

Prüfbericht-Nr.: <i>Test Report No.:</i>	50085877 001	Auftrags-Nr.: <i>Order No.:</i>	154243722	Seite 1 von 61 <i>Page 1 of 61</i>
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	52195561	Auftragsdatum: <i>Order date:</i>	26.04.2017	
Auftraggeber: <i>Client:</i>	AXENT Corporation Ltd. 3 Musick, Irvine CA 92618 USA			
Prüfgegenstand: <i>Test item:</i>	Intelligent toilet			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	E322-02 FCC ID: 2AL4GAXENT-ONE-C			
Auftrags-Inhalt: <i>Order content:</i>	Complete test			
Prüfgrundlage: <i>Test specification:</i>	FCC CFR47 Part 15, Subpart C Section 15.247 ANSI C63.10: 2013 Public Notice DA 00-705 March 30, 2000			
Wareneingangsdatum: <i>Date of receipt:</i>	05.05.2017	Please refer to the External Photos		
Prüfmuster-Nr.: <i>Test sample No.:</i>	A000540881-003			
Prüfzeitraum: <i>Testing period:</i>	16.06.2017 to 20.06.2017			
Ort der Prüfung: <i>Place of testing:</i>	MRT Technology(Suzhou) Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
11.07.2017 Datum <i>Date</i>		11.07.2017 Datum <i>Date</i>		
Elliot Zhang / Assistant Project Manager Name / Stellung <i>Name / Position</i>		Shi Li / Department Manager Name / Stellung <i>Name / Position</i>		
 Unterschrift <i>Signature</i>		 Unterschrift <i>Signature</i>		
Sonstiges / Other				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend Legend: 1 = very good 2 = good 3 = satisfactory P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s)		4 = ausreichend 5 = mangelhaft 4 = sufficient 5 = poor N/A = nicht anwendbar N/T = nicht getestet N/A = not applicable N/T = not tested		
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

TEST SUMMARY

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 PEAK OUTPUT POWER

RESULT: Pass

5.1.3 20dB BANDWIDTH

RESULT: Pass

5.1.4 CONDUCTED SPURIOUS EMISSIONS

RESULT: Pass

5.1.5 FREQUENCY SEPARATION

RESULT: Pass

5.1.6 NUMBER OF HOPPING FREQUENCY

RESULT: Pass

5.1.7 TIME OF OCCUPANCY

RESULT: Pass

5.2.1 CONDUCTED EMISSION

RESULT: Pass

5.3.1 RADIATED SPURIOUS EMISSION

RESULT: Pass

Contents

1.	GENERAL REMARKS	4
1.1	COMPLEMENTARY MATERIALS	4
2.	TEST SITES	4
2.1	TEST FACILITIES	4
2.2	LIST OF TEST AND MEASUREMENT INSTRUMENTS	5
2.3	TRACEABILITY	5
2.4	CALIBRATION	6
2.5	MEASUREMENT UNCERTAINTY	6
3.	GENERAL PRODUCT INFORMATION	7
3.1	PRODUCT FUNCTION AND INTENDED USE	7
3.2	RATINGS AND SYSTEM DETAILS	7
3.3	INDEPENDENT OPERATION MODES	8
3.4	NOISE GENERATING AND NOISE SUPPRESSING PARTS	8
3.5	SUBMITTED DOCUMENTS	8
4.	TEST SET-UP AND OPERATION MODES	9
4.1	PRINCIPLE OF CONFIGURATION SELECTION	9
4.2	TEST OPERATION AND TEST SOFTWARE	9
4.3	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	9
4.4	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE	9
5.	TEST RESULTS	10
5.1	CONDUCTED TESTING AT ANTENNA PORT	10
5.1.1	<i>Antenna Requirement</i>	<i>10</i>
5.1.2	<i>Peak Output Power</i>	<i>11</i>
5.1.3	<i>20dB Bandwidth</i>	<i>12</i>
5.1.4	<i>Conducted Spurious Emissions</i>	<i>18</i>
5.1.5	<i>Frequency Separation</i>	<i>25</i>
5.1.6	<i>Number of Hopping Frequency</i>	<i>31</i>
5.1.7	<i>Time of Occupancy</i>	<i>38</i>
5.2	EMISSION IN THE FREQUENCY RANGE UP TO 30MHZ	41
5.2.1	<i>Conducted Emission</i>	<i>41</i>
5.3	EMISSION IN THE FREQUENCY RANGE ABOVE 30MHZ	44
5.3.1	<i>Radiated Spurious Emission</i>	<i>44</i>
6.	LIST OF TABLES	60
7.	LIST OF FIGURES	60

1. General Remarks

1.1 Complementary Materials

Null.

2. Test Sites

2.1 Test Facilities

MRT Technology (Suzhou) Co., Ltd.

D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China

The used test equipment is in accordance with CISPR 16 for measurement of radio interference.

The Federal Communications Commission has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance with the requirements of section 2.948 of the FCC rules. The description of the test facility is listed under FCC registration number 809388.

The Industry Canada has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance. The description of the test facility is listed under chambers filing number 11384A.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment
Radiated Test Equipments

Instrument	Manufacturer	Type No.	Asset No.	Cali. Due Date
Spectrum Analyzer	Agilent	E4447A	MY45300136	08.12.2017
EMI Test Receiver	R&S	ESR7	101209	03.11.2017
Preamplifier	Schwarzbeck	BBV 9721	9721-008	16.04.2018
Preamplifier	Agilent	83017A	MY53270040	29.03.2018
Loop Antenna	Schwarzbeck	FMZB1519	1519-041	14.12.2017
TRILOG Antenna	Schwarzbeck	VULB9162	9162-047	07.11.2017
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1167	07.11.2017
Broadband Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170549	04.01.2018
Digital Thermometer & Hygrometer	Minggao	N/A	N/A	30.11.2017

Conducted Test Equipments

Instrument	Manufacturer	Type No.	Asset No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MY52090106	05.08.2018
USB Wideband Power Sensor	Boonton	55006	8911	05.08.2018
Temperature/Humidity Meter	Yuhuaze	N/A	N/A	20.12.2017

Conducted Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Due Date
EMI Test Receiver	R&S	ESR7	101209	03.11.2017
Two-Line V-Network	R&S	ENV216	101683	03.11.2017
Two-Line V-Network	R&S	ENV216	101684	03.11.2017
Temperature/Humidity Meter	Yuhuaze	N/A	N/A	20.12.2017

2.3 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

Table 2: Measurement Uncertainty

Measurement Type	Frequency	Uncertainty
Antenna Port Conducted Emission	< 1GHz	±0.39dB
	> 1GHz	±0.68dB
Radiated Emission	30MHz - 1GHz	±5.34dB
	> 1GHz	±5.40dB
AC Conducted Emission Measurement	150kHz~30MHz	± 3.46dB

3. General Product Information

3.1 Product Function and Intended Use

The EUT (Equipment Under Test) is an intelligent toilet which contains a 2.4GHz wireless modular and a Bluetooth Dual Mode module.

The aim of this report is to evaluate the RF characteristic of the Bluetooth Classical Part of the Bluetooth modular.

For details refer to the User Manual and Circuit Diagram.

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

General Description of EUT	
Product Name:	Intelligent toilet
Brand Name:	AXENT
Model No.:	E322-02
Rated Voltage:	AC 120V, 60Hz
Bluetooth Classical	
Frequency Range:	2402 – 2480MHz
Modulation Type:	BDR: GFSK EDR: $\pi/4$ -DQPSK; 8DPSK
Antenna Type:	PCB Antenna
Antenna Gain:	1.6dBi
Bluetooth Low Energy	
Frequency Range:	2402 – 2480MHz
Modulation Type:	GFSK
Antenna Type:	PCB Antenna
Antenna Gain:	1.6dBi
2.4GHz Wireless Module	
Frequency Range:	2411MHz
Modulation Type:	FSK
Antenna Type:	PCB
Antenna Gain:	0dBi

3.3 Independent Operation Modes

Test Mode	Data Rate	Channel
TM1	1-DH5	00
TM2	1-DH5	39
TM3	1-DH5	78
TM4	2-DH5	00
TM5	2-DH5	39
TM6	2-DH5	78
TM7	3-DH5	00
TM8	3-DH5	39
TM9	3-DH5	78
TM10	1-DH5	Hopping
TM11	2-DH5	Hopping
TM12	3-DH5	Hopping
TM13	3-DH3	Hopping
TM14	3-DH1	Hopping
TM15	Normal Operating Mode	

Note: The EUT was set into continuous transmitting or receiving mode from TM1 to TM9 in the related tests.

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- Bill of Material
- PCB Layout
- Photo Document
- Circuit Diagram
- Instruction Manual
- Rating Label

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.10: 2013.

4.3 Special Accessories and Auxiliary Equipment

Null.

4.4 Countermeasures to achieve EMC Compliance

Null.

5. Test Results

5.1 Conducted Testing at Antenna Port

5.1.1 Antenna Requirement

RESULT:

Pass

Table 4: Antenna Requirement

FCC 15.203 – Antenna Requirement 1	
Requirement:	No antenna other than that furnished by the responsible party shall be used with the device ☒ Use of a permanently attached antenna, or ☐ Use an antenna that uses a unique coupling to the intentional radiator.
Results:	Antenna type: PCB antenna
Verdict:	PASS

FCC 15.204 – Antenna Requirement 2	
Requirement:	An intentional radiator may be operated only with the antenna with which it is authorized. If an antenna is marketed with the intentional radiator, it shall be of a type which is authorized with the intentional radiator.
Results:	Only one integral antenna can be used
Verdict:	PASS

Mode	CH.	Freq. [MHz]	Maximum Peak Conducted Output Power [dBm]	Peak Conducted Output Power Limit [dBm]
TM1	00	2402	6.017	30
TM2	39	2441	5.909	30
TM3	78	2480	5.770	30
TM4	00	2402	6.081	30
TM5	39	2441	5.939	30
TM6	78	2480	5.830	30
TM7	00	2402	6.158	30
TM8	39	2441	6.058	30
TM9	78	2480	5.938	30

5.1.3 20dB Bandwidth

RESULT:

Pass

Date of testing : 16.06.2017
Test standard : FCC Part 15.247(a)(1)
Test procedure : ANSI C63.10: 2013
Kind of test site : Shielded room

Test setup

Test Channel	: Low/ Middle/ High
Operation Mode	: TM1 to TM9
Ambient temperature	: 25°C
Relative humidity	: 52%
Atmospheric pressure	: 101kPa

Table 6: 20dB Bandwidth, TM1 to TM9

Mode	Frequency [MHz]	20dB Bandwidht [kHz]	99% Bandwidth [kHz]
TM1	2402	1019	967.89
TM2	2441	1015	947.79
TM3	2480	1011	929.54
TM4	2402	1335	1259.9
TM5	2441	1315	1245.8
TM6	2480	1311	1206.1
TM7	2402	1325	1248.8
TM8	2441	1286	1229.3
TM9	2480	1266	1209.0

Note:

For frequency hopping systems operating in the 2400 – 2483.5MHz band, no bandwidth limit is specified. The test data is provide for reference.

And according to FCC, when the occupied bandwidth limit is not stated in the applicable FCC or reference measurement method, the transmitted signal band width shall be reported as the 99% emission bandwidth.

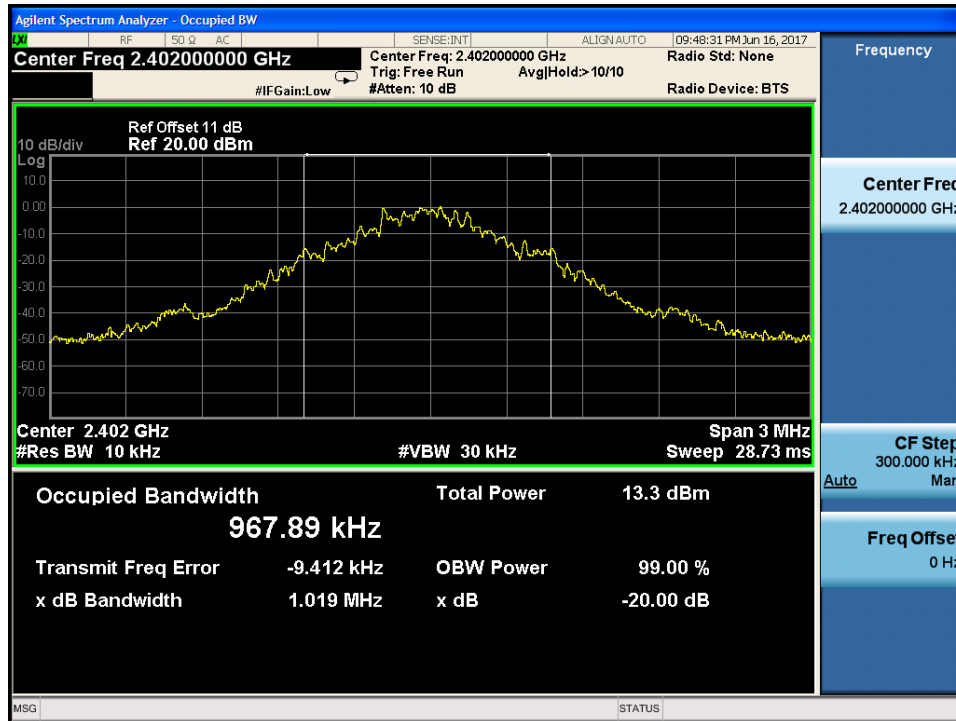
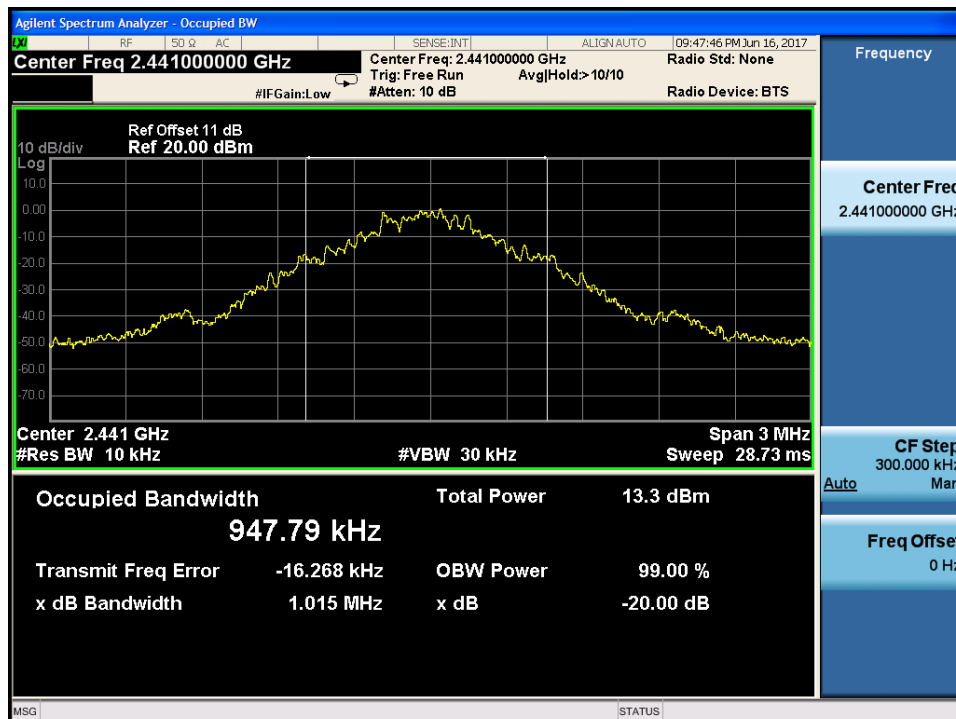
Figure 1: 20dB Bandwidth, TM1

Figure 2: 20dB Bandwidth, TM2


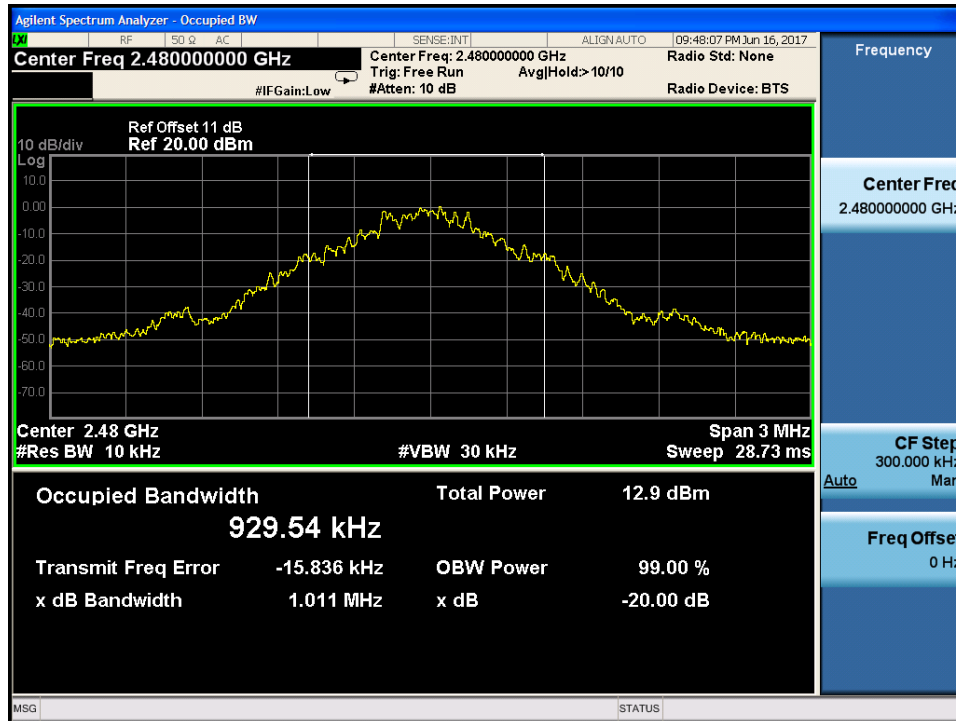
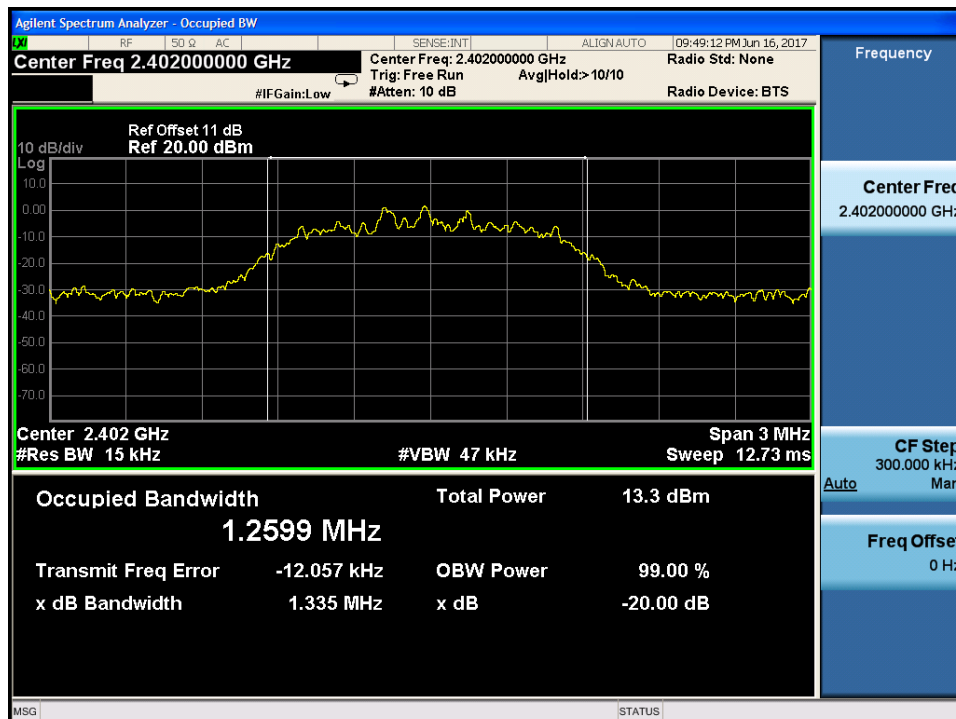
Figure 3: 20dB Bandwidth, TM3

Figure 4: 20dB Bandwidth, TM4


Figure 5: 20dB Bandwidth, TM5

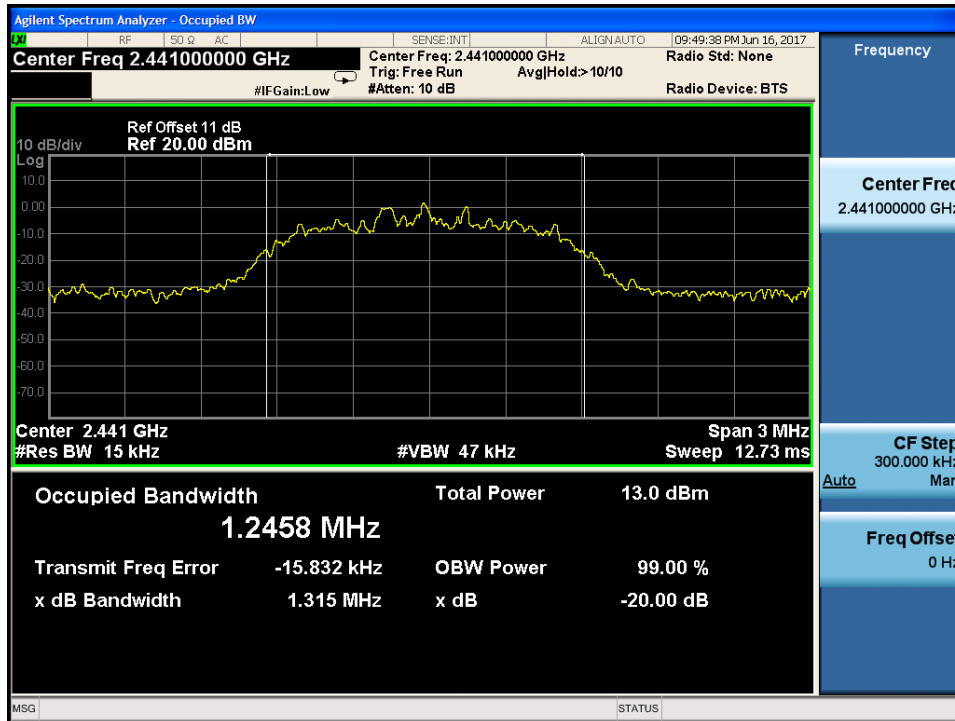


Figure 6: 20dB Bandwidth, TM6

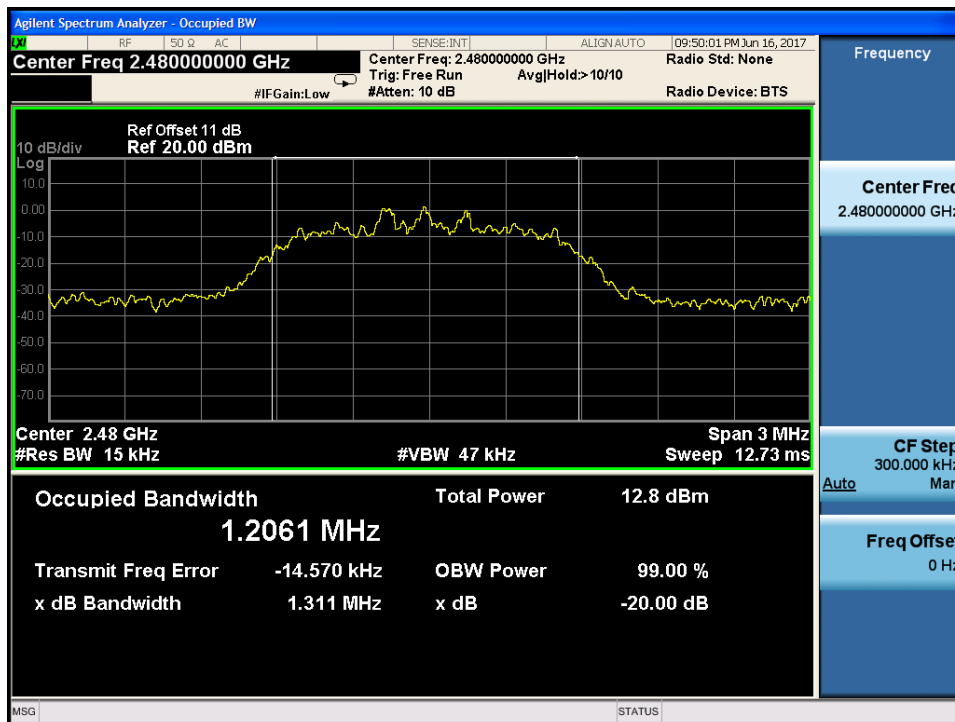


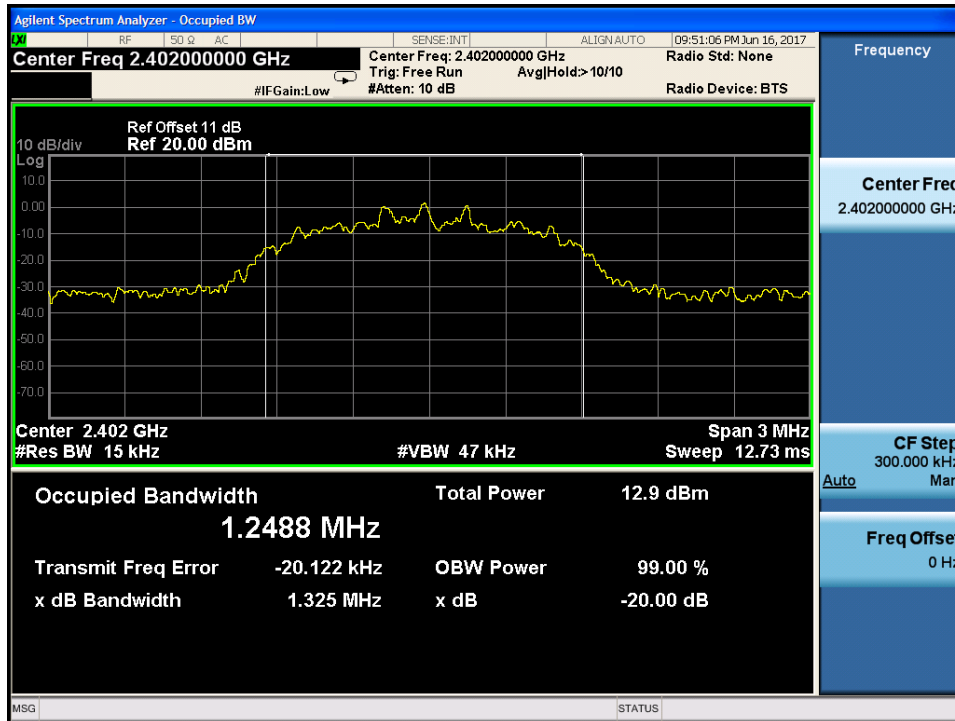
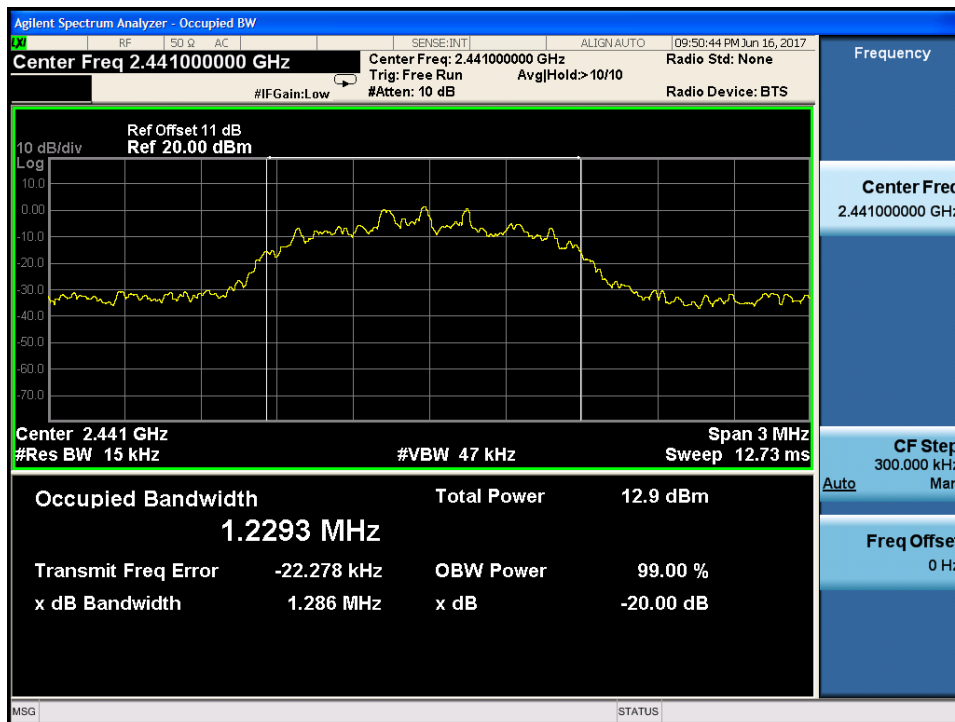
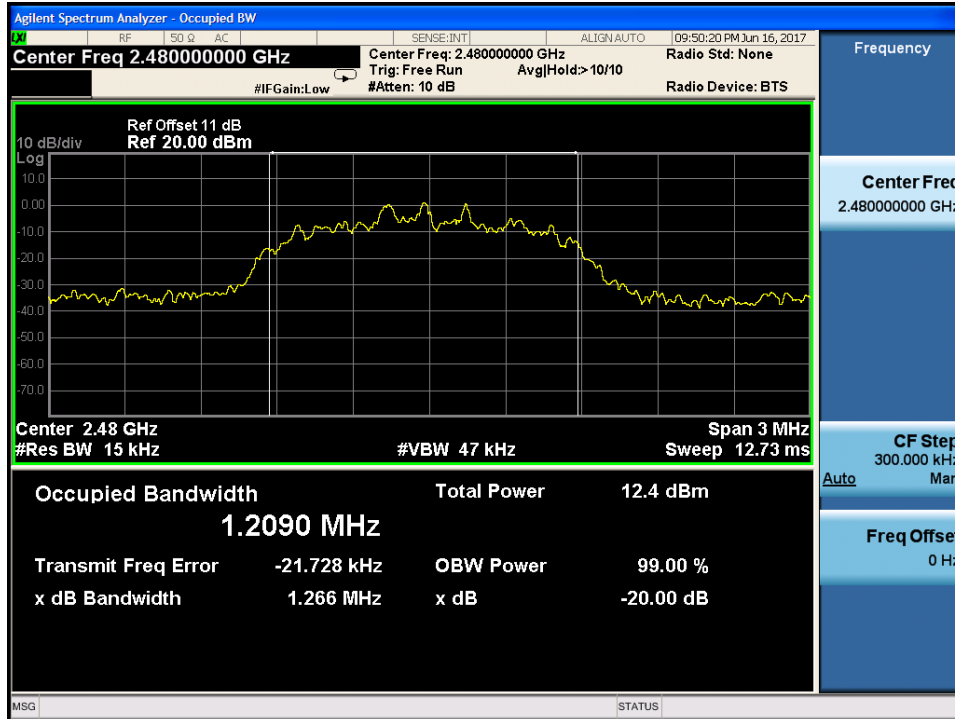
Figure 7: 20dB Bandwidth, TM7

Figure 8: 20dB Bandwidth, TM8


Figure 9: 20dB Bandwidth, TM9



5.1.4 Conducted Spurious Emissions

RESULT:**Pass**

Date of testing : 16.06.2017
Test standard : FCC Part 15.247(d)
Test procedure : ANSI C63.10: 2013
Public Notice DA 00-705 March 30, 2000
Limit : FCC Part 15.247(d)
Kind of test site : Shielded room

Test setup

Test Channel : Low/ Middle/ High
Operation Mode : TM1, TM3, TM4, TM6, TM7, TM9
Ambient temperature : 25°C
Relative humidity : 52%
Atmospheric pressure : 101kPa

Figure 10: Conducted Spurious Emission, TM1

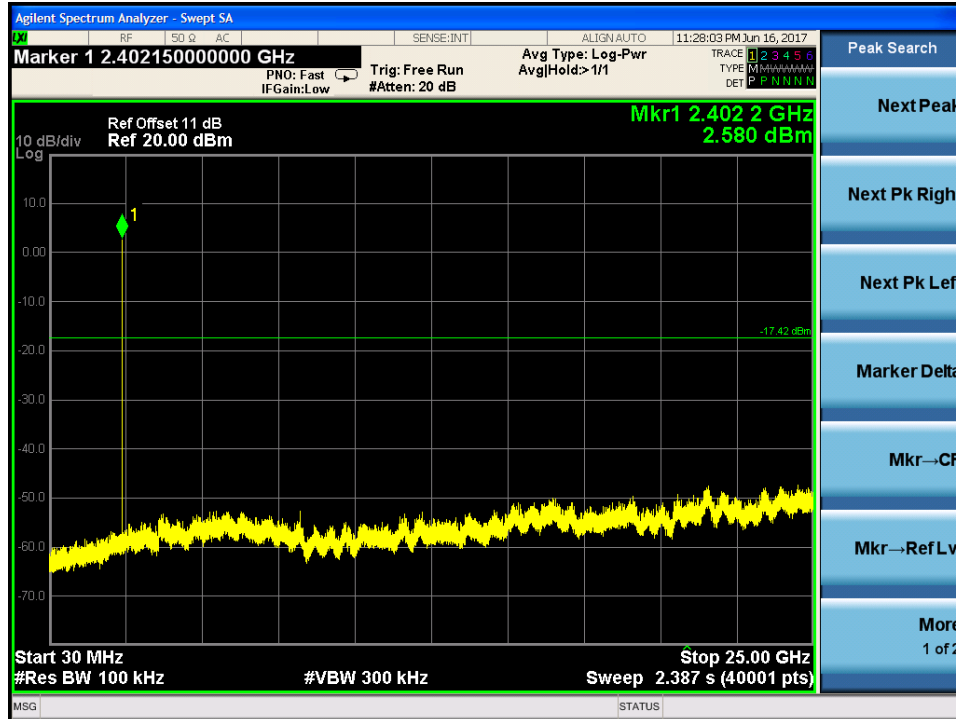


Figure 11: Conducted Spurious Emission, TM3

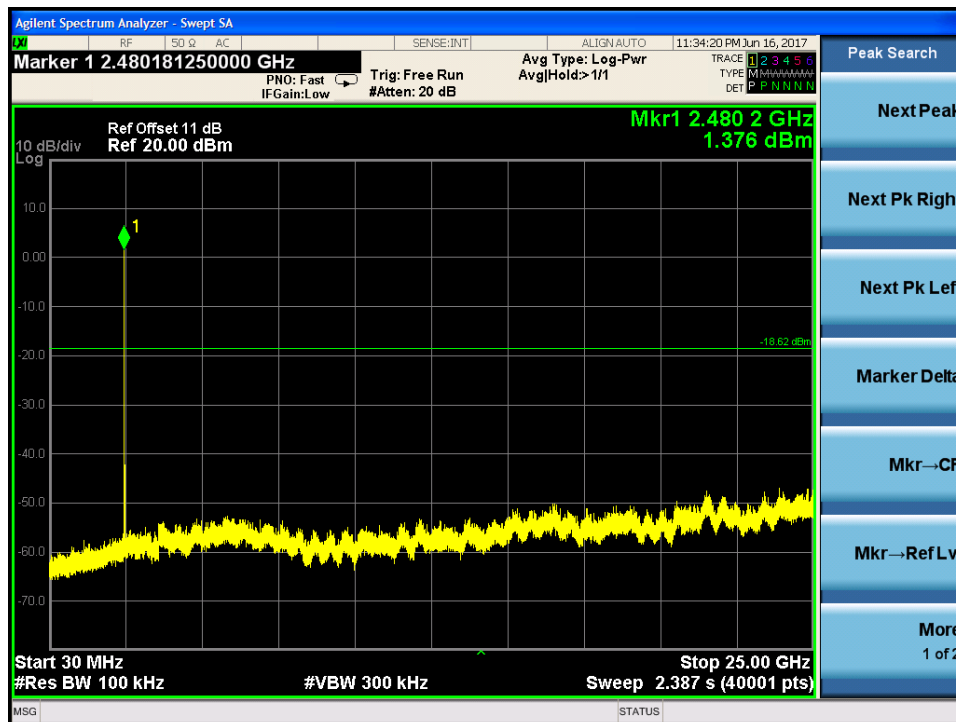


Figure 12: Conducted Spurious Emission, TM4

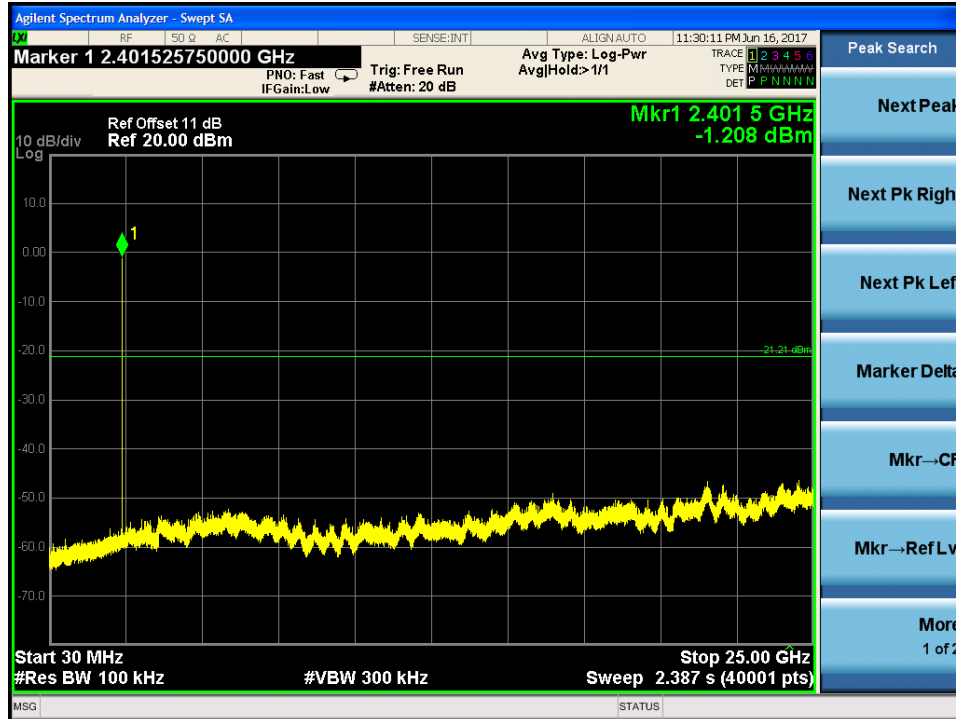


Figure 13: Conducted Spurious Emission, TM6

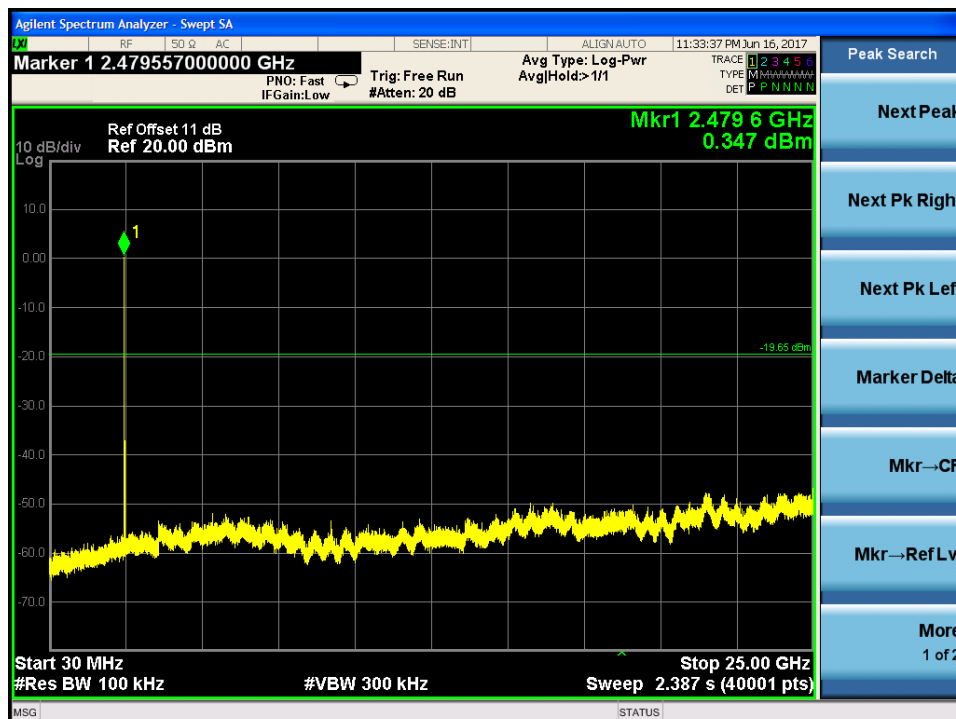


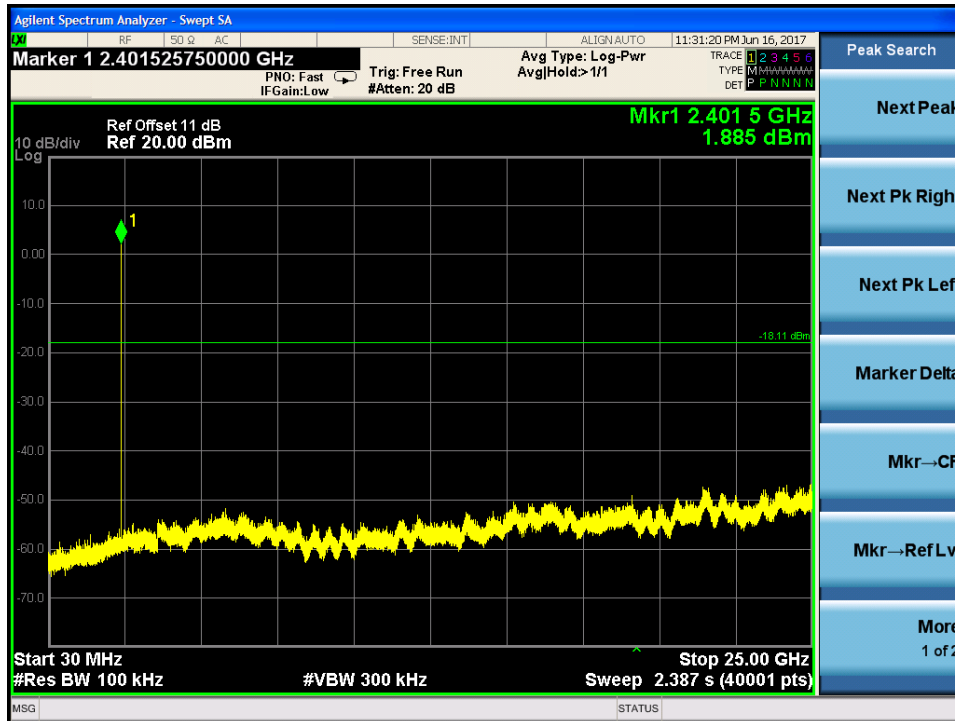
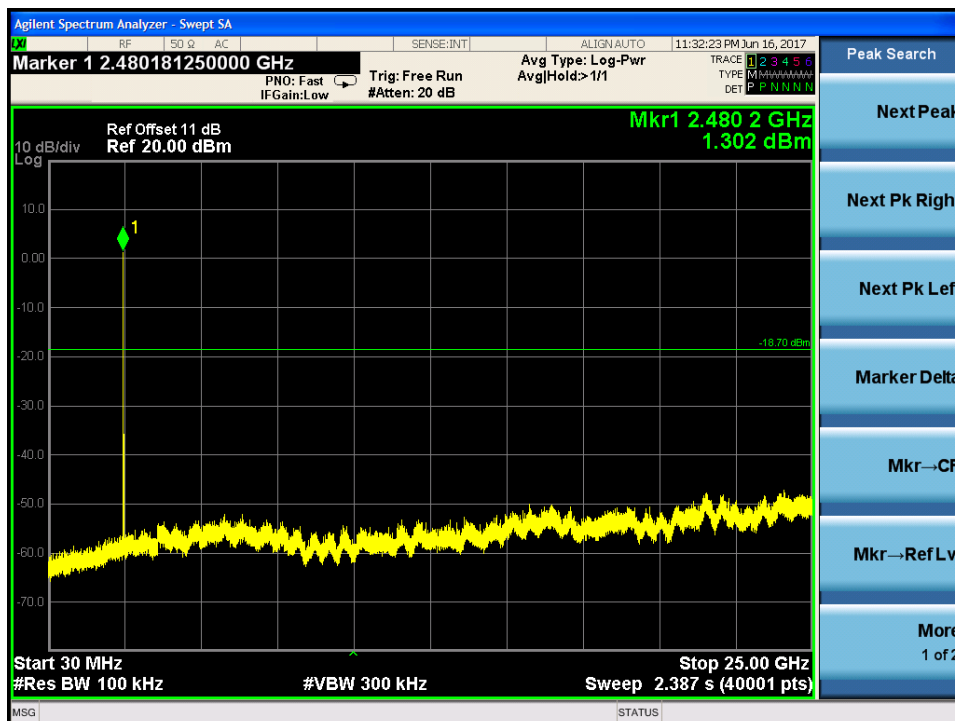
Figure 14: Conducted Spurious Emission, TM7

Figure 15: Conducted Spurious Emission, TM9


Figure 16: Band Edge, TM1

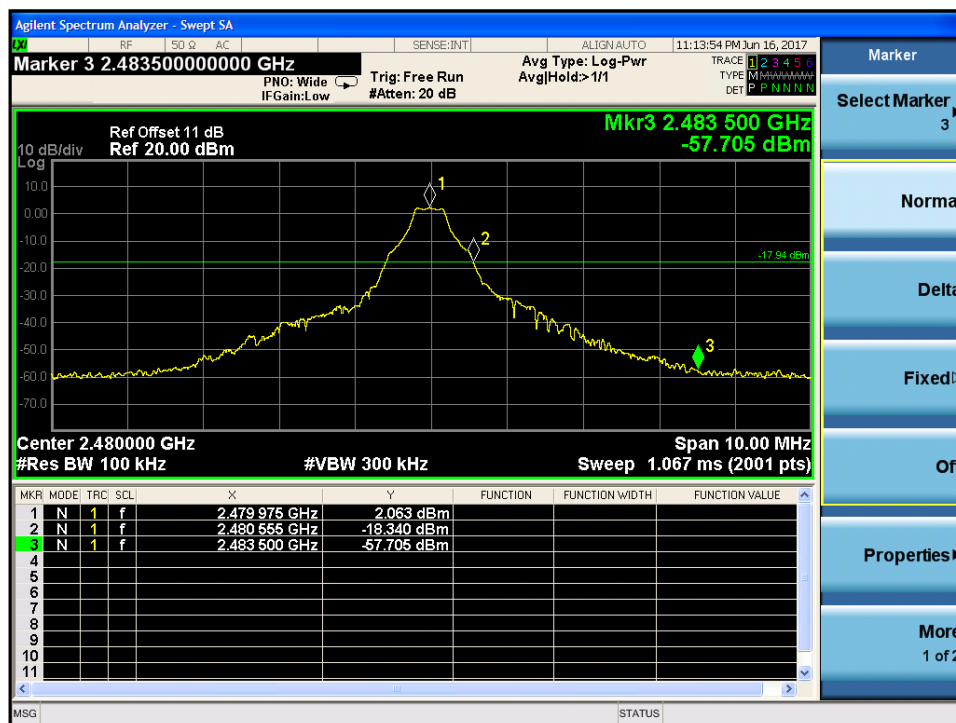
Figure 17: Band Edge, TM3


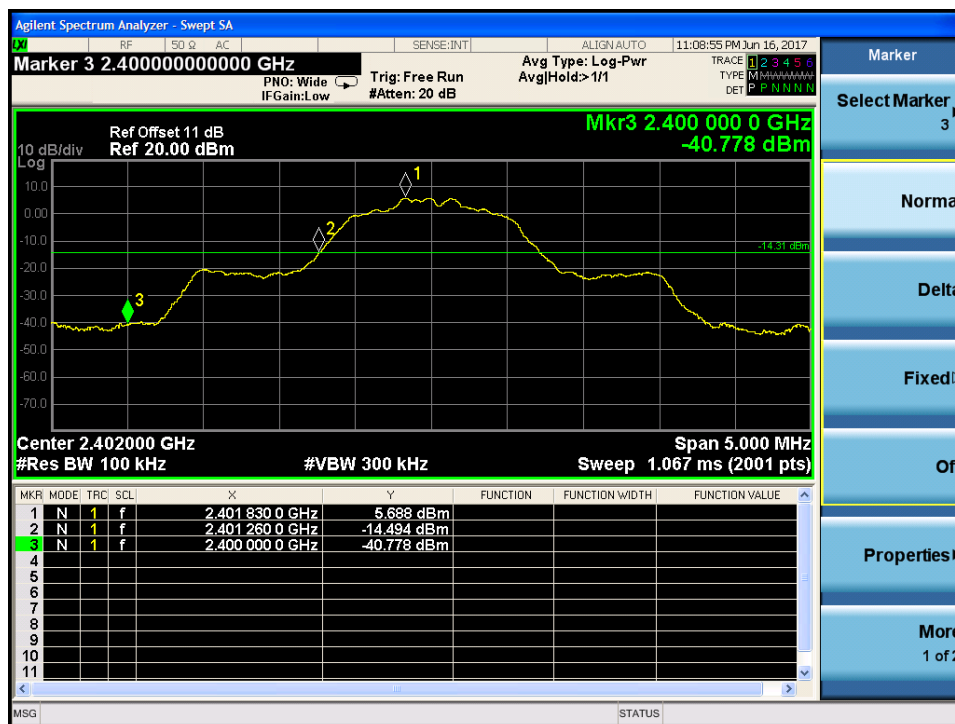
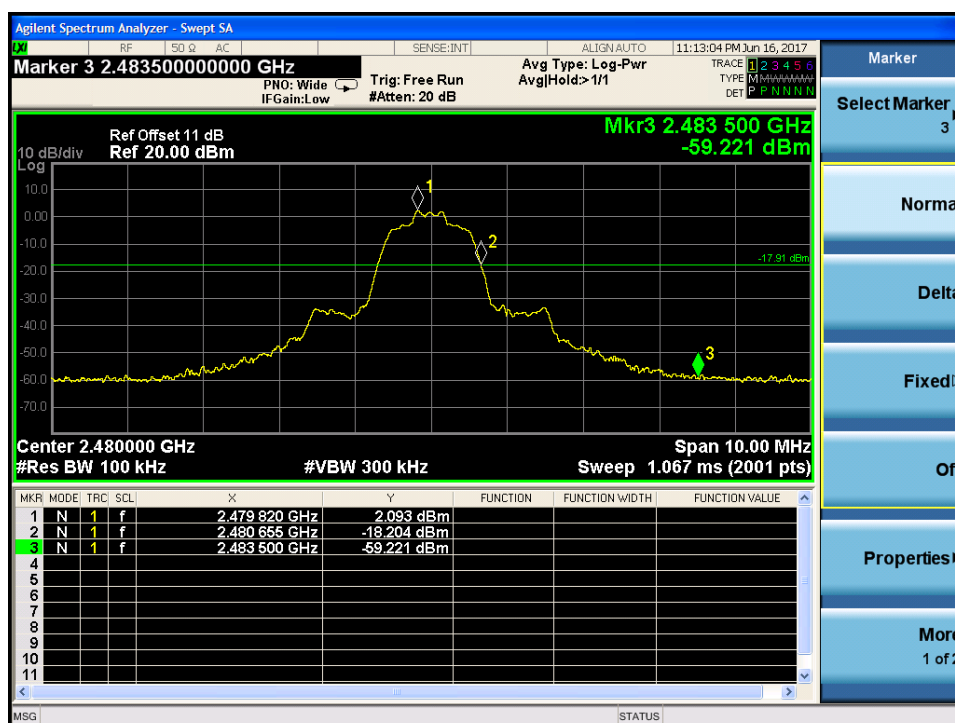
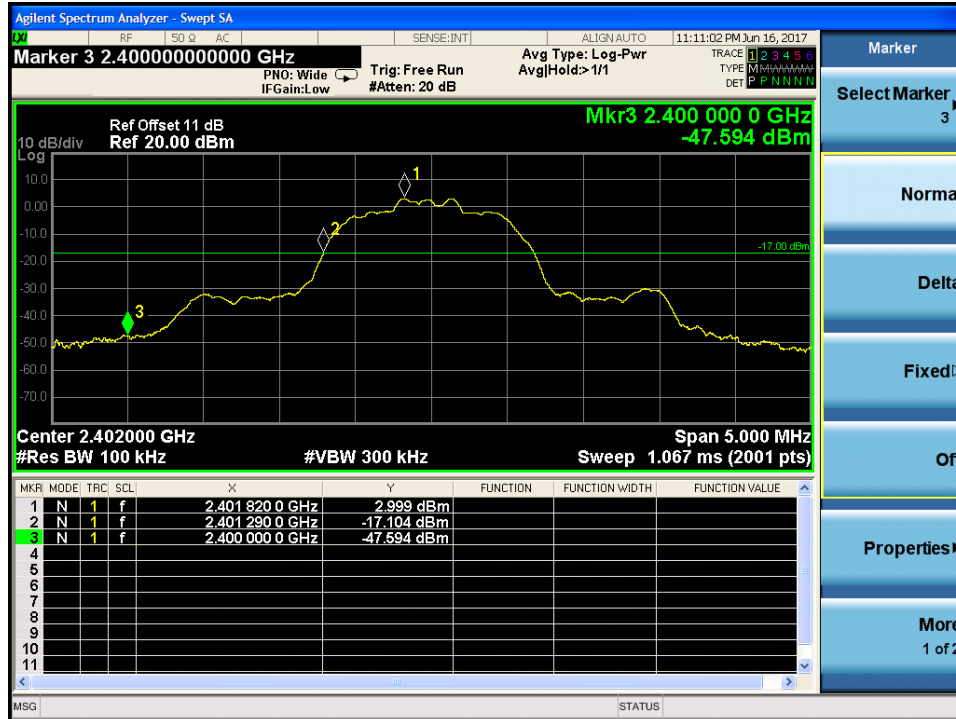
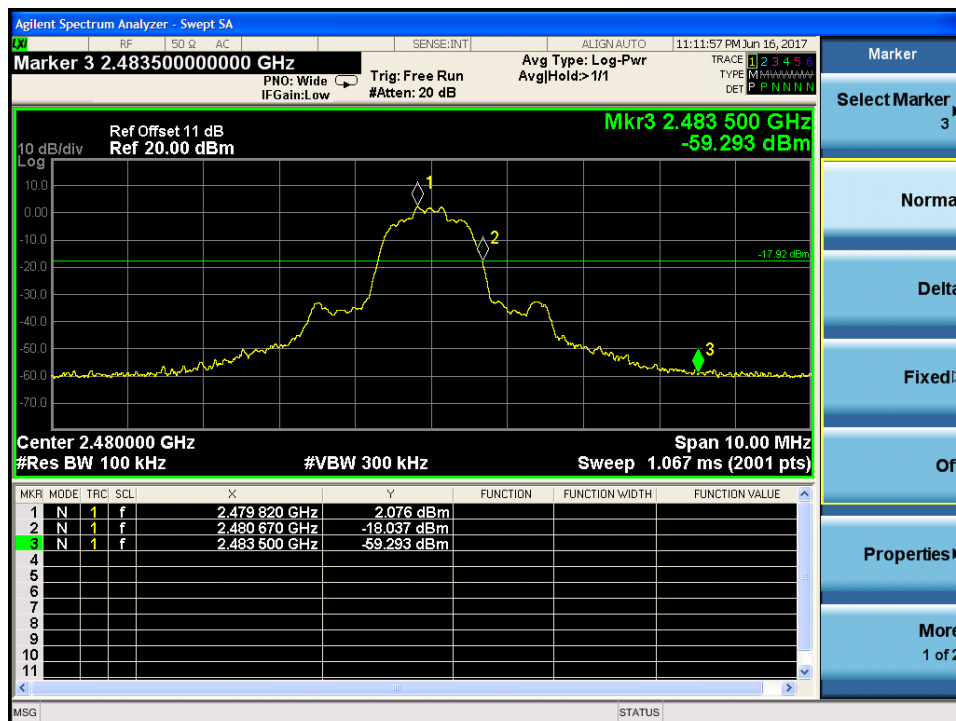
Figure 18: Band Edge, TM4

Figure 19: Band Edge, TM6


Figure 20: Band Edge, TM7

Figure 21: Band Edge, TM9


5.1.5 Frequency Separation

RESULT:**Pass**

Date of testing : 16.06.2017
Test standard : FCC Part 15.247(a)(1)
Test procedure : ANSI C63.10: 2013
Public Notice DA 00-705 March 30, 2000
Limit : FCC Part 15.247(a)(1)
Kind of test site : Shielded room

Test setup

Test Channel : Low/ Middle/ High
Operation Mode : TM10 to TM12
Ambient temperature : 25°C
Relative humidity : 52%
Atmospheric pressure : 101kPa

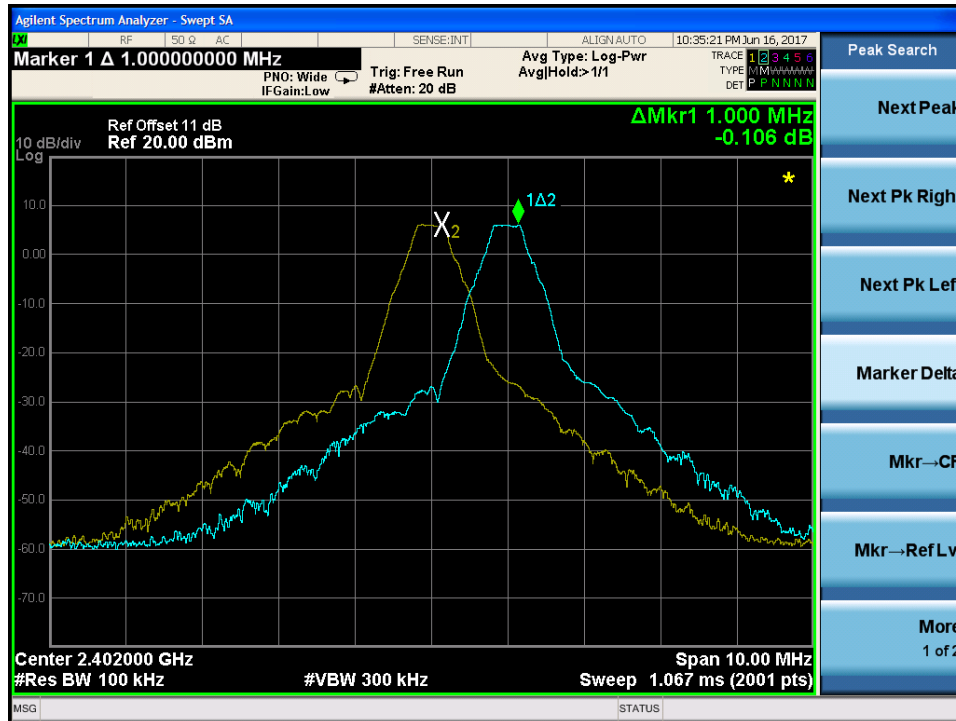
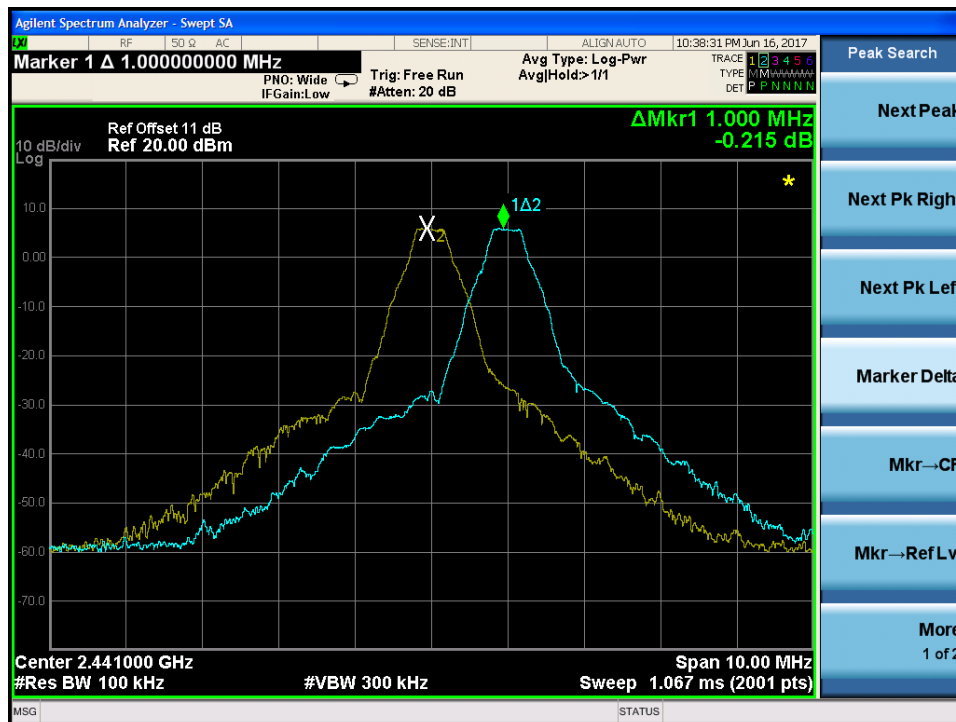
Figure 22: Frequency Separation, TM10, observation Frequency 2402MHz

Figure 23: Frequency Separation, TM10, observation Frequency 2441MHz


Figure 24: Frequency Separation, TM10, observation Frequency 2480MHz

Figure 25: Frequency Separation, TM11, observation Frequency 2402MHz


Figure 26: Frequency Separation, TM11, observation Frequency 2441MHz

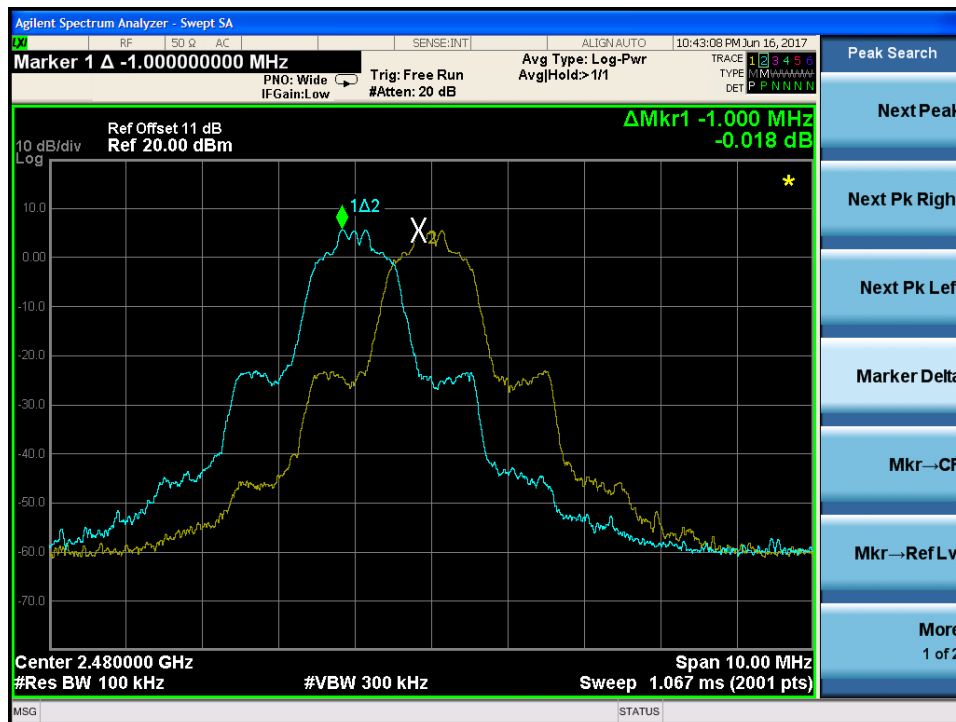
Figure 27: Frequency Separation, TM11, observation Frequency 2480MHz


Figure 28: Frequency Separation, TM12, observation Frequency 2402MHz

Figure 29: Frequency Separation, TM12, observation Frequency 2441MHz


Figure 30: Frequency Separation, TM12, observation Frequency 2480MHz



5.1.6 Number of Hopping Frequency

RESULT:**Pass**

Date of testing : 16.06.2017
Test standard : FCC 15.247(a)(1)(iii)
Test procedure : ANSI C63.10: 2013
Public Notice DA 00-705 March 30, 2000
Limit : FCC 15.247(a)(1)(iii)
Kind of test site : Shielded room

Test setup

Operation Mode : TM10 to TM12
Ambient temperature : 25°C
Relative humidity : 52%
Atmospheric pressure : 101kPa

Table 7: Number of Hopping Frequency

Frequency Range	Measured Quantity of Hopping Channel	Limit
2402 to 2480	79	≥15

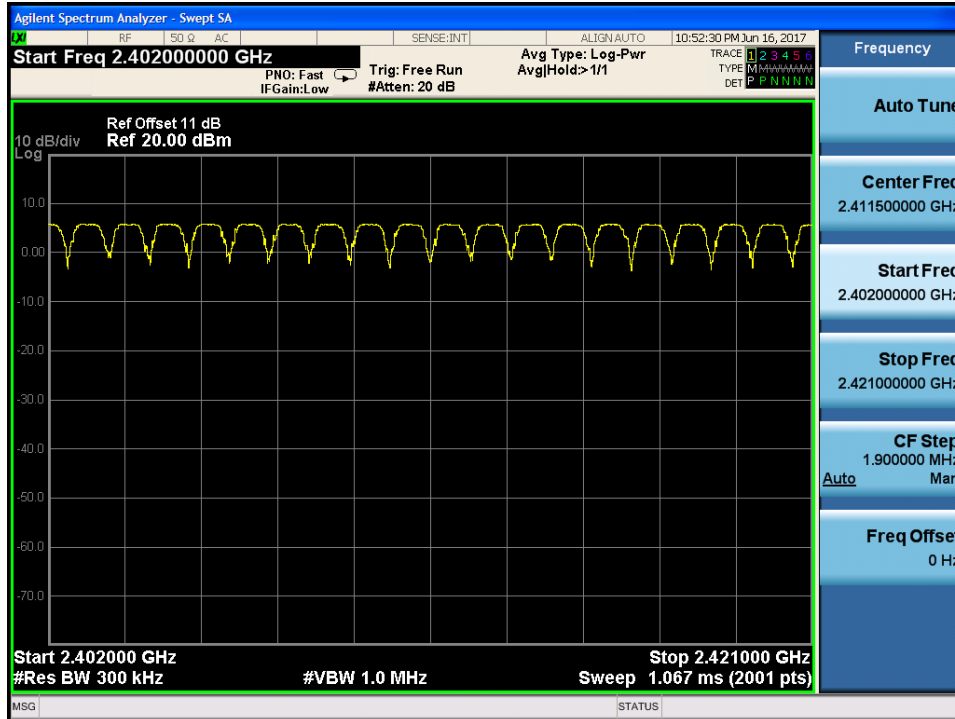
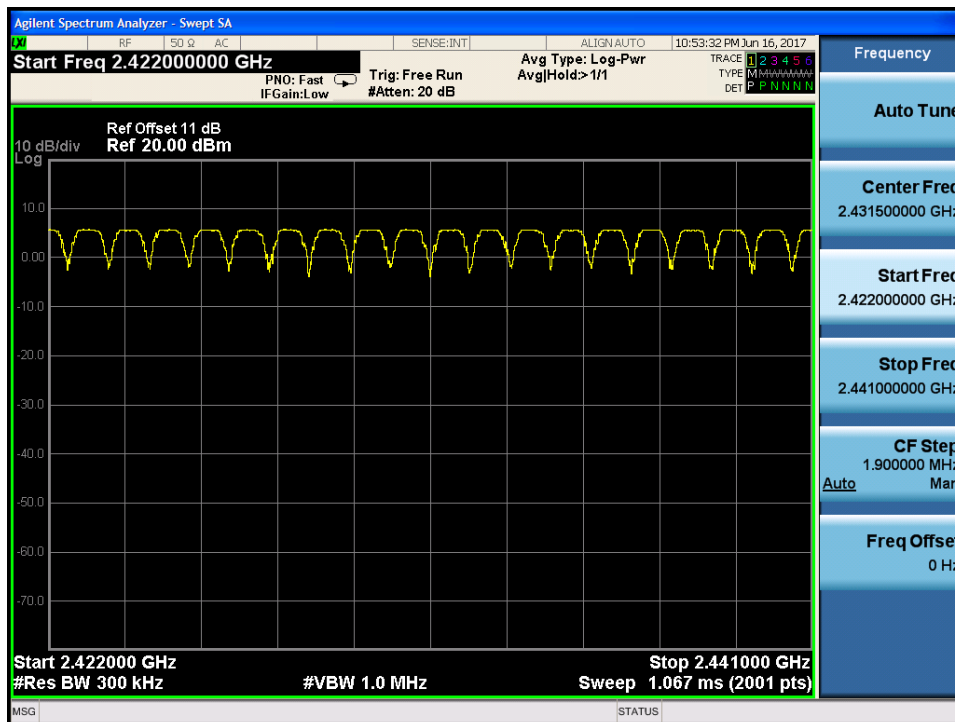
Figure 31: Number of Hopping Frequency, TM10, part 1

Figure 32: Number of Hopping Frequency, TM10, part 2


Figure 33: Number of Hopping Frequency, TM10, part 3

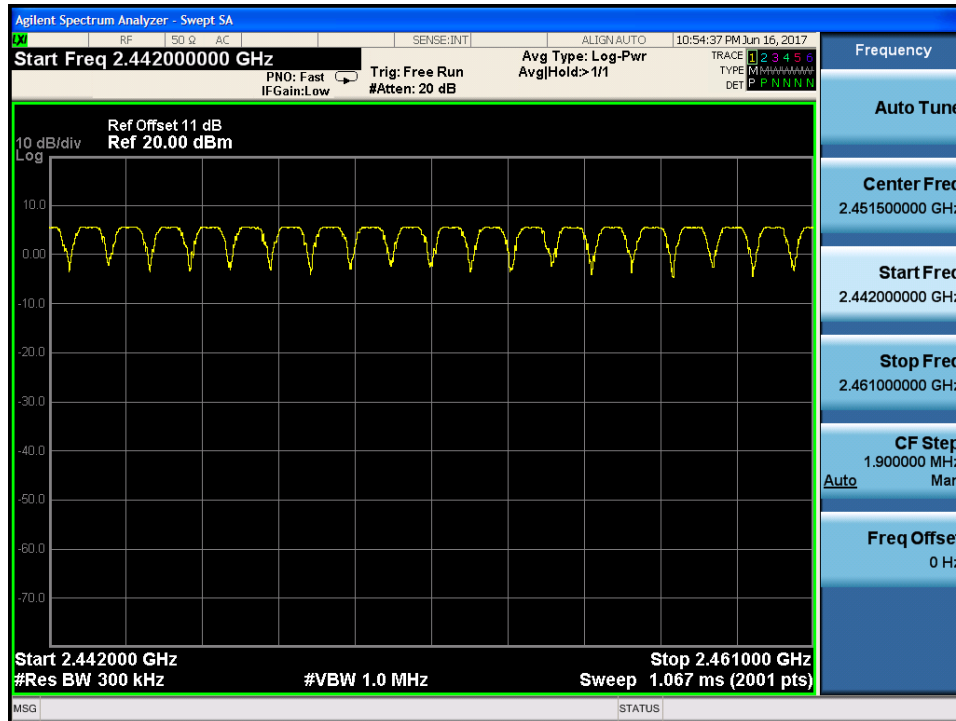


Figure 34: Number of Hopping Frequency, TM10, part 4

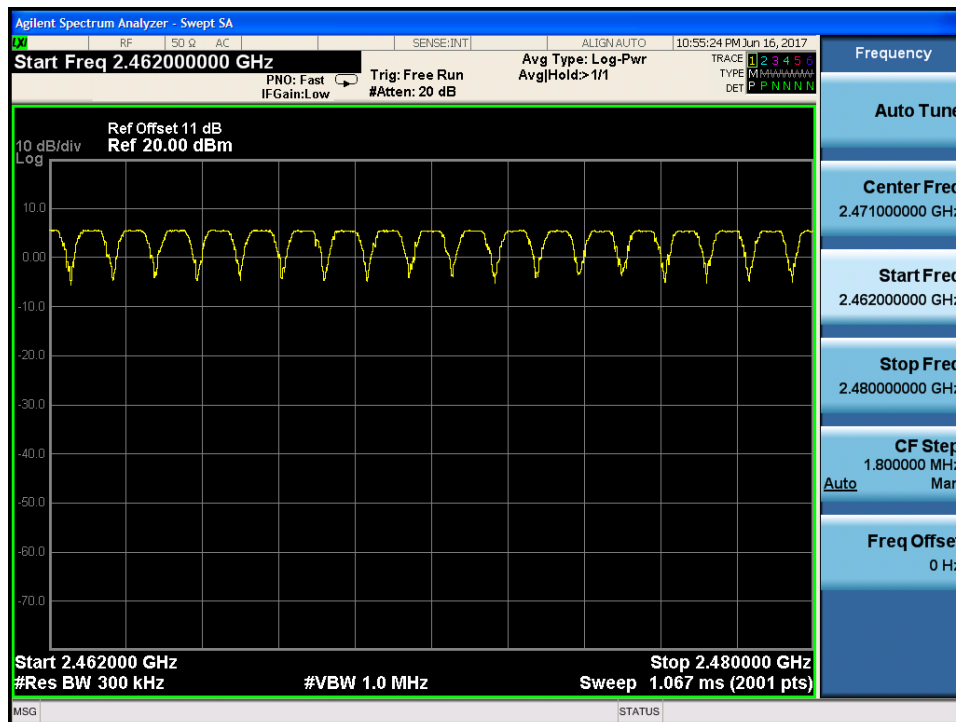


Figure 35: Number of Hopping Frequency, TM11, part 1

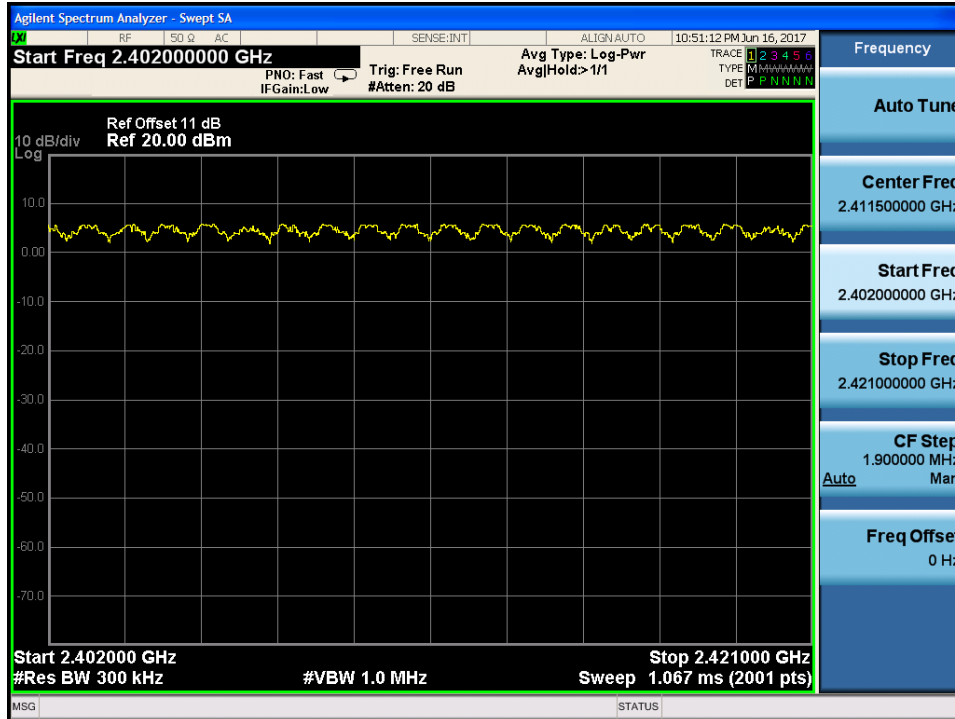


Figure 36: Number of Hopping Frequency, TM11, part 2

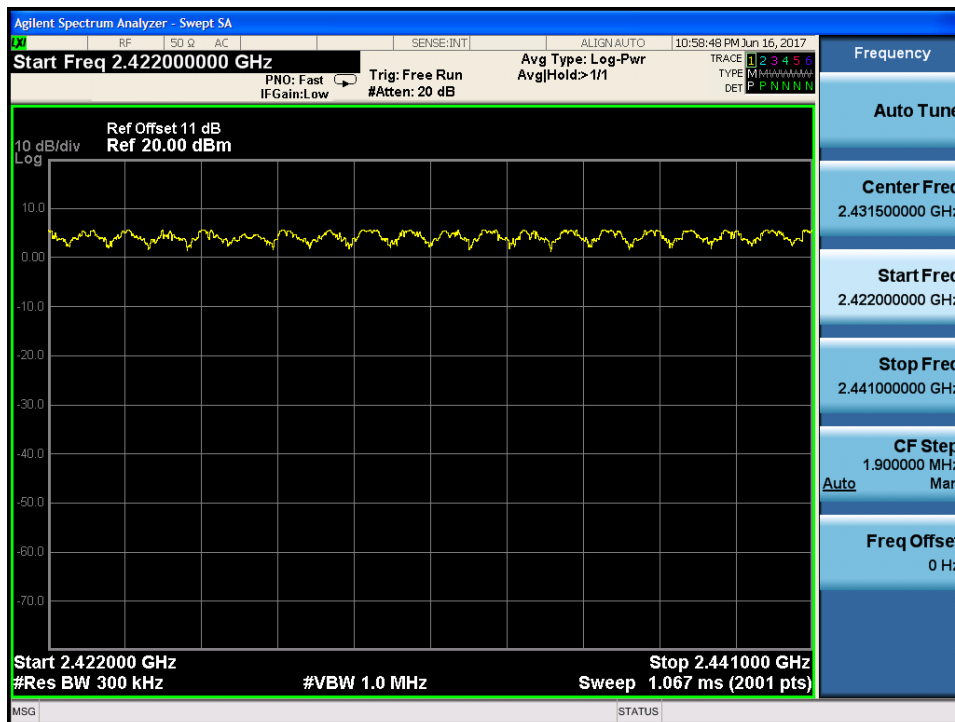


Figure 37: Number of Hopping Frequency, TM11, part 3

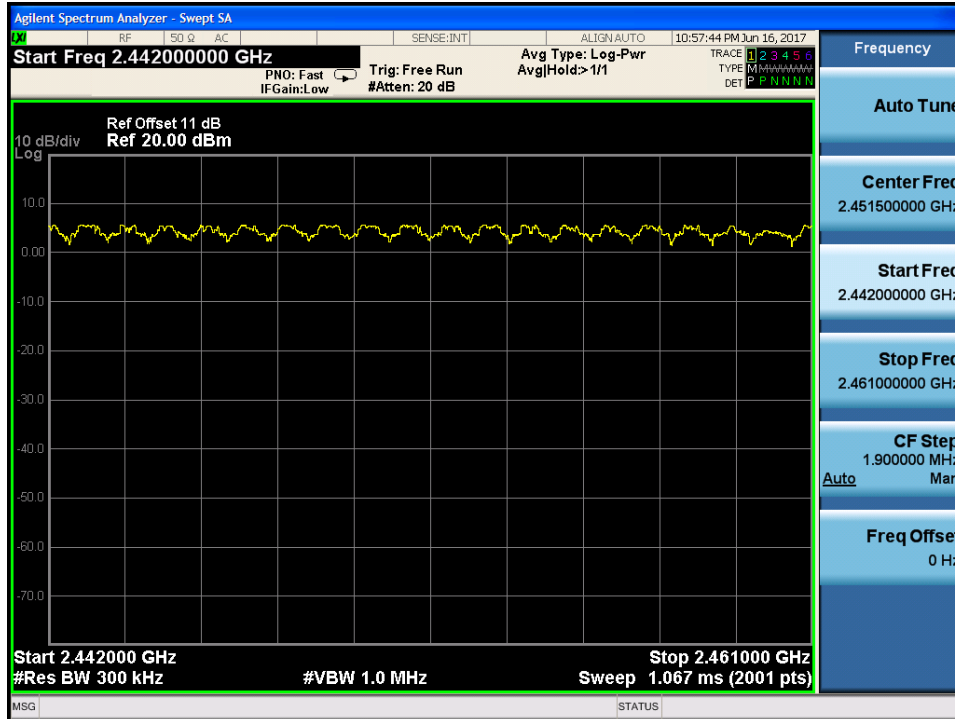


Figure 38: Number of Hopping Frequency, TM11, part 4

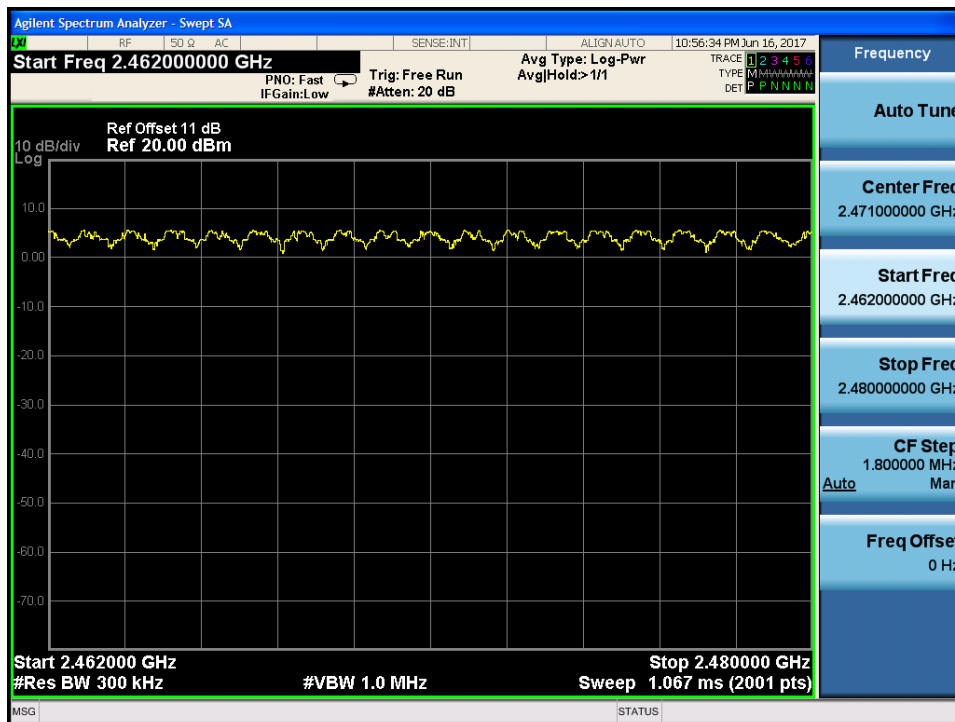


Figure 39: Number of Hopping Frequency, TM12, part 1

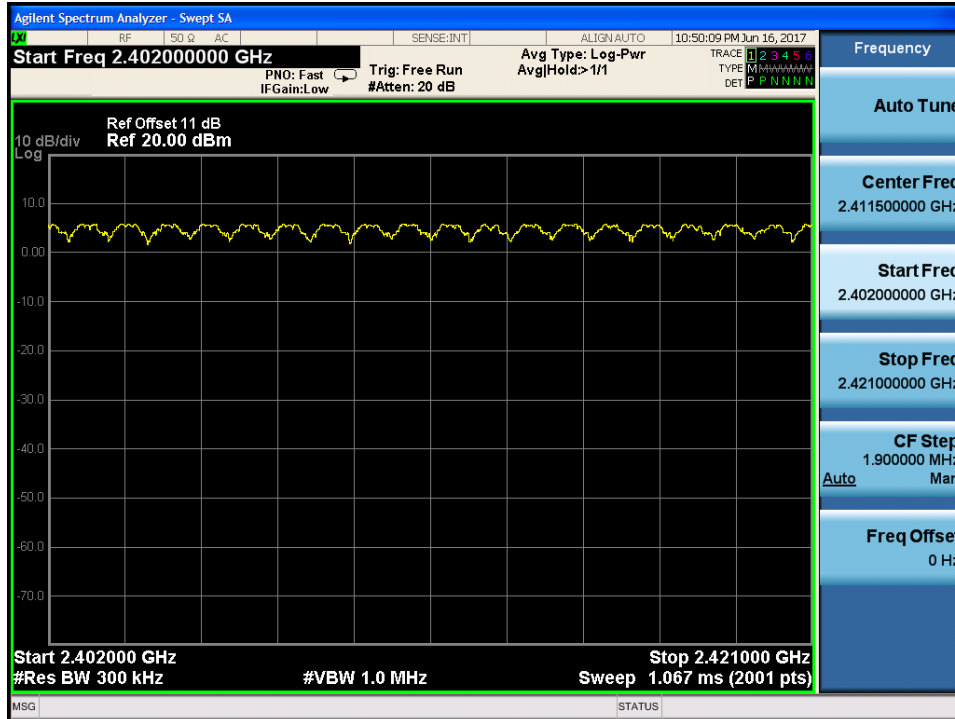


Figure 40: Number of Hopping Frequency, TM12, part 2

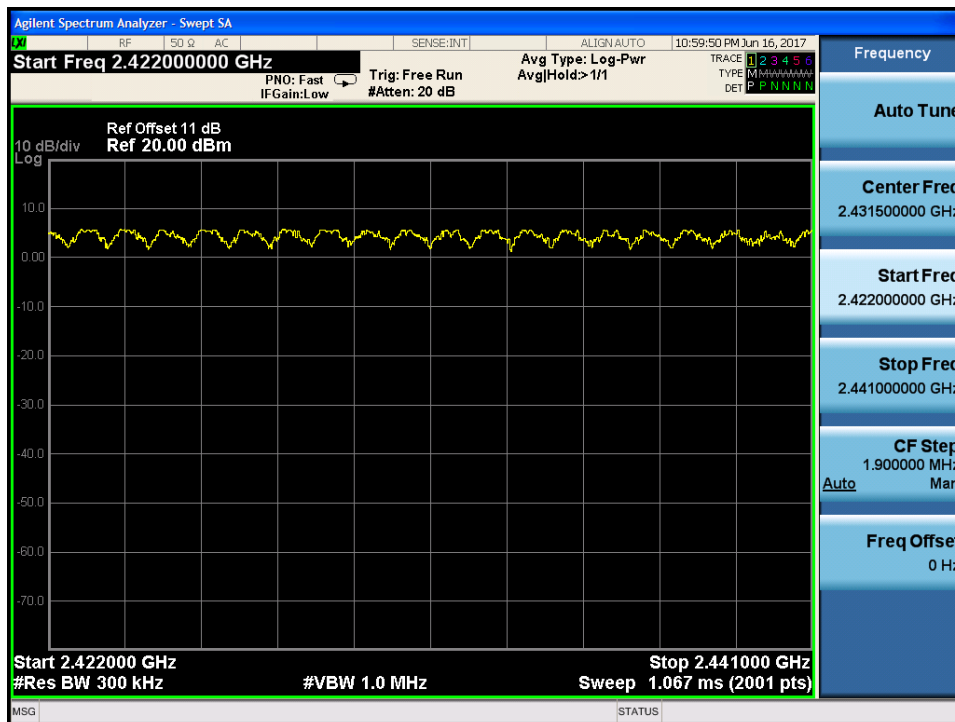


Figure 41: Number of Hopping Frequency, TM12, part 3

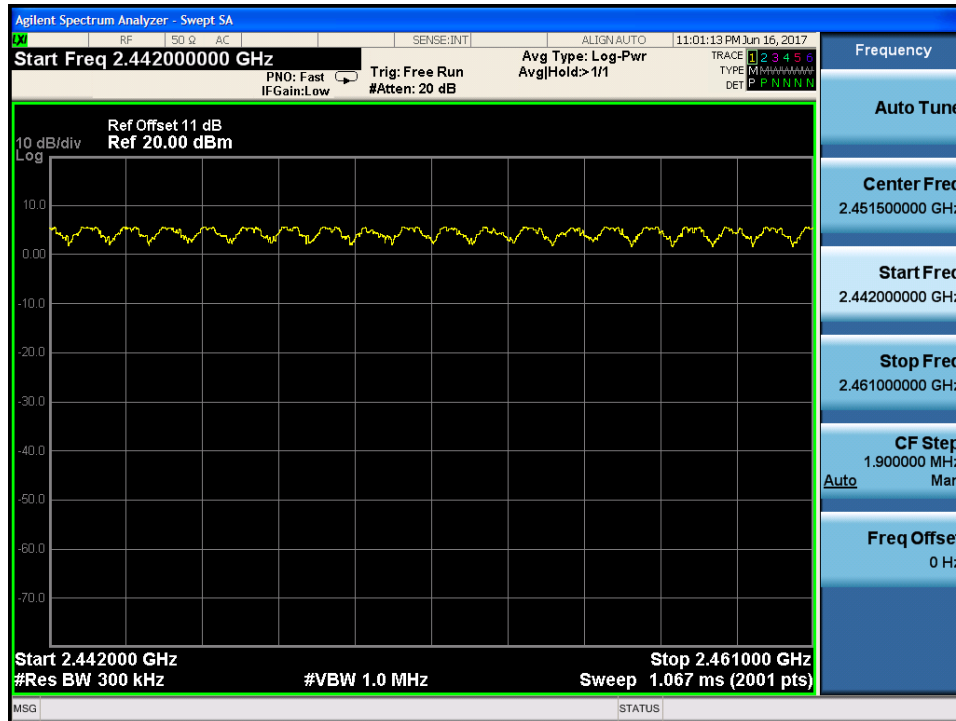
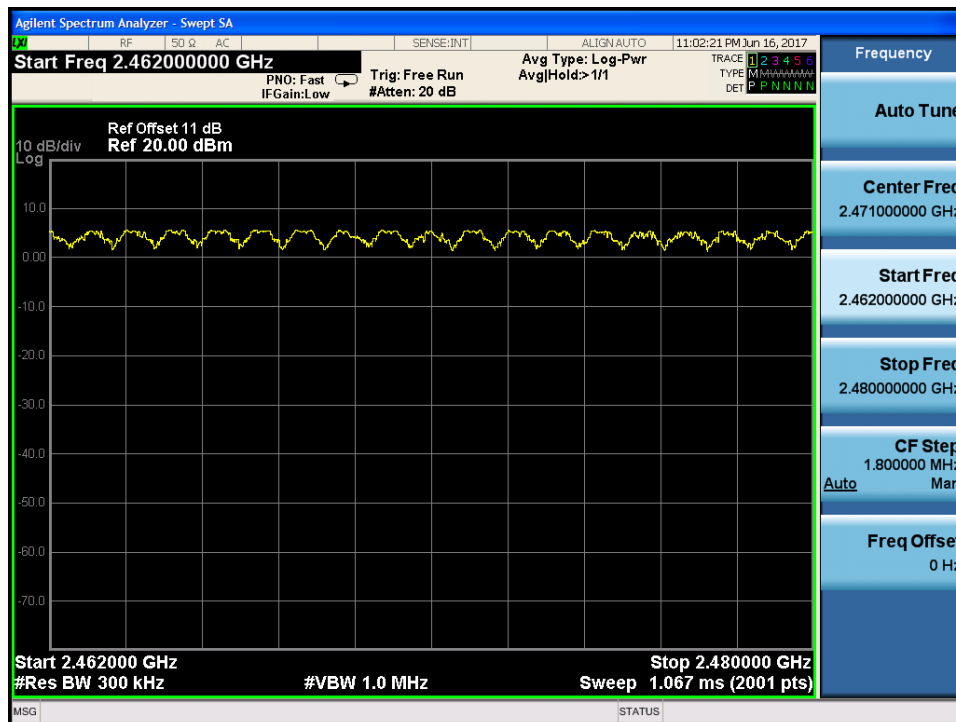


Figure 42: Number of Hopping Frequency, TM12, part 4



The maximum number of hopping channels in 31.6s for 3DH5 = $1600 / 6 / 79 * 31.6 = 107$

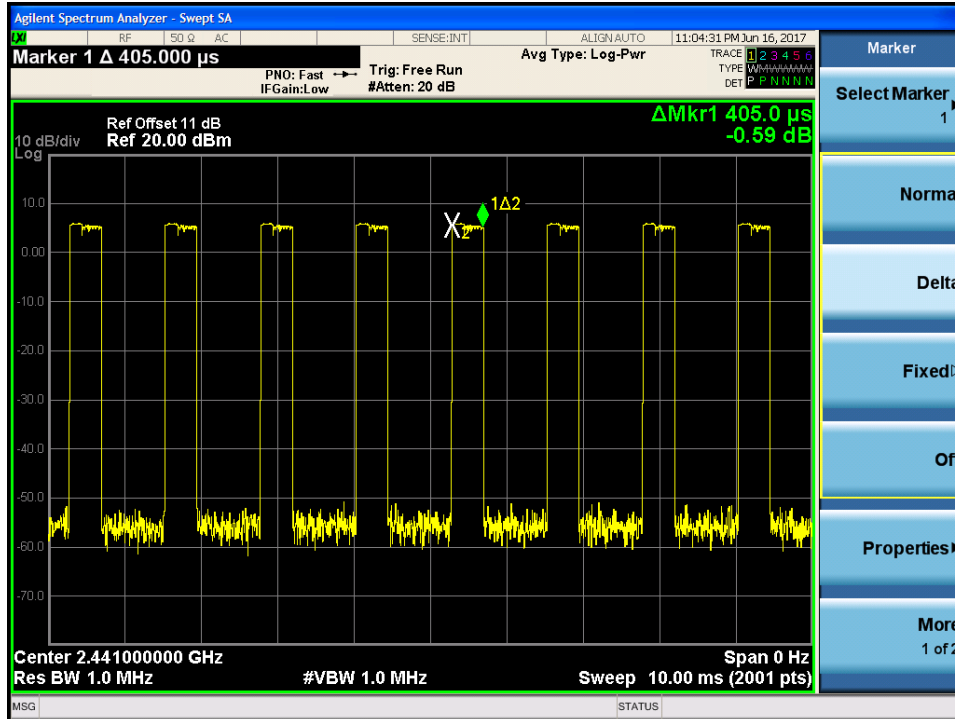
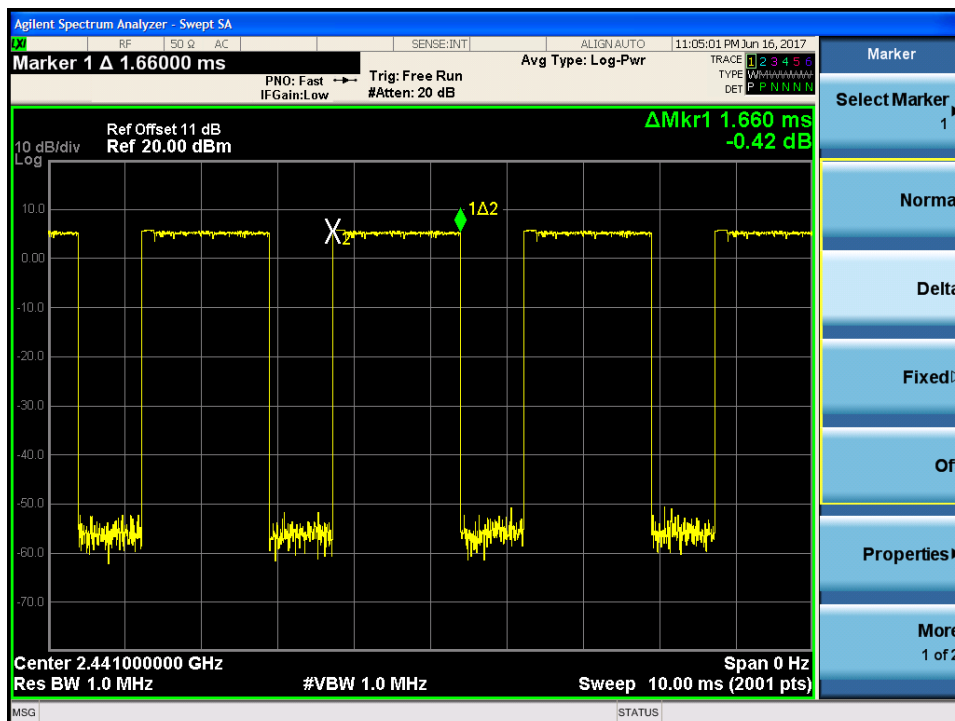
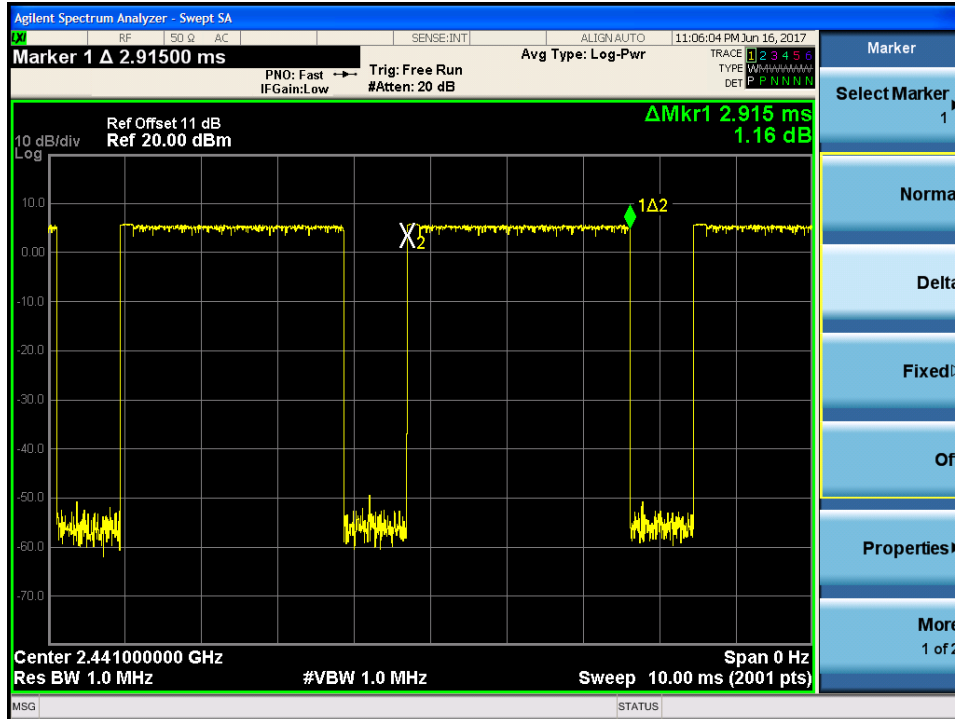
Figure 43: Time of Occupancy, TM14, observation Frequency 2441MHz

Figure 44: Time of Occupancy, TM13, observation Frequency 2441MHz


Figure 45: Time of Occupancy, TM12, observation Frequency 2441MHz



5.2 Emission in the Frequency Range up to 30MHz

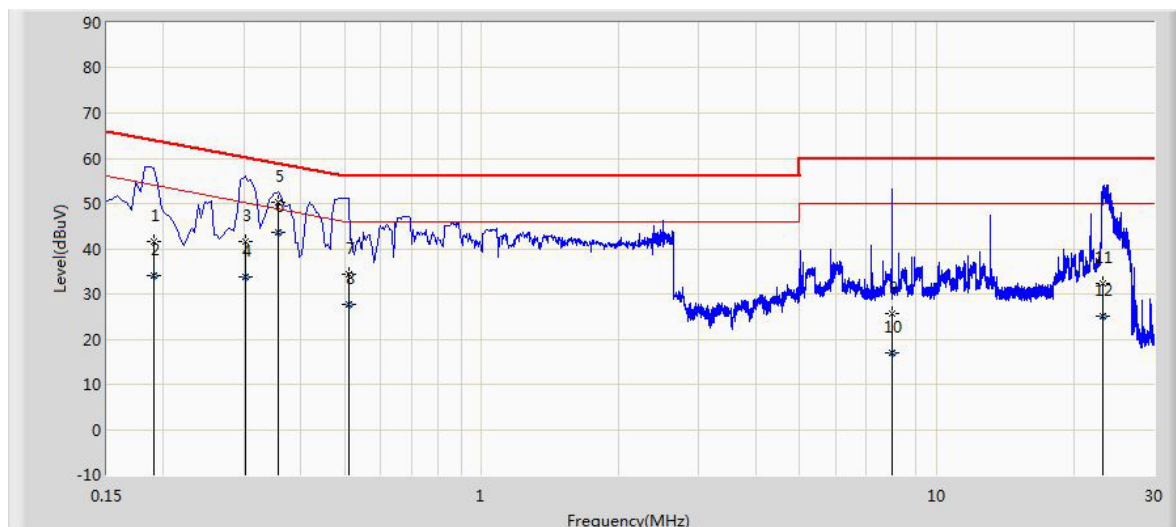
5.2.1 Conducted Emission

RESULT:**Pass**

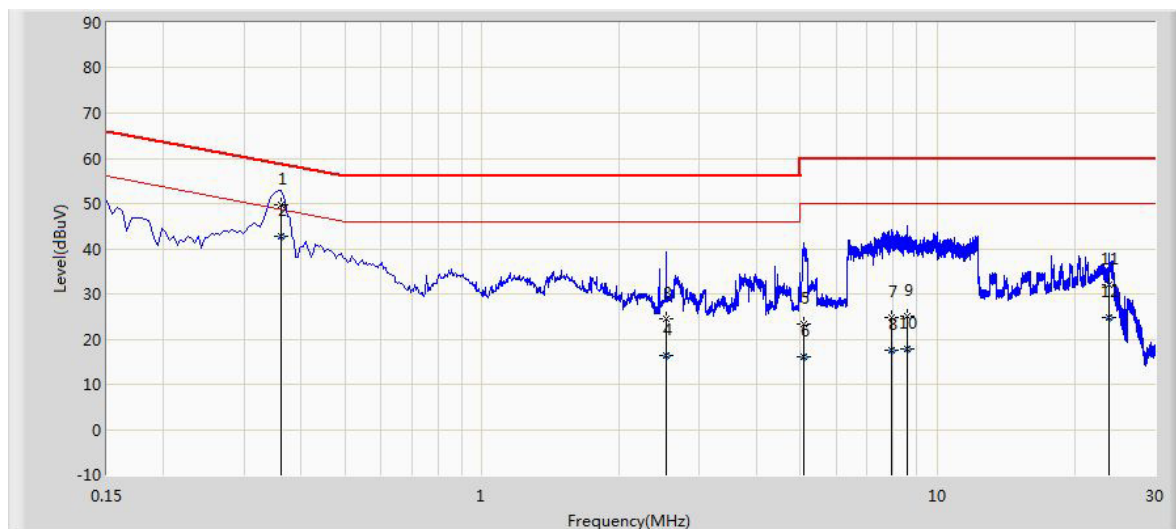
Date of testing	: 19.06.2017
Test standard	: FCC Part 15.207 (a)
Test procedure	: ANSI C63.10: 2013
Limit	: FCC Part 15.207 (a)
Kind of test site	: Shielded room

Test setup

Operation Mode	: TM15
Ambient temperature	: 25°C
Relative humidity	: 52%
Atmospheric pressure	: 101kPa

Figure 46: Conducted Emission, L line

Table 9: Conducted Emission, L line

Frequency [MHz]	Measure Level [dBuV]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV]	Factor [dB]	Type
0.190	41.629	31.600	-22.408	64.037	10.029	QP
0.190	34.029	24.000	-20.008	54.037	10.029	AV
0.302	41.715	31.710	-18.472	60.188	10.006	QP
0.302	33.854	23.848	-16.334	50.188	10.006	AV
0.358	50.429	40.378	-8.345	58.775	10.051	QP
0.358	43.665	33.613	-5.110	48.775	10.051	AV
0.510	34.263	24.106	-21.737	56.000	10.157	QP
0.510	27.684	17.527	-18.316	46.000	10.157	AV
7.986	25.531	15.363	-34.469	60.000	10.168	QP
7.986	17.096	6.928	-32.904	50.000	10.168	AV
23.214	32.272	22.082	-27.728	60.000	10.190	QP
23.214	25.007	14.817	-24.993	50.000	10.190	AV

Figure 47: Conducted Emission, N line

Table 10: Conducted Emission, N line

Frequency [MHz]	Measure Level [dBuV]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV]	Factor [dB]	Type
0.362	49.818	39.734	-8.864	58.682	10.084	QP
0.362	42.772	32.688	-5.911	48.682	10.084	AV
2.534	24.447	14.587	-31.553	56.000	9.860	QP
2.534	16.445	6.585	-29.555	46.000	9.860	AV
5.094	23.380	13.324	-36.620	60.000	10.057	QP
5.094	16.171	6.114	-33.829	50.000	10.057	AV
7.926	24.814	14.631	-35.186	60.000	10.183	QP
7.926	17.526	7.343	-32.474	50.000	10.183	AV
8.554	24.997	14.794	-35.003	60.000	10.203	QP
8.554	17.770	7.567	-32.230	50.000	10.203	AV
23.842	31.976	21.701	-28.024	60.000	10.274	QP
23.842	24.729	14.455	-25.271	50.000	10.274	AV

5.3 Emission in the Frequency Range above 30MHz

5.3.1 Radiated Spurious Emission

RESULT:
Pass

Date of testing : 20.06.2017
 Test standard : FCC 15.247(d)
 Test procedure : ANSI C63.10: 2013
 Public Notice DA 00-705 March 30, 2000
 Limit : FCC 15.247(d)
 FCC 15.209(a)
 Kind of test site : 3m Semi-Anechoic Chamber

Test setup

Test Channel : Low/ Middle/ High
 Operation Mode : TM1 to TM9
 Ambient temperature : 25°C
 Relative humidity : 52%
 Atmospheric pressure : 101kPa

Table 11: Radiated Spurious Emission, below 1GHz, TM1

Mode	Freq. [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type	Ant. Pol.
TM1	111.965	30.965	18.740	-12.535	43.500	12.225	QP	H
	127.970	33.365	19.760	-10.135	43.500	13.605	QP	
	224.485	33.787	21.616	-12.213	46.000	12.172	QP	
	336.035	35.237	20.059	-10.763	46.000	15.178	QP	
	384.050	40.197	24.020	-5.803	46.000	16.177	QP	
	797.755	30.245	7.035	-15.755	46.000	23.210	QP	
	30.485	25.985	12.356	-14.015	40.000	13.629	QP	V
	44.065	25.342	11.098	-14.658	40.000	14.244	QP	
	79.955	30.424	20.340	-9.576	40.000	10.084	QP	
	137.670	28.431	14.130	-15.069	43.500	14.301	QP	
	224.970	30.362	18.156	-15.638	46.000	12.206	QP	
	634.310	29.278	8.125	-16.722	46.000	21.153	QP	

Note:

All the modes were performed, only the worst case was listed in the table above.
 The radiated emission below 30MHz are very low, so they are not shown in this report.

Table 12: Radiated Spurious Emission, above 1GHz, TM1 to TM3

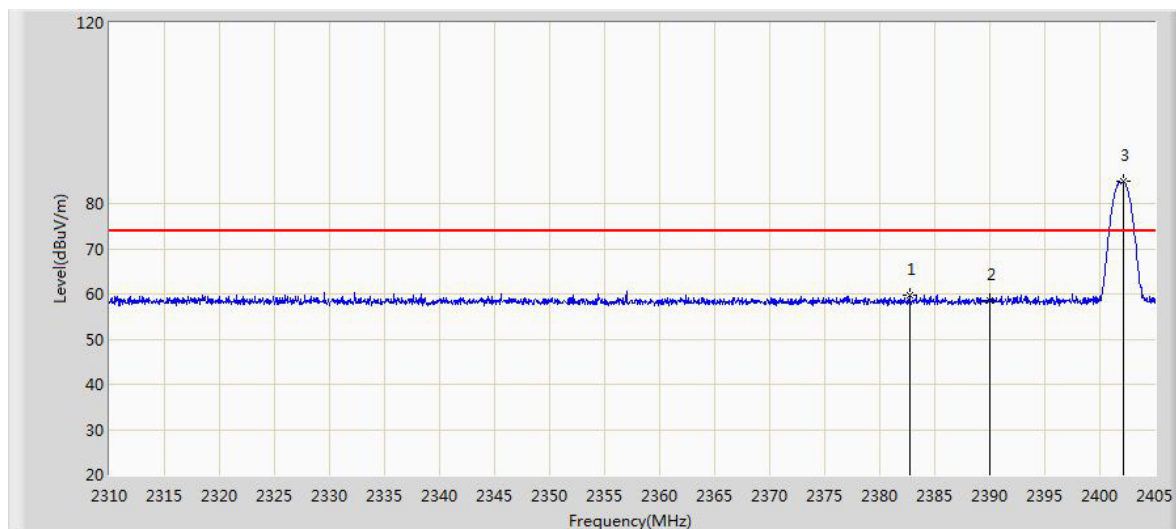
Mode	Freq. [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type	Ant. Pol.
TM1	4986.500	40.626	37.610	-33.374	74.000	3.016	PK	H
	7893.500	44.897	36.551	-29.103	74.000	8.345	PK	
	3771.000	35.722	36.039	-38.278	74.000	-0.317	PK	V
	4995.000	46.202	43.158	-27.798	74.000	3.044	PK	
	8879.500	44.979	35.815	-29.021	74.000	9.164	PK	
	10282.000	47.678	35.672	-26.322	74.000	12.006	PK	
TM2	4034.500	35.544	35.083	-38.456	74.000	0.460	PK	H
	4995.000	39.931	36.887	-34.069	74.000	3.044	PK	
	8624.500	44.356	35.576	-29.644	74.000	8.780	PK	
	9508.500	44.016	33.411	-29.984	74.000	10.604	PK	
	4077.000	34.873	34.276	-39.127	74.000	0.597	PK	V
	4995.000	45.010	41.966	-28.990	74.000	3.044	PK	
	8514.000	44.605	36.233	-29.395	74.000	8.372	PK	
	10358.500	46.845	34.666	-27.155	74.000	12.179	PK	
TM3	3941.000	35.524	35.253	-38.476	74.000	0.271	PK	H
	4978.000	39.992	37.005	-34.008	74.000	2.987	PK	
	8582.000	44.273	35.624	-29.727	74.000	8.649	PK	
	9814.500	46.434	34.860	-27.566	74.000	11.573	PK	
	3745.500	37.497	37.911	-36.503	74.000	-0.413	PK	V
	4978.000	45.501	42.514	-28.499	74.000	2.987	PK	
	8913.500	45.267	36.149	-28.733	74.000	9.118	PK	
	10205.500	47.034	35.251	-26.966	74.000	11.783	PK	

Table 13: Radiated Spurious Emission, above 1GHz, TM4 to TM6

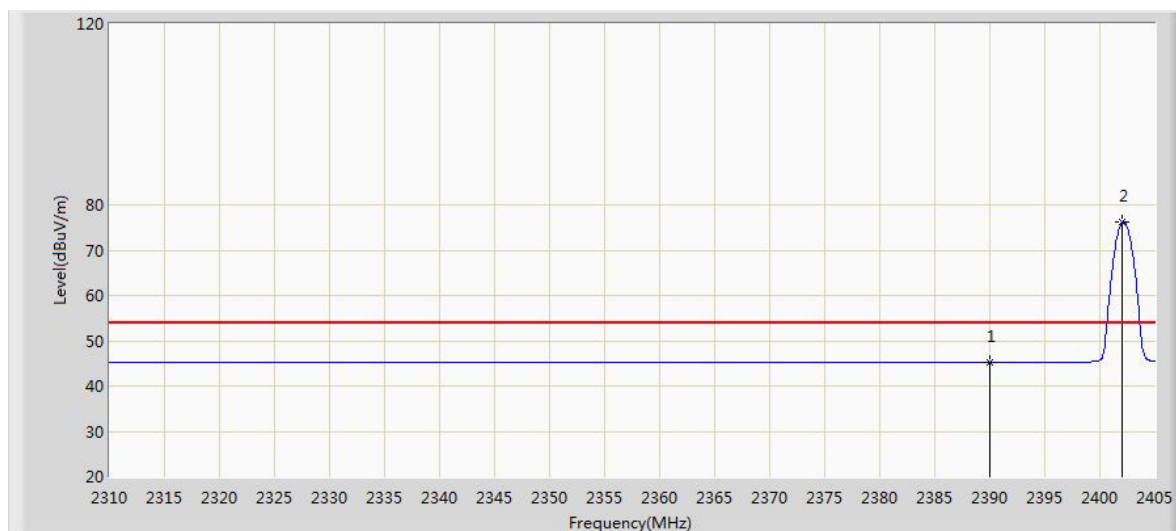
Mode	Freq. [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type	Ant. Pol.
TM4	4051.500	35.834	35.323	-38.166	74.000	0.511	PK	H
	4986.500	40.029	37.013	-33.971	74.000	3.016	PK	
	8794.500	45.137	36.244	-28.863	74.000	8.893	PK	
	9797.500	46.446	34.967	-27.554	74.000	11.480	PK	
	4026.000	35.900	35.462	-38.100	74.000	0.438	PK	V
	4995.000	46.665	43.621	-27.335	74.000	3.044	PK	
	8845.500	44.374	35.273	-29.626	74.000	9.101	PK	
	9857.000	45.217	33.625	-28.783	74.000	11.592	PK	
TM5	3907.000	35.028	34.814	-38.972	74.000	0.214	PK	H
	4995.000	38.756	35.712	-35.244	74.000	3.044	PK	
	8820.000	43.882	34.859	-30.118	74.000	9.023	PK	
	10078.000	46.014	34.520	-27.986	74.000	11.494	PK	
	4009.000	36.241	35.851	-37.759	74.000	0.390	PK	V
	4986.500	45.516	42.500	-28.484	74.000	3.016	PK	
	8616.000	43.578	34.787	-30.422	74.000	8.791	PK	
	10180.000	46.440	34.698	-27.560	74.000	11.742	PK	
TM6	4009.000	35.821	35.431	-38.179	74.000	0.390	PK	H
	4986.500	39.242	36.226	-34.758	74.000	3.016	PK	
	8718.000	43.580	34.606	-30.420	74.000	8.974	PK	
	9780.500	47.414	35.979	-26.586	74.000	11.435	PK	
	4034.500	36.520	36.059	-37.480	74.000	0.460	PK	V
	4986.500	46.378	43.362	-27.622	74.000	3.016	PK	
	8786.000	44.941	36.068	-29.059	74.000	8.873	PK	
	10384.000	47.837	35.542	-26.163	74.000	12.295	PK	

Table 14: Radiated Spurious Emission, above 1GHz, TM7 to TM9

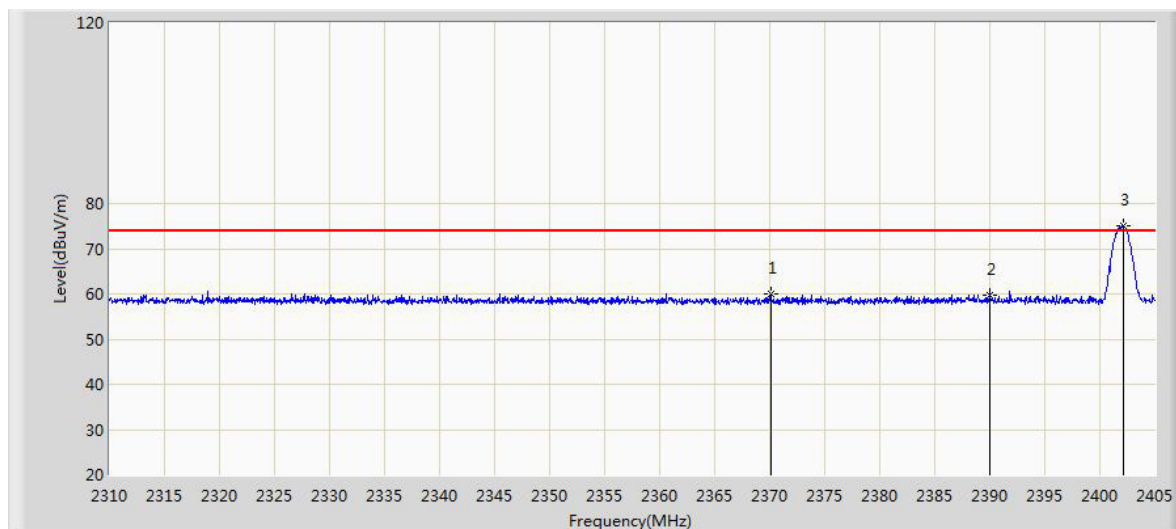
Mode	Freq. [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type	Ant. Pol.
TM7	3915.500	36.718	36.484	-37.282	74.000	0.234	PK	H
	4986.500	39.943	36.927	-34.057	74.000	3.016	PK	
	8888.000	44.896	35.702	-29.104	74.000	9.194	PK	
	10545.500	47.106	34.646	-26.894	74.000	12.460	PK	
	4102.500	36.224	35.555	-37.776	74.000	0.669	PK	V
	4995.000	45.865	42.821	-28.135	74.000	3.044	PK	
	8769.000	43.693	34.748	-30.307	74.000	8.945	PK	
	9857.000	44.633	33.041	-29.367	74.000	11.592	PK	
TM8	3949.500	35.439	35.153	-38.561	74.000	0.286	PK	H
	4995.000	38.907	35.863	-35.093	74.000	3.044	PK	
	8718.000	44.745	35.771	-29.255	74.000	8.974	PK	
	10273.500	46.481	34.494	-27.519	74.000	11.986	PK	
	3915.500	34.696	34.462	-39.304	74.000	0.234	PK	V
	4978.000	45.048	42.061	-28.952	74.000	2.987	PK	
	8709.500	44.483	35.500	-29.517	74.000	8.984	PK	
	10163.000	46.477	34.804	-27.523	74.000	11.673	PK	
TM9	8650.000	44.753	35.964	-29.247	74.000	8.789	PK	H
	3082.500	36.379	38.231	-37.621	74.000	-1.852	PK	
	3567.000	36.317	37.130	-37.683	74.000	-0.813	PK	
	4961.000	47.191	44.279	-26.809	74.000	2.912	PK	
	7442.500	53.191	45.200	-0.809	54.000	7.992	AV	V
	7443.000	55.226	47.234	-18.774	74.000	7.992	PK	
	4961.000	42.370	39.458	-31.630	74.000	2.912	PK	
	5760.000	40.162	36.256	-33.838	74.000	3.906	PK	
	7439.930	49.608	41.620	-4.392	54.000	7.989	AV	
	7443.000	55.202	47.210	-18.798	74.000	7.992	PK	

Figure 48: Band Edge, TM1, Horizontal, PK


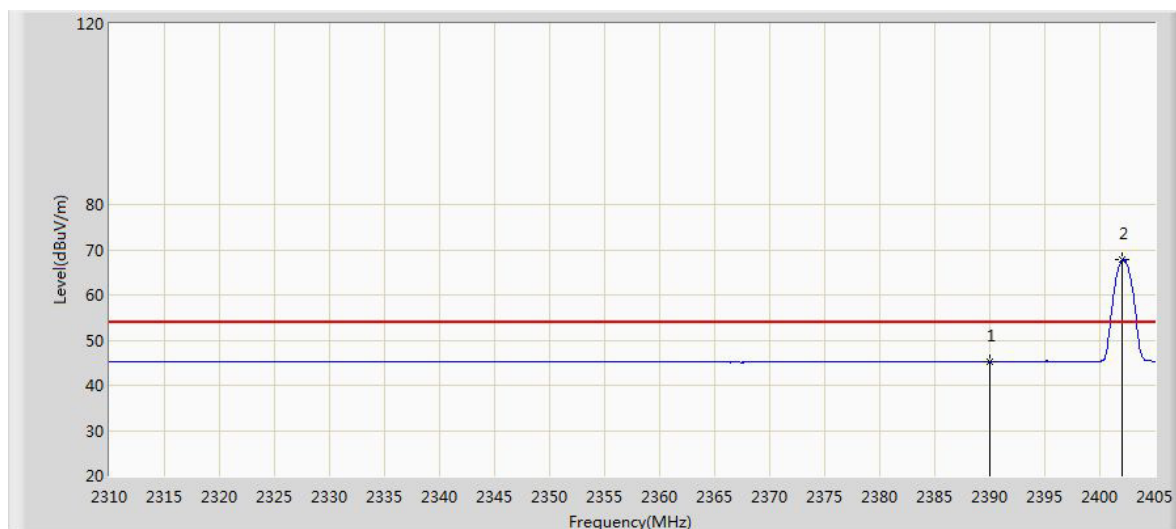
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2382.722	59.713	28.497	-14.287	74.000	31.216	PK
2390.000	58.472	27.269	-15.528	74.000	31.203	PK
2402.103	84.794	53.610	NA	NA	31.184	PK

Figure 49: Band Edge, TM1, Horizontal, AV


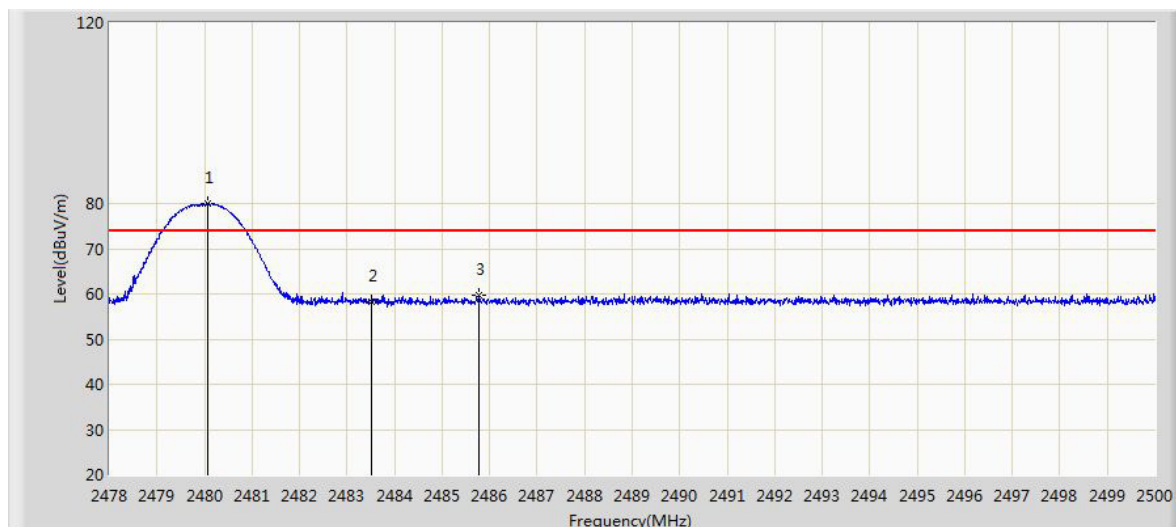
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2390.000	45.268	14.065	-8.732	54.000	31.203	AV
2402.055	76.100	44.916	NA	NA	31.184	AV

Figure 50: Band Edge, TM1, Vertical, PK


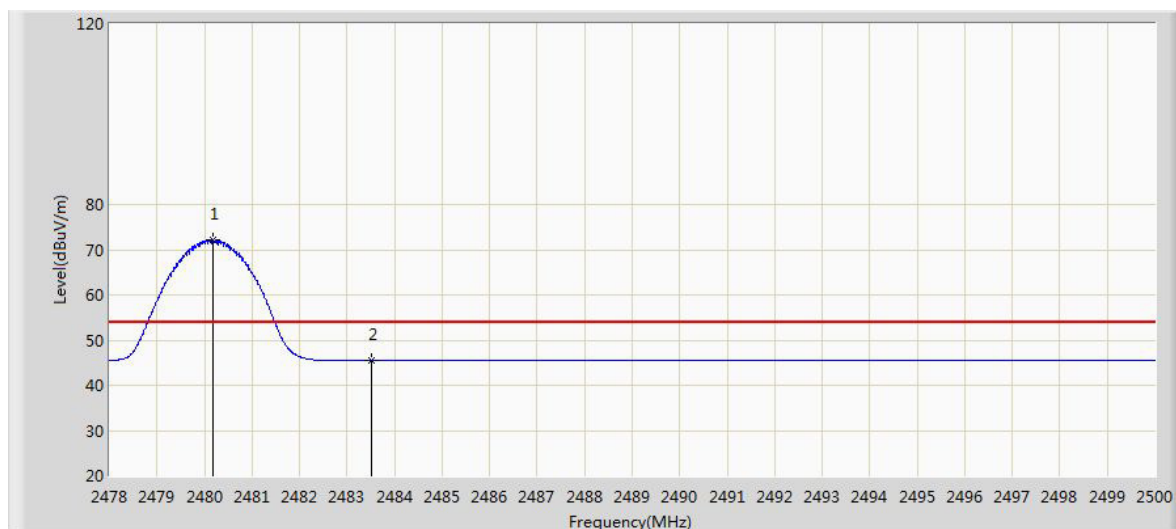
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2370.087	60.034	28.794	-13.966	74.000	31.240	PK
2390.000	59.716	28.513	-14.284	74.000	31.203	PK
2402.150	74.956	43.772	NA	NA	31.184	PK

Figure 51: Band Edge, TM1, Vertical, AV


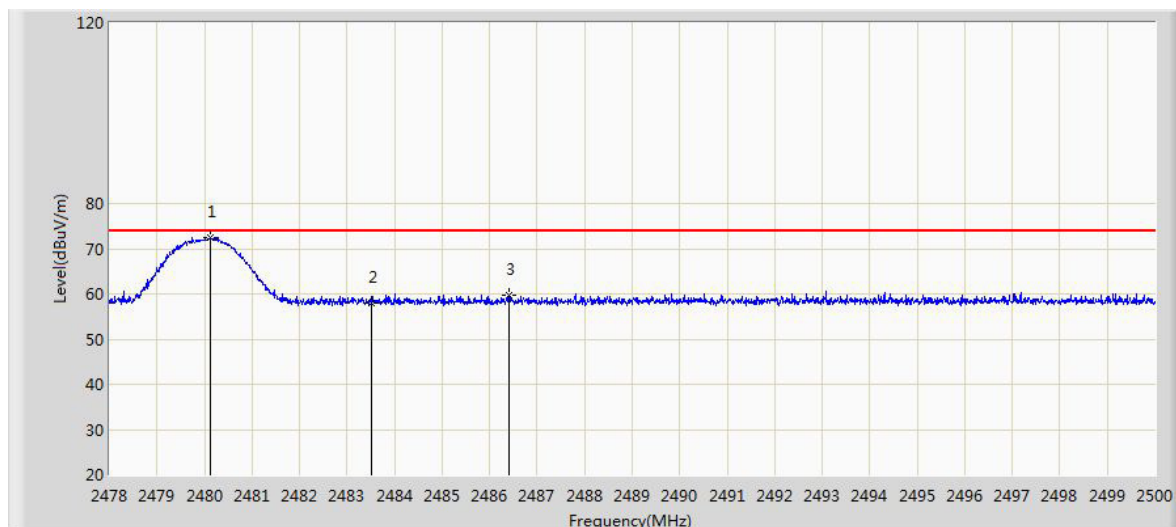
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2390.000	45.278	14.075	-8.722	54.000	31.203	AV
2402.055	67.753	36.569	NA	NA	31.184	AV

Figure 52: Band Edge, TM3, Horizontal, PK


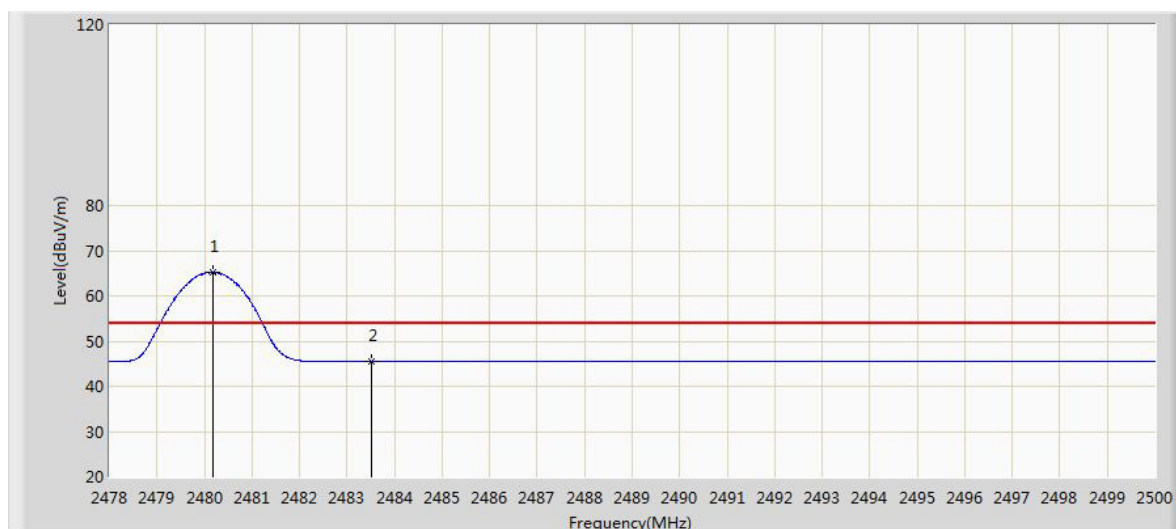
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2480.068	79.881	48.697	NA	NA	31.184	PK
2483.500	58.335	27.142	-15.665	74.000	31.194	PK
2485.788	59.699	28.500	-14.301	74.000	31.200	PK

Figure 53: Band Edge, TM3, Horizontal, AV


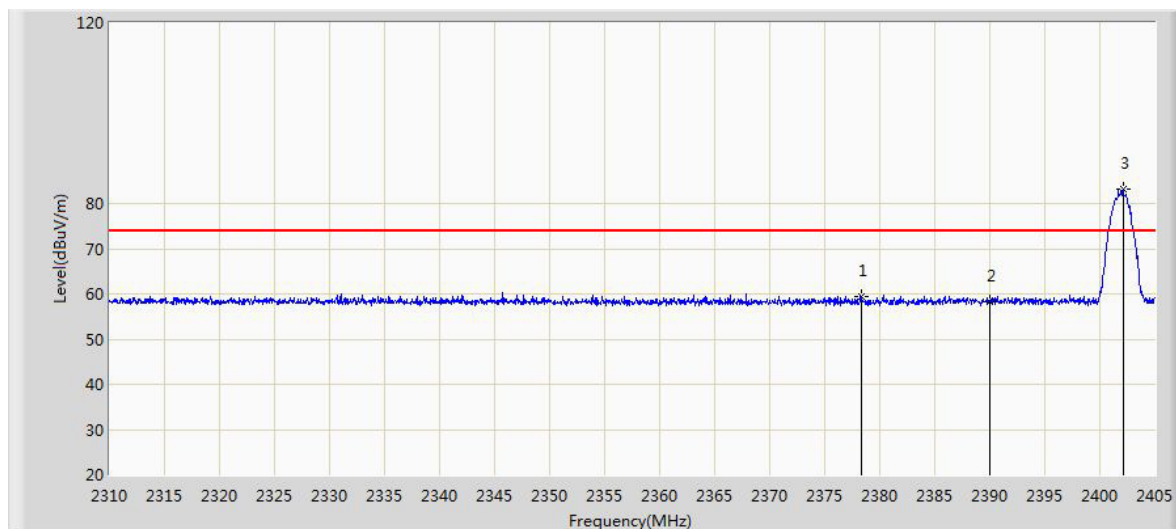
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2480.178	72.163	40.978	NA	NA	31.185	AV
2483.500	45.403	14.210	-8.597	54.000	31.194	AV

Figure 54: Band Edge, TM3, Vertical, PK


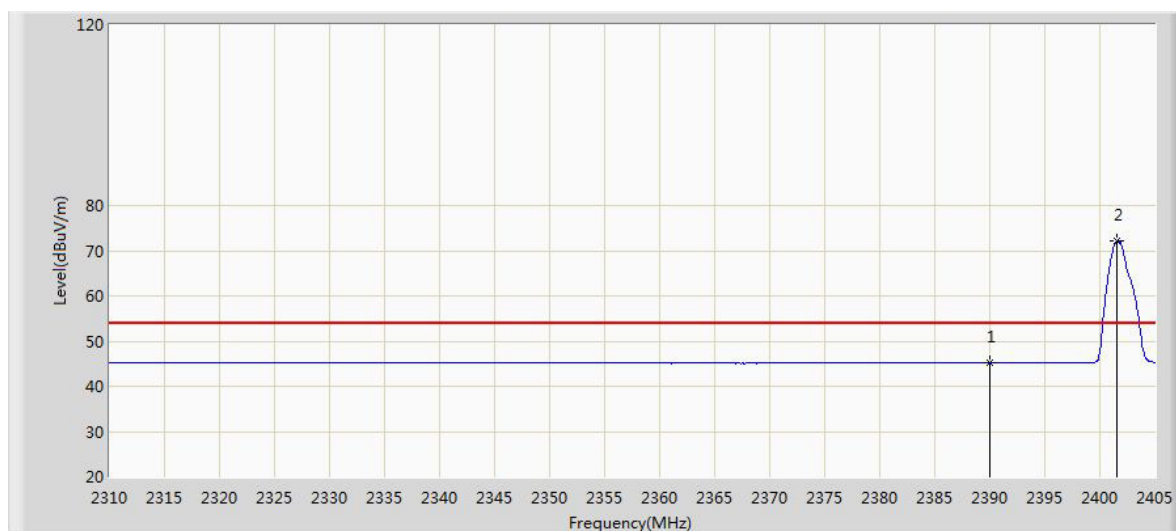
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2480.123	72.369	41.185	NA	NA	31.185	PK
2483.500	57.958	26.765	-16.042	74.000	31.194	PK
2486.404	59.608	28.407	-14.392	74.000	31.201	PK

Figure 55: Band Edge, TM3, Vertical, AV


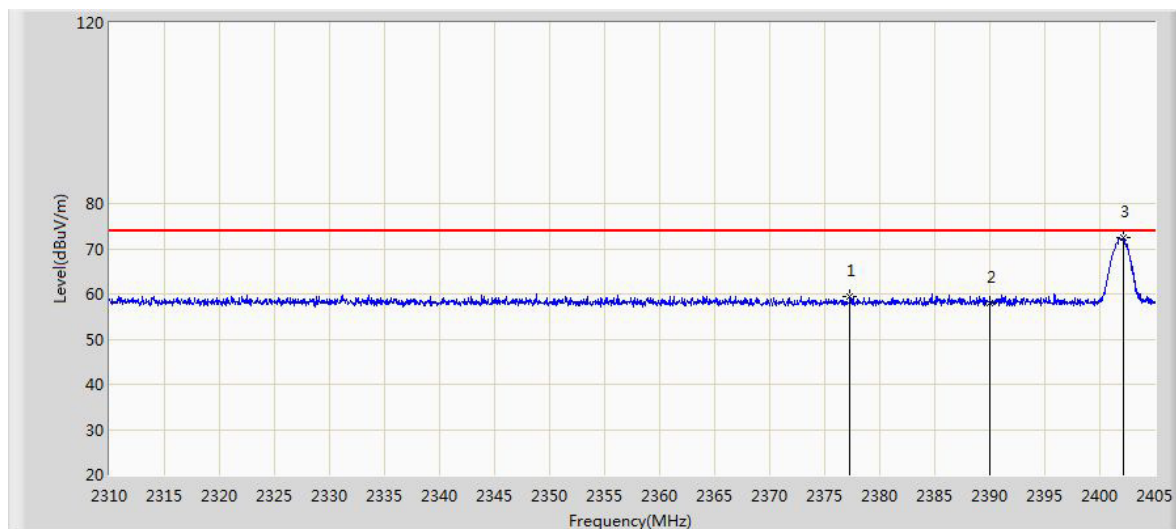
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2480.178	65.285	34.100	NA	NA	31.185	AV
2483.500	45.422	14.229	-8.578	54.000	31.194	AV

Figure 56: Band Edge, TM4, Horizontal, PK


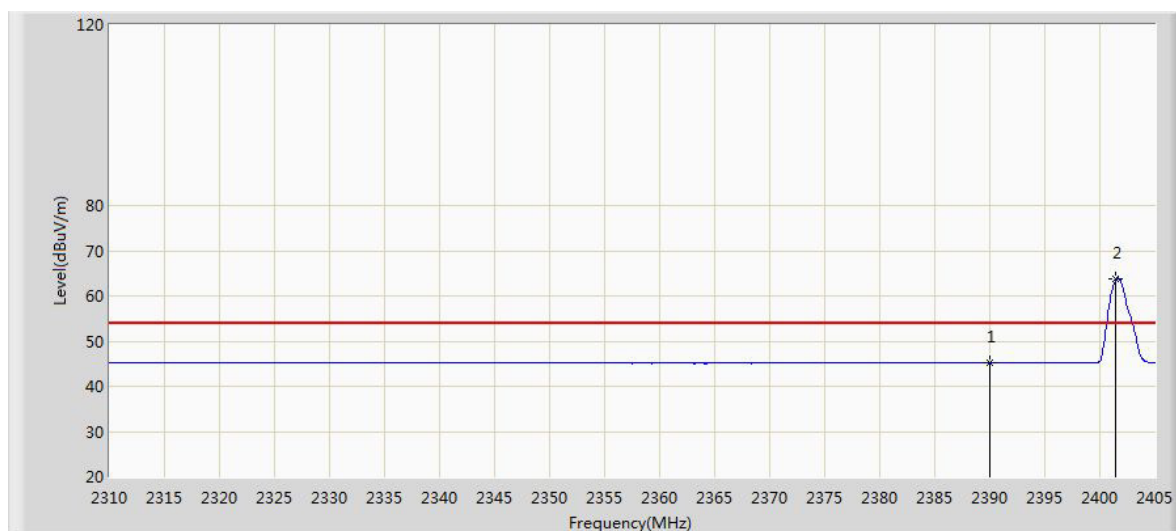
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2378.353	59.487	28.263	-14.513	74.000	31.224	PK
2390.000	58.171	26.968	-15.829	74.000	31.203	PK
2402.150	83.059	51.875	NA	NA	31.184	PK

Figure 57: Band Edge, TM4, Horizontal, AV


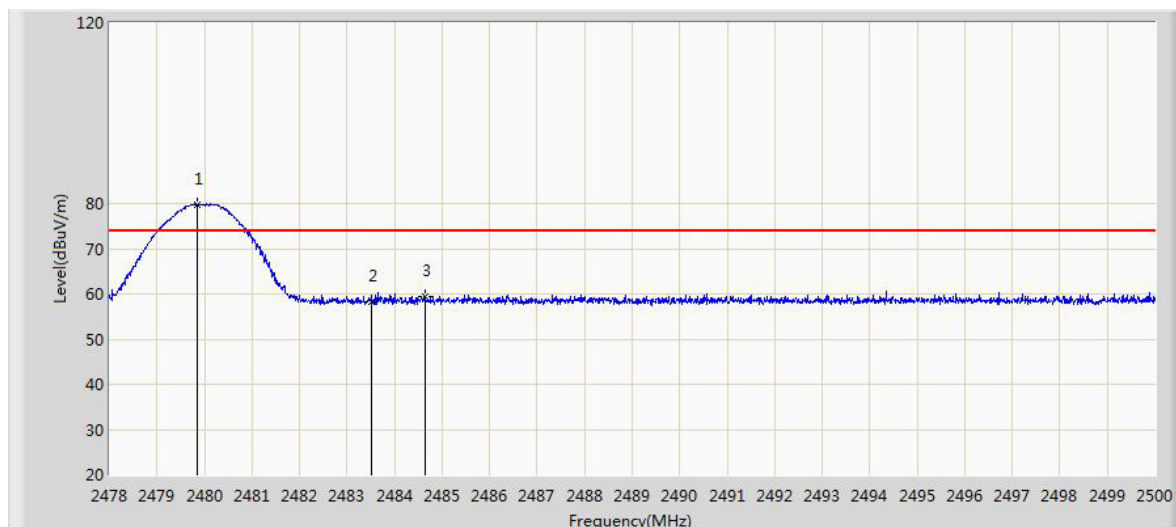
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2390.000	45.223	14.020	-8.777	54.000	31.203	AV
2401.532	72.042	40.857	NA	NA	31.185	AV

Figure 58: Band Edge, TM4, Vertical, PK


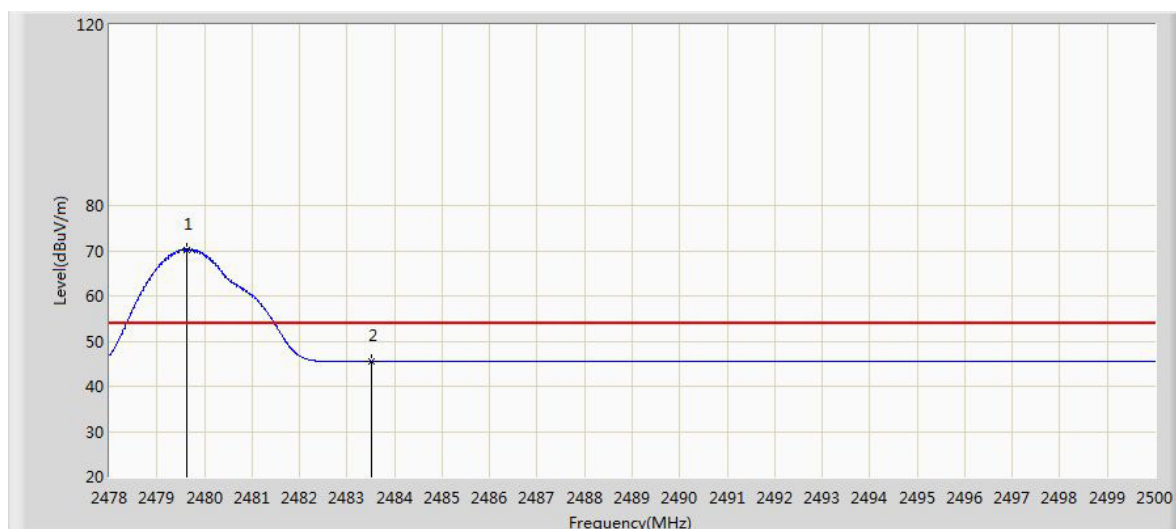
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2377.308	59.440	28.214	-14.560	74.000	31.226	PK
2390.000	57.975	26.772	-16.025	74.000	31.203	PK
2402.103	72.369	41.185	NA	NA	31.184	PK

Figure 59: Band Edge, TM4, Vertical, AV


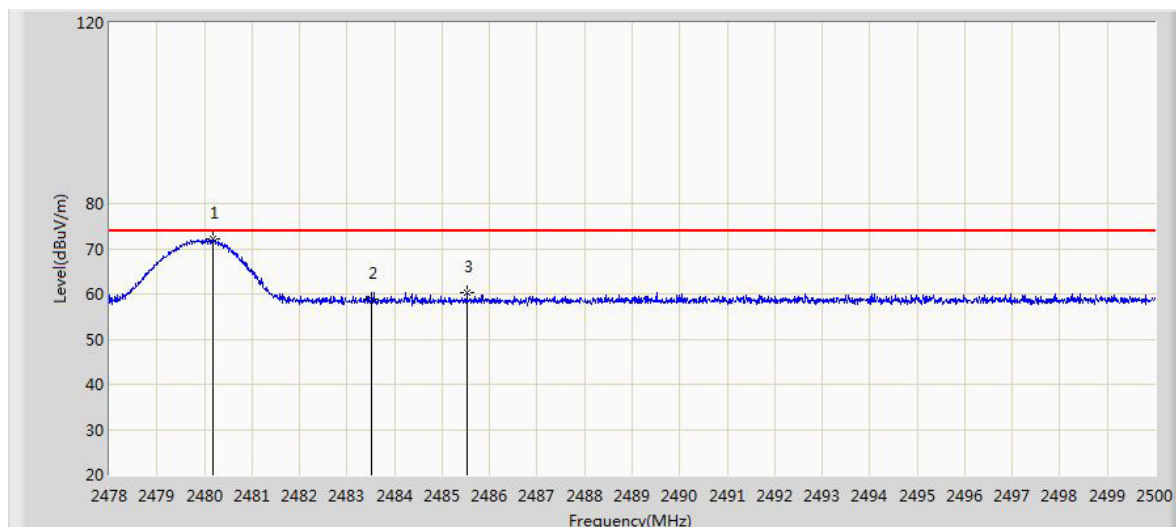
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2390.000	45.174	13.971	-8.826	54.000	31.203	AV
2401.485	63.671	32.486	NA	NA	31.185	AV

Figure 60: Band Edge, TM6, Horizontal, PK


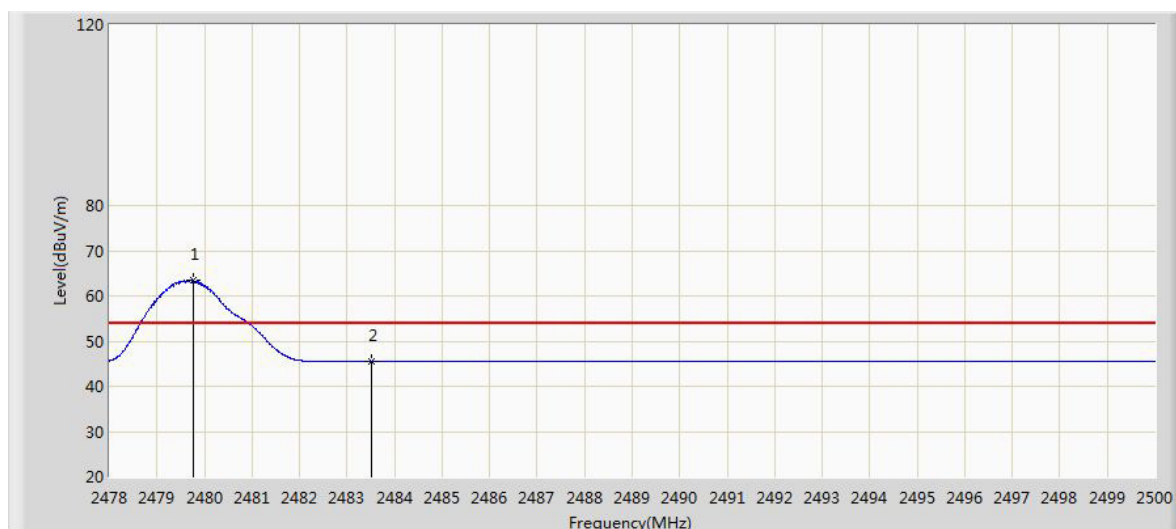
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2479.837	79.832	48.648	NA	NA	31.184	PK
2483.500	58.378	27.185	-15.622	74.000	31.194	PK
2484.655	59.556	28.360	-14.444	74.000	31.197	PK

Figure 61: Band Edge, TM6, Horizontal, AV


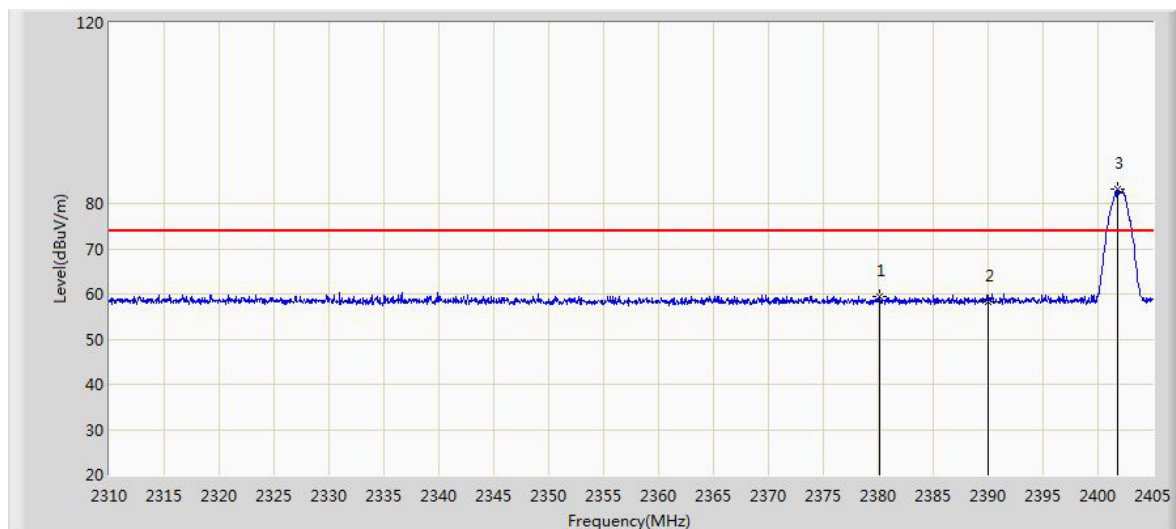
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2479.628	70.251	39.068	NA	NA	31.184	AV
2483.500	45.391	14.198	-8.609	54.000	31.194	AV

Figure 62: Band Edge, TM6, Vertical, PK


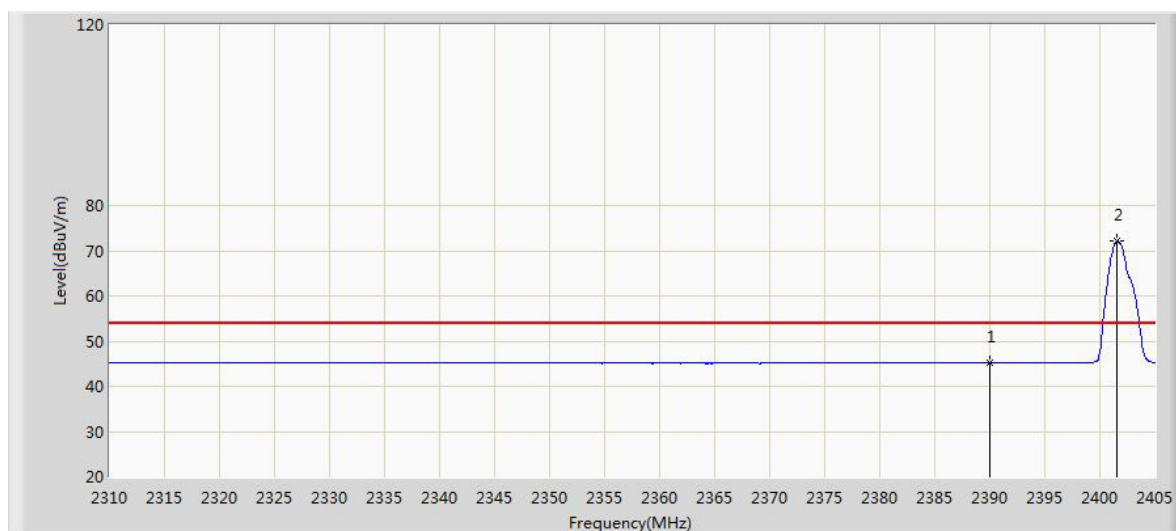
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2480.167	72.163	40.978	NA	NA	31.185	PK
2483.500	58.885	27.692	-15.115	74.000	31.194	PK
2485.524	60.310	29.111	-13.690	74.000	31.198	PK

Figure 63: Band Edge, TM6, Vertical, AV


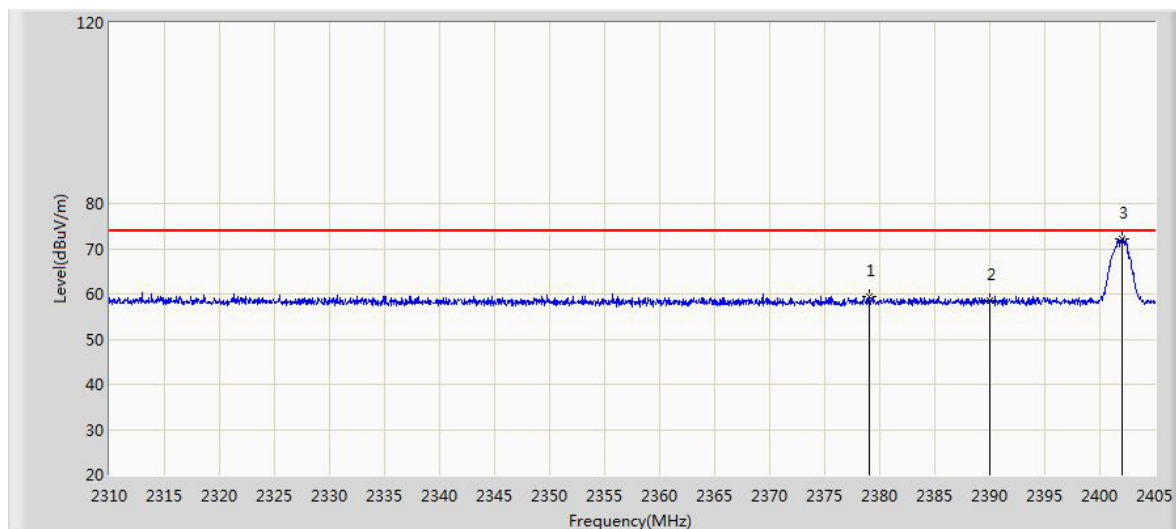
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2479.760	63.376	32.193	NA	NA	31.184	AV
2483.500	45.385	14.192	-8.615	54.000	31.194	AV

Figure 64: Band Edge, TM7, Horizontal, PK


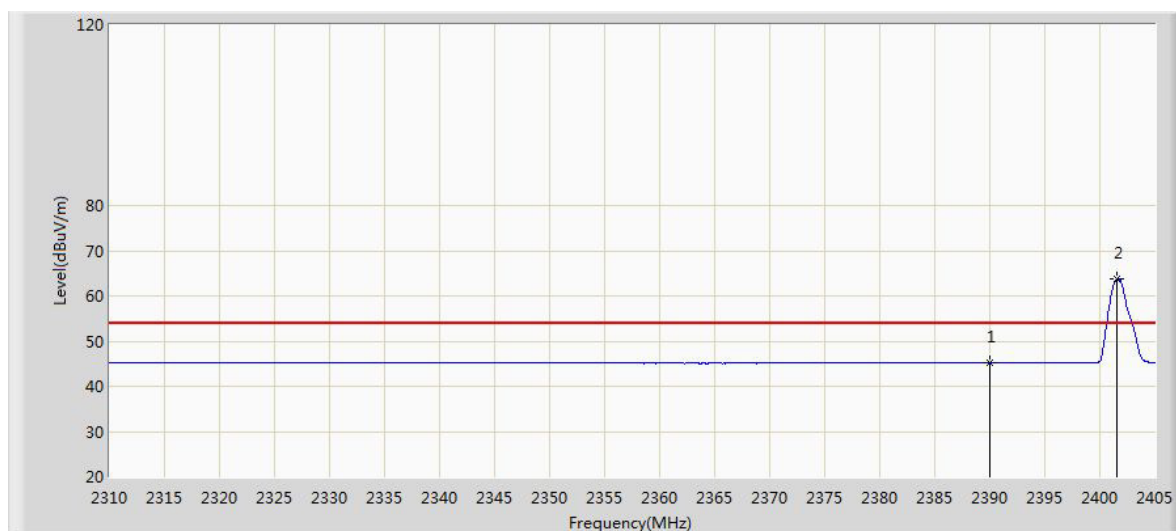
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2380.157	59.325	28.104	-14.675	74.000	31.220	PK
2390.000	58.291	27.088	-15.709	74.000	31.203	PK
2401.770	83.064	51.880	NA	NA	31.184	PK

Figure 65: Band Edge, TM7, Horizontal, AV


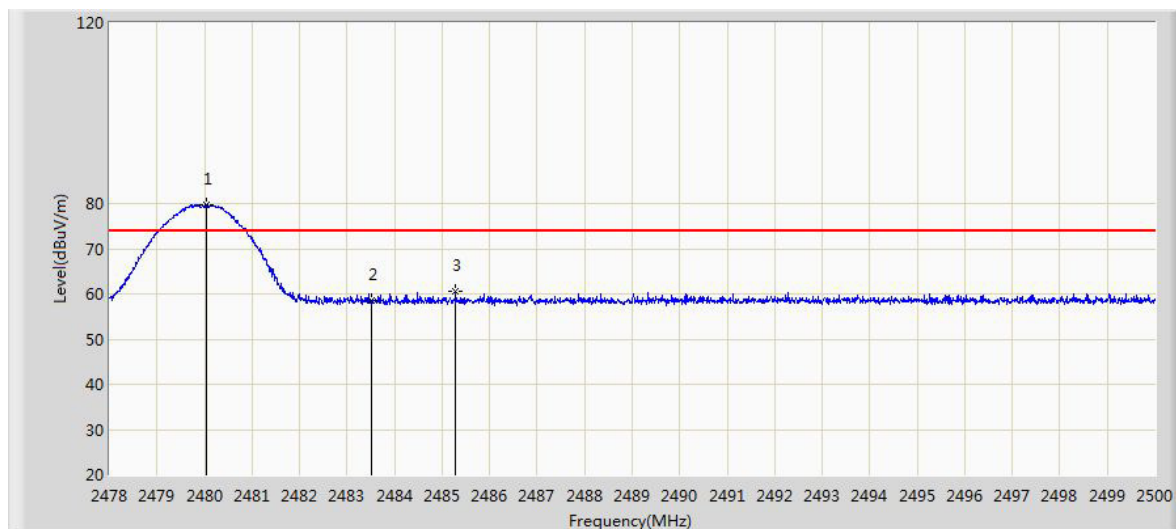
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2390.000	45.216	14.013	-8.784	54.000	31.203	AV
2401.580	72.099	40.914	NA	NA	31.185	AV

Figure 66: Band Edge, TM7, Vertical, PK


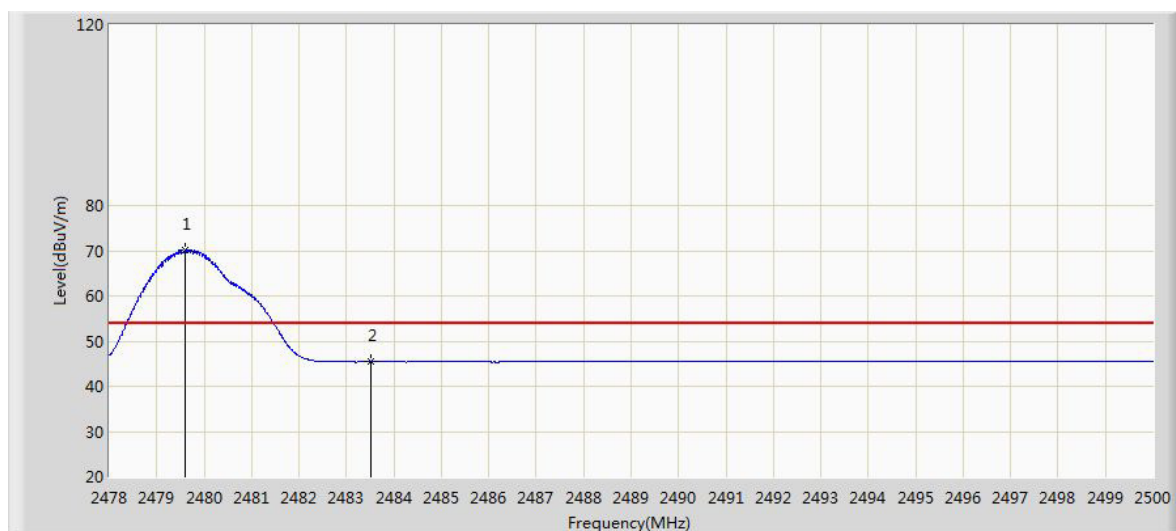
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2379.065	59.546	28.323	-14.454	74.000	31.223	PK
2390.000	58.516	27.313	-15.484	74.000	31.203	PK
2402.055	72.245	41.061	NA	NA	31.184	PK

Figure 67: Band Edge, TM7, Vertical, AV


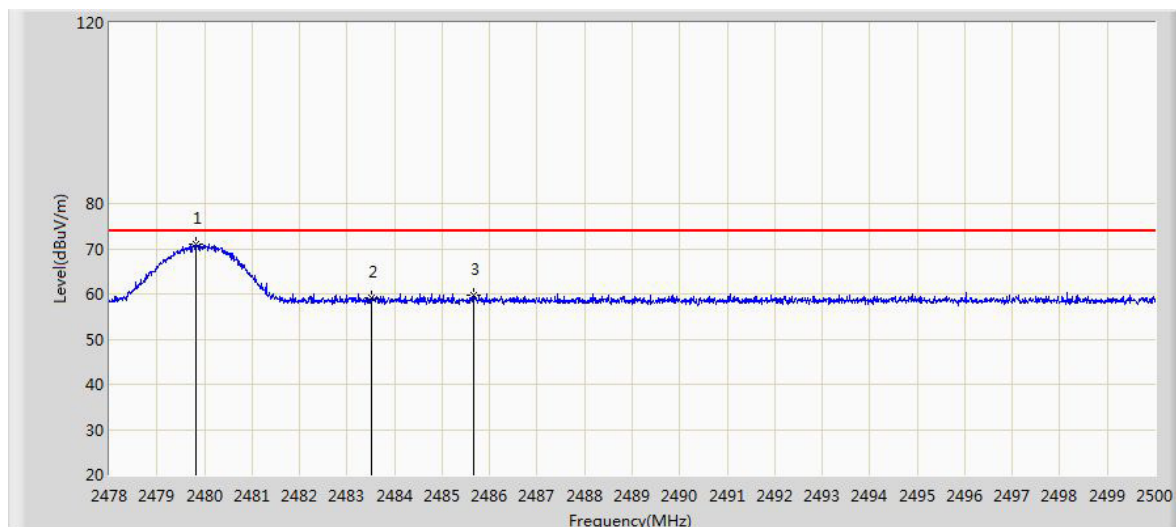
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2390.000	45.262	14.059	-8.738	54.000	31.203	AV
2401.532	63.688	32.503	NA	NA	31.185	AV

Figure 68: Band Edge, TM9, Horizontal, PK


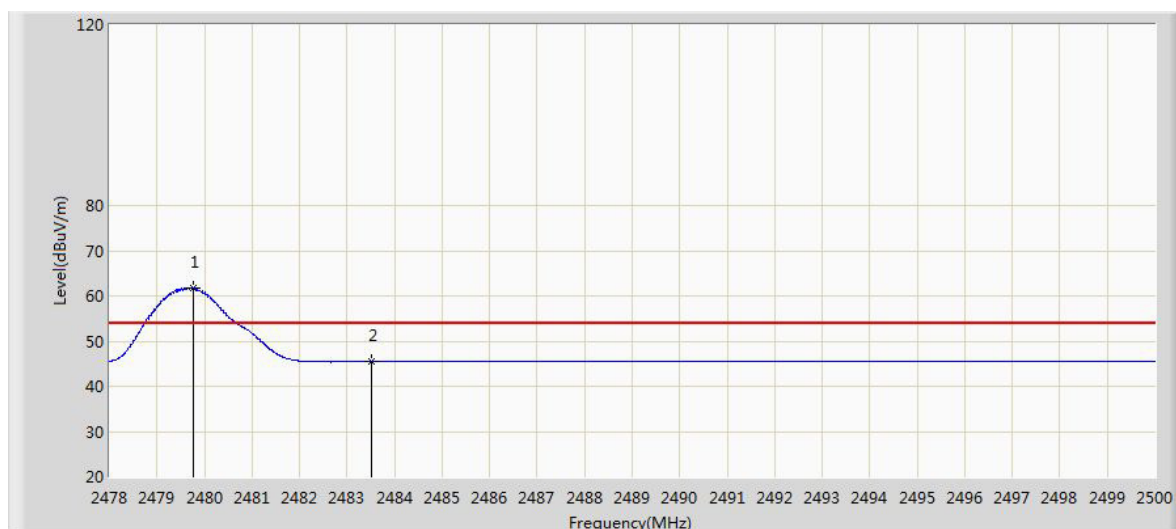
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2480.046	79.808	48.624	NA	NA	31.184	PK
2483.500	58.438	27.245	-15.562	74.000	31.194	PK
2485.282	60.579	29.381	-13.421	74.000	31.198	PK

Figure 69: Band Edge, TM9, Horizontal, AV


Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2479.595	70.194	39.011	NA	NA	31.183	AV
2483.500	45.401	14.208	-8.599	54.000	31.194	AV

Figure 70: Band Edge, TM9, Vertical, PK


Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2479.826	70.872	39.688	NA	NA	31.184	PK
2483.500	59.059	27.866	-14.941	74.000	31.194	PK
2485.656	59.852	28.653	-14.148	74.000	31.199	PK

Figure 71: Band Edge, TM9, Vertical, AV


Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2479.760	61.778	30.595	NA	NA	31.184	AV
2483.500	45.397	14.204	-8.603	54.000	31.194	AV

6. List of Tables

Table 1: List of Test and Measurement Equipment	5
Table 2: Measurement Uncertainty	6
Table 3: Technical Specification of EUT	7
Table 4: Antenna Requirement	10
Table 5: Peak Output Power, TM1 to TM9	11
Table 6: 20dB Bandwidth, TM1 to TM9	12
Table 7: Number of Hopping Frequency	31
Table 8: Time of Occupancy, TM12 to TM14	38
Table 9: Conducted Emission, L line	42
Table 10: Conducted Emission, N line	43
Table 11: Radiated Spurious Emission, below 1GHz, TM1	44
Table 12: Radiated Spurious Emission, above 1GHz, TM1 to TM3	45
Table 13: Radiated Spurious Emission, above 1GHz, TM4 to TM6	46
Table 14: Radiated Spurious Emission, above 1GHz, TM7 to TM9	47

7. List of Figures

Figure 1: 20dB Bandwidth, TM1	13
Figure 2: 20dB Bandwidth, TM2	13
Figure 3: 20dB Bandwidth, TM3	14
Figure 4: 20dB Bandwidth, TM4	14
Figure 5: 20dB Bandwidth, TM5	15
Figure 6: 20dB Bandwidth, TM6	15
Figure 7: 20dB Bandwidth, TM7	16
Figure 8: 20dB Bandwidth, TM8	16
Figure 9: 20dB Bandwidth, TM9	17
Figure 10: Conducted Spurious Emission, TM1	19
Figure 11: Conducted Spurious Emission, TM3	19
Figure 12: Conducted Spurious Emission, TM4	20
Figure 13: Conducted Spurious Emission, TM6	20
Figure 14: Conducted Spurious Emission, TM7	21
Figure 15: Conducted Spurious Emission, TM9	21
Figure 16: Band Edge, TM1	22
Figure 17: Band Edge, TM3	22
Figure 18: Band Edge, TM4	23
Figure 19: Band Edge, TM6	23
Figure 20: Band Edge, TM7	24
Figure 21: Band Edge, TM9	24
Figure 22: Frequency Separation, TM10, observation Frequency 2402MHz	26
Figure 23: Frequency Separation, TM10, observation Frequency 2441MHz	26
Figure 24: Frequency Separation, TM10, observation Frequency 2480MHz	27
Figure 25: Frequency Separation, TM11, observation Frequency 2402MHz	27
Figure 26: Frequency Separation, TM11, observation Frequency 2441MHz	28
Figure 27: Frequency Separation, TM11, observation Frequency 2480MHz	28
Figure 28: Frequency Separation, TM12, observation Frequency 2402MHz	29

Prüfbericht - Nr.: 50085877 001

Test Report No.

Seite 61 von 61

Page 61 of 61

Figure 29: Frequency Separation, TM12, observation Frequency 2441MHz	29
Figure 30: Frequency Separation, TM12, observation Frequency 2480MHz	30
Figure 31: Number of Hopping Frequency, TM10, part 1	32
Figure 32: Number of Hopping Frequency, TM10, part 2	32
Figure 33: Number of Hopping Frequency, TM10, part 3	33
Figure 34: Number of Hopping Frequency, TM10, part 4	33
Figure 35: Number of Hopping Frequency, TM11, part 1	34
Figure 36: Number of Hopping Frequency, TM11, part 2	34
Figure 37: Number of Hopping Frequency, TM11, part 3	35
Figure 38: Number of Hopping Frequency, TM11, part 4	35
Figure 39: Number of Hopping Frequency, TM12, part 1	36
Figure 40: Number of Hopping Frequency, TM12, part 2	36
Figure 41: Number of Hopping Frequency, TM12, part 3	37
Figure 42: Number of Hopping Frequency, TM12, part 4	37
Figure 43: Time of Occupancy, TM14, observation Frequency 2441MHz.....	39
Figure 44: Time of Occupancy, TM13, observation Frequency 2441MHz.....	39
Figure 45: Time of Occupancy, TM12, observation Frequency 2441MHz.....	40
Figure 46: Conducted Emission, L line.....	42
Figure 47: Conducted Emission, N line.....	43
Figure 48: Band Edge, TM1, Horizontal, PK	48
Figure 49: Band Edge, TM1, Horizontal, AV	48
Figure 50: Band Edge, TM1, Vertical, PK	49
Figure 51: Band Edge, TM1, Vertical, AV	49
Figure 52: Band Edge, TM3, Horizontal, PK	50
Figure 53: Band Edge, TM3, Horizontal, AV	50
Figure 54: Band Edge, TM3, Vertical, PK	51
Figure 55: Band Edge, TM3, Vertical, AV	51
Figure 56: Band Edge, TM4, Horizontal, PK	52
Figure 57: Band Edge, TM4, Horizontal, AV	52
Figure 58: Band Edge, TM4, Vertical, PK	53
Figure 59: Band Edge, TM4, Vertical, AV	53
Figure 60: Band Edge, TM6, Horizontal, PK	54
Figure 61: Band Edge, TM6, Horizontal, AV	54
Figure 62: Band Edge, TM6, Vertical, PK	55
Figure 63: Band Edge, TM6, Vertical, AV	55
Figure 64: Band Edge, TM7, Horizontal, PK	56
Figure 65: Band Edge, TM7, Horizontal, AV	56
Figure 66: Band Edge, TM7, Vertical, PK	57
Figure 67: Band Edge, TM7, Vertical, AV	57
Figure 68: Band Edge, TM9, Horizontal, PK	58
Figure 69: Band Edge, TM9, Horizontal, AV	58
Figure 70: Band Edge, TM9, Vertical, PK	59
Figure 71: Band Edge, TM9, Vertical, AV	59