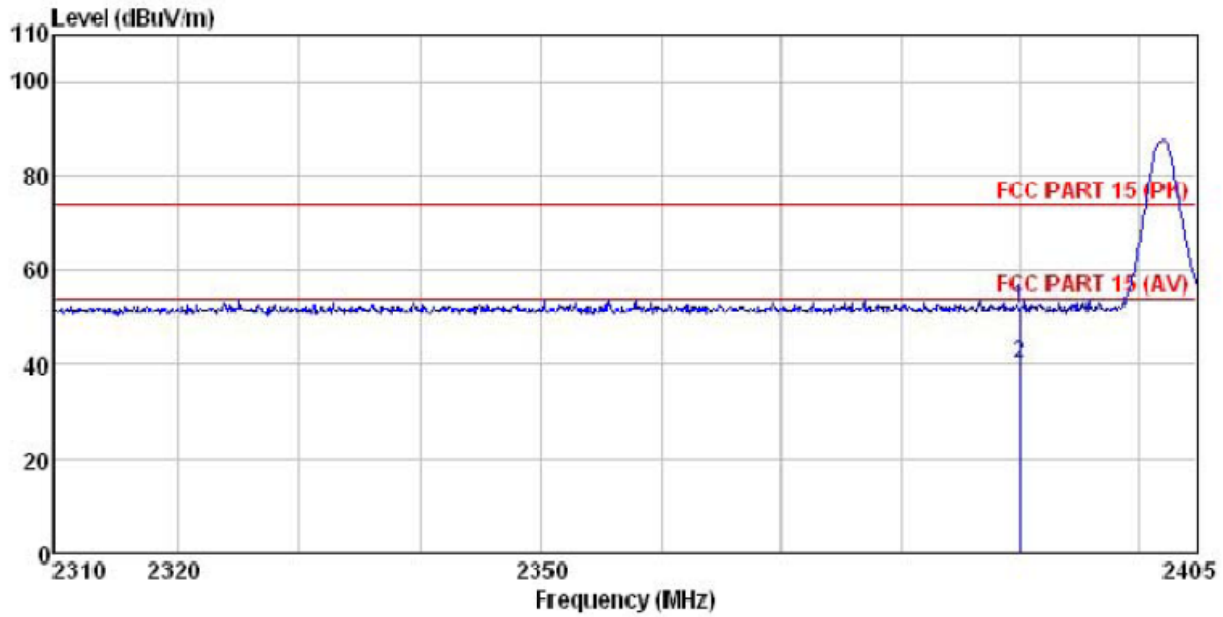
Low Channel Horizontal



	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	19.20	27.58	5.67	0.00	52.45	74.00	-21.55	Peak
2	2390.000	6.95	27.58	5.67	0.00	40.20	54.00	-13.80	Average

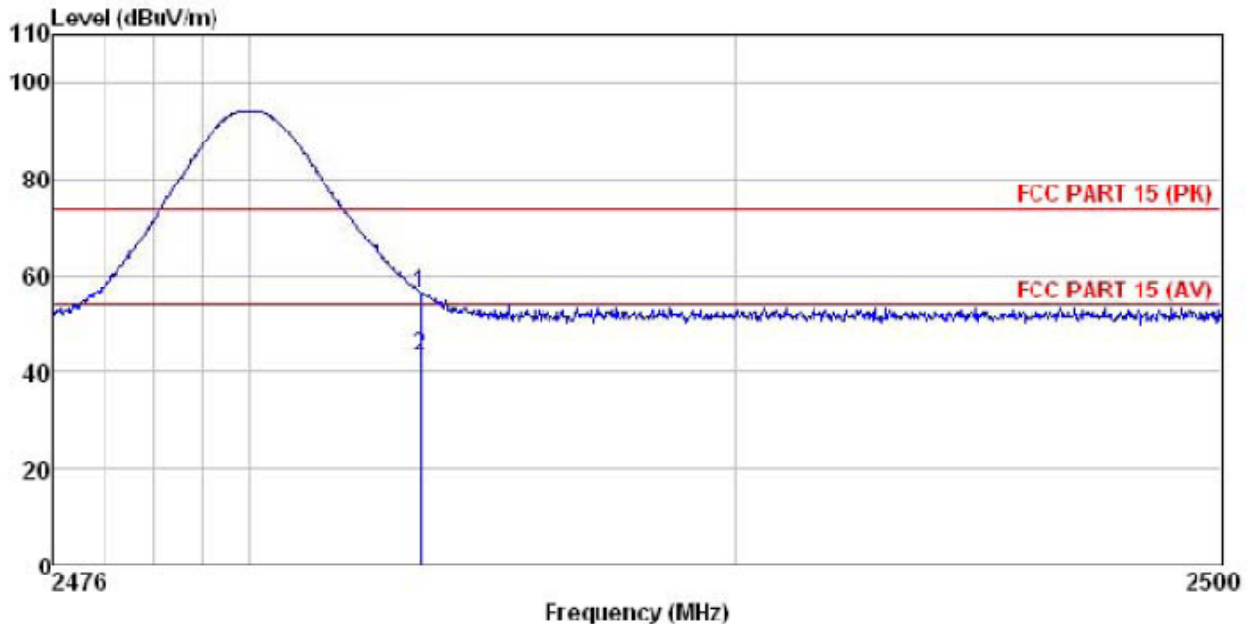


Low Channel Vertical



	Freq	ReadAntenna Level	Cable Factor	Preamp Loss	Level	Limit	Over	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2390.000	18.59	27.58	5.67	0.00	51.84	74.00	-22.16 Peak
2	2390.000	7.02	27.58	5.67	0.00	40.27	54.00	-13.73 Average

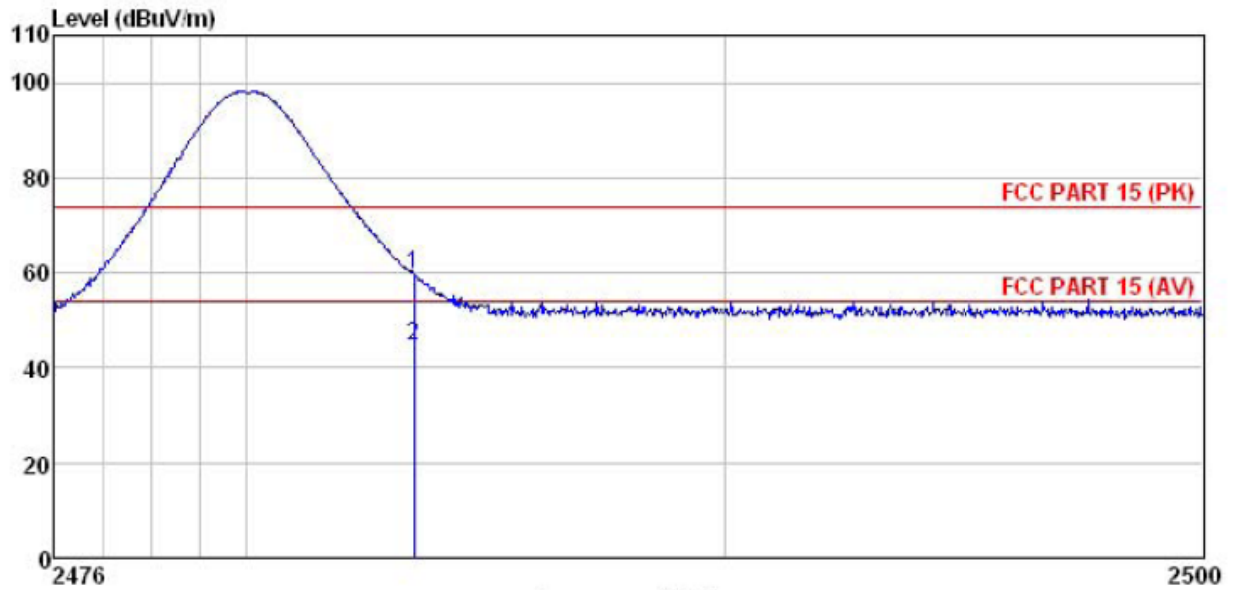
High Channel Horizontal



	Freq	ReadAntenna Level	Cable Factor	Preamp Loss	Level	Limit	Over	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2483.500	23.35	27.52	5.70	0.00	56.57	74.00	-17.43 Peak
2	2483.500	10.23	27.52	5.70	0.00	43.45	54.00	-10.55 Average



High Channel Vertical

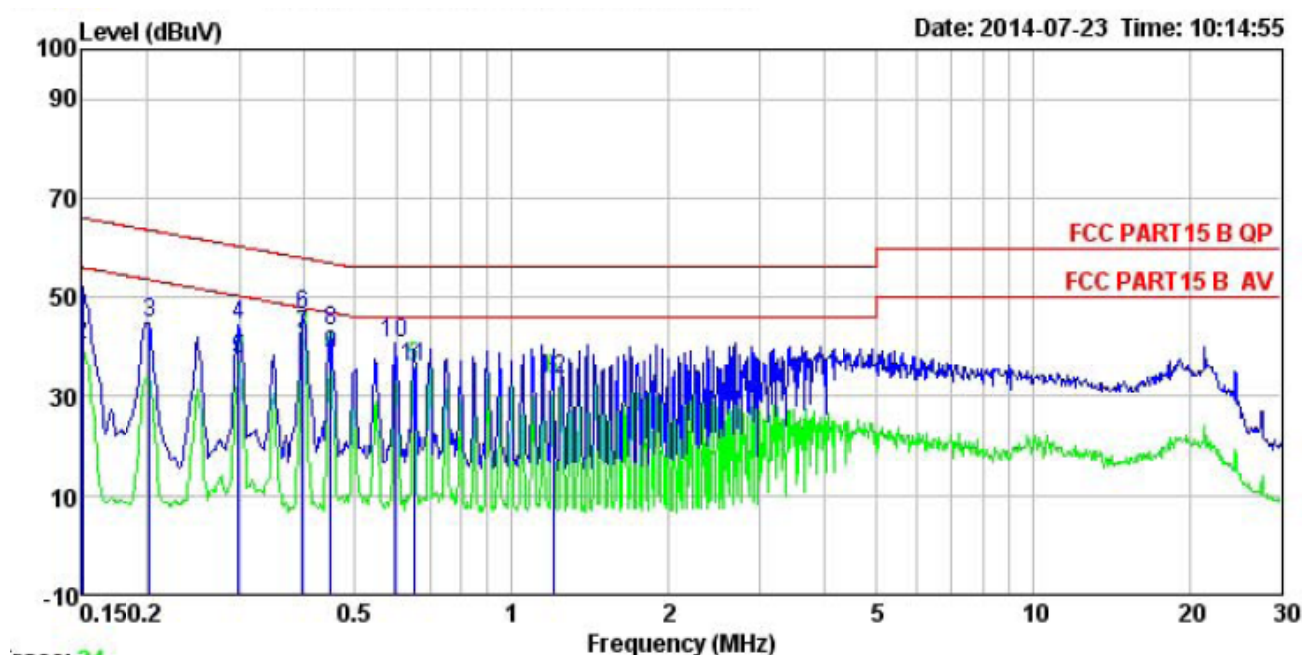


Frequency (MHz)									
	ReadAntenna	Cable Preamp			Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark	
-----	-----	-----	-----	-----	-----	-----	-----	-----	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2483.511	26.55	27.52	5.70	0.00	59.77	74.00	-14.23	Peak
2	2483.511	11.32	27.52	5.70	0.00	44.54	54.00	-9.46	Average

Appendix I: AC Power Line Conducted Emissions

Channel 39

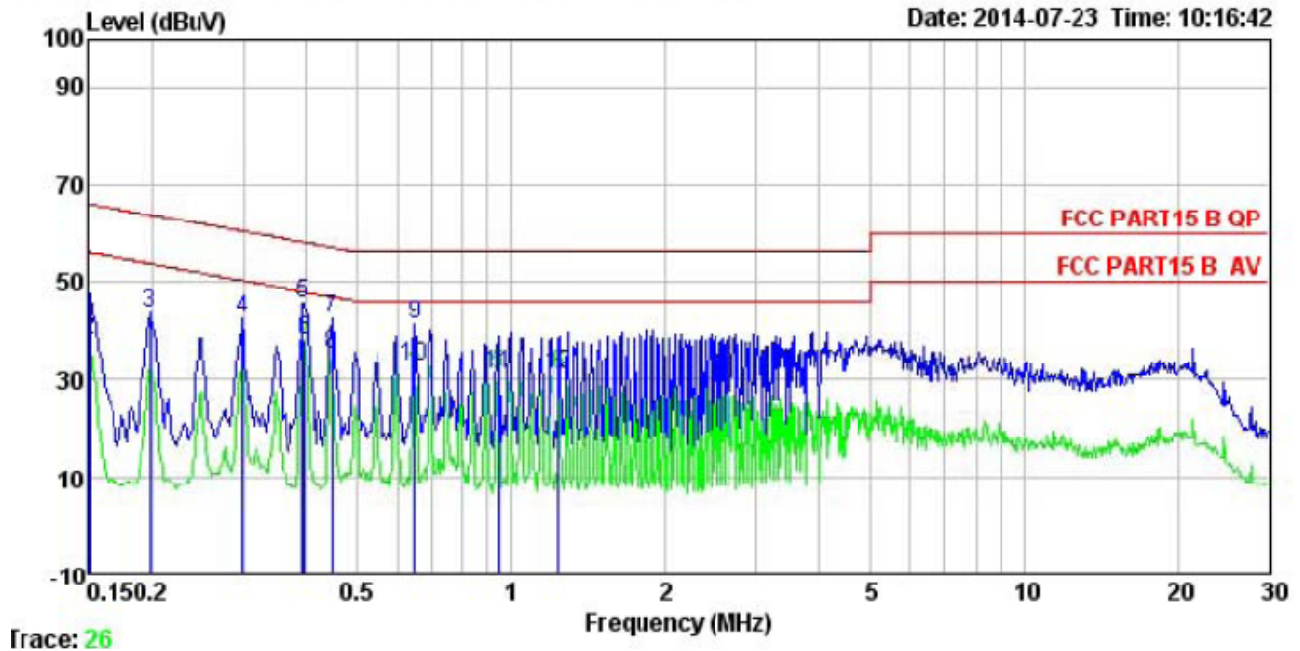
Line



	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	41.24	0.25	10.78	52.27	66.00	-13.73	Peak
2	0.150	29.25	0.25	10.78	40.28	56.00	-15.72	Average
3	0.202	33.62	0.25	10.76	44.63	63.54	-18.91	Peak
4	0.299	33.21	0.26	10.74	44.21	60.28	-16.07	Peak
5	0.299	26.68	0.26	10.74	37.68	50.28	-12.60	Average
6	0.398	35.31	0.25	10.72	46.28	57.90	-11.62	Peak
7	0.398	31.32	0.25	10.72	42.29	47.90	-5.61	Average
8	0.449	32.25	0.27	10.74	43.26	56.89	-13.63	Peak
9	0.449	27.25	0.27	10.74	38.26	46.89	-8.63	Average
10	0.598	29.57	0.23	10.77	40.57	56.00	-15.43	Peak
11	0.651	24.71	0.20	10.77	35.68	46.00	-10.32	Average
12	1.197	22.34	0.24	10.89	33.47	46.00	-12.53	Average



Neutral



	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	36.66	0.27	10.78	47.71	66.00	-18.29	Peak
2	0.150	26.78	0.27	10.78	37.83	56.00	-18.17	Average
3	0.198	32.37	0.28	10.76	43.41	63.71	-20.30	Peak
4	0.299	31.52	0.26	10.74	42.52	60.28	-17.76	Peak
5	0.393	34.56	0.28	10.72	45.56	57.99	-12.43	Peak
6	0.398	26.73	0.28	10.72	37.73	47.90	-10.17	Average
7	0.447	31.32	0.28	10.74	42.34	56.93	-14.59	Peak
8	0.447	24.08	0.28	10.74	35.10	46.93	-11.83	Average
9	0.647	30.00	0.24	10.77	41.01	56.00	-14.99	Peak
10	0.647	21.73	0.24	10.77	32.74	46.00	-13.26	Average
11	0.943	19.81	0.24	10.85	30.90	46.00	-15.10	Average
12	1.236	19.67	0.25	10.90	30.82	46.00	-15.18	Average

End of Report