

RF TEST REPORT

Test item : RCU
Model No. : PRF-T170T-V4
Order No. : DTNC1503-01405
Date of receipt : 2015-03-27
Test duration : 2015-03-27 ~ 2015-04-07
Date of issue : 2015-04-09
Use of report : FCC Original Grant

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Test specification : FCC Part 15 Subpart C 247

Test environment : See appended test report

Test result : Pass Fail

The test results presented in this test report are limited only to the sample supplied by applicant and the use of this test report is inhibited other than its purpose. This test report shall not be reproduced except in full, without the written approval of DT&C Co., Ltd.

Tested by:



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Test Report Version

Test Report No.	Date	Description
DRTFCC1504-0079	Apr. 08, 2015	Initial issue
DRTFCC1504-0079(1)	Apr. 09, 2015	Adds Band-edge

Table of Contents

1. EUT DESCRIPTION	4
2. SUMMARY OF TESTS	5
3. TEST METHODOLOGY	6
3.1 EUT Configuration	6
3.2 EUT Exercise.....	6
3.3 General Test Procedures	6
3.4 Description of Test Modes	6
4. INSTRUMENT CALIBRATION	7
5. FACILITIES AND ACCREDITATIONS.....	7
5.1 Facilities	7
5.2 Equipment.....	7
6. ANTENNA REQUIREMENTS.....	7
7. TEST RESULT	8
7.1 6dB Bandwidth	8
7.2 Maximum Peak Conducted Output Power	11
7.3 Maximum Power Spectral Density.....	14
7.4 Out of Band Emissions at the Band Edge/ Conducted Spurious Emissions	17
7.5 Radiated Measurement.....	26
7.6 AC Power-line Conducted Emissions	29
7.7 Occupied Bandwidth	30
8. LIST OF TEST EQUIPMENT.....	31
APPENDIX I	32
APPENDIX II	33

1. EUT DESCRIPTION

Product	RCU
Model Name	PRF-T170T-V4
Power Supply	DC 3.0 V(Lithium Ion Battery)
Frequency Range	2425 ~ 2475 MHz(3 channels)
Modulation Type	O-QPSK
Antenna Specification	Antenna Type: Internal Antenna Antenna Gain: -3.46 dBi(PK)

2. SUMMARY OF TESTS

FCC Part Section(s)	RSS Section(s)	Parameter	Limit	Test Condition	Status Note 1
I. Transmitter Mode (TX)					
15.247(a)	RSS-210 [A8.2]	6 dB Bandwidth	> 500 kHz	Conducted	C
15.247(b)	RSS-210 [A8.4]	Transmitter Output Power	< 1Watt		C
15.247(d)	RSS-210 [A8.5]	Out of Band Emissions / Band Edge	20dBc in any 100kHz BW		C
15.247(e)	RSS-210 [A8.2]	Transmitter Power Spectral Density	< 8dBm / 3kHz		C
-	RSS-Gen [6.6]	Occupied Bandwidth (99%)	RSS-Gen(6.6)		NA
15.205 15.209	RSS-210 [A8.5]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	< FCC 15.209 limits	Radiated	C ^{Note2}
15.207	RSS-Gen [8.8]	AC Conducted Emissions	< FCC 15.207 limits	AC Line Conducted	NA ^{Note3}
15.203	RSS-Gen [6.7]	Antenna Requirements	FCC 15.203	-	C
<p>Note 1: C=Comply NC=Not Comply NT=Not Tested NA=Not Applicable</p> <p>Note 2: This test item was performed in each axis and the worst case data was reported.</p> <p>Note 3: This device is used Battery for power supplying.(DC 3.0 V(Lithium Ion Battery)) Therefore this test item was not performed.</p>					

3. TEST METHODOLOGY

Generally the tests were performed according to the KDB558074 v03r02. And ANSI C63.10-2009 was used to reference appropriate EUT setup and maximizing procedures of radiated spurious emission and AC line conducted emission testing.

3.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

3.3 General Test Procedures

Conducted Emissions

According to the requirements in Section 6.2 of ANSI C63.10, the EUT is placed on the turntable, which is 0.8 m above ground plane and the conducted emissions from the EUT are measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and Average detector.

Radiated Emissions

The EUT is placed on a turntable, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the highest emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axis according to the requirements in Section 6.3 of ANSI C63.10

3.4 Description of Test Modes

The EUT has been tested with the operating condition for maximizing the emission characteristics. A test program is used to control the EUT for staying in transmitting.

Test Mode	Channel	Frequency [MHz]
O-QPSK	Lowest	2425
	Middle	2450
	Highest	2475

4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

5. FACILITIES AND ACCREDITATIONS

5.1 Facilities

The open area test site(OATS) or semi anechoic chamber and conducted measurement facility used to collect the radiated and conducted test data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 449-935. The site is constructed in conformance with the requirements.

- Semi anechoic chamber registration Number: 165783

5.2 Equipment

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, loop, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and peak, quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203& RSS-Gen [6.7]:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

This device uses a pattern antenna.

Therefore this E.U.T Complies with the requirement of §15.203

7. TEST RESULT

7.1 6dB Bandwidth

■ Test Requirements and limit, §15.247(a) & RSS-210[A8.2]

The minimum 6 dB band-width shall be at least 500 kHz.

■ Test Configuration

Refer to the APPENDIX I.

■ Test Procedure

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described above (i.e., RBW = 100 kHz, VBW $\geq 3 \times$ RBW, peak detector with maximum hold) is implemented by the instrumentation function.

When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 dB.

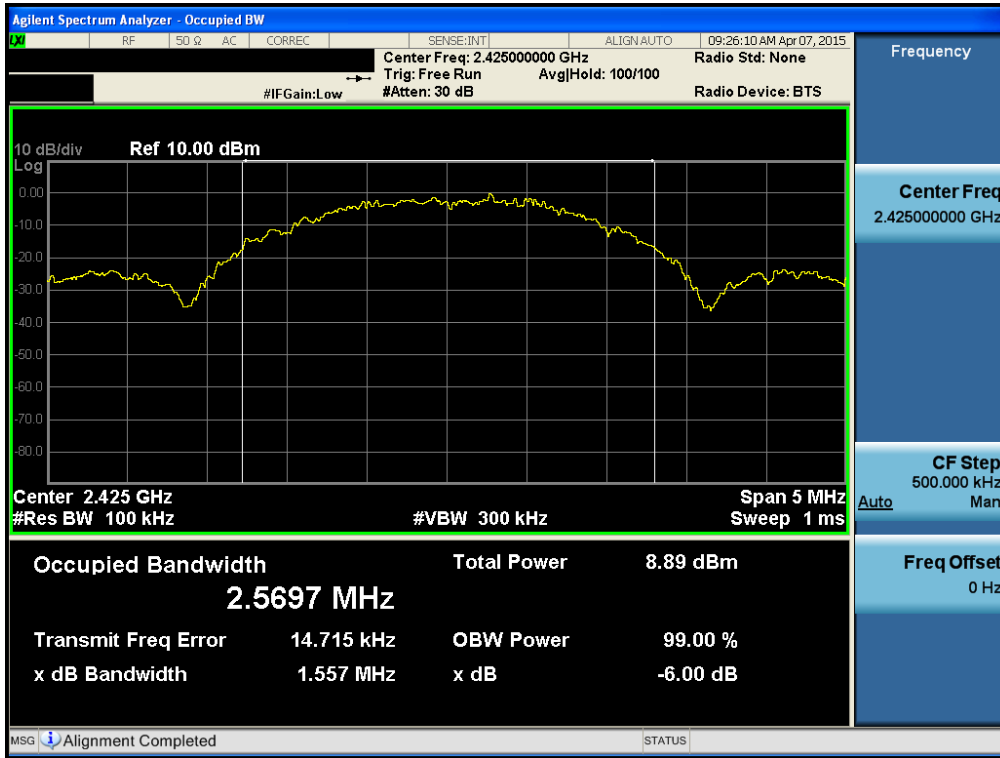
■ Test Results: **Comply**

Test Mode	Channel	Results [MHz]
O-QPSK	Lowest	2.570
	Middle	2.573
	Highest	2.572

Result Plots

6 dB Bandwidth

Lowest channel



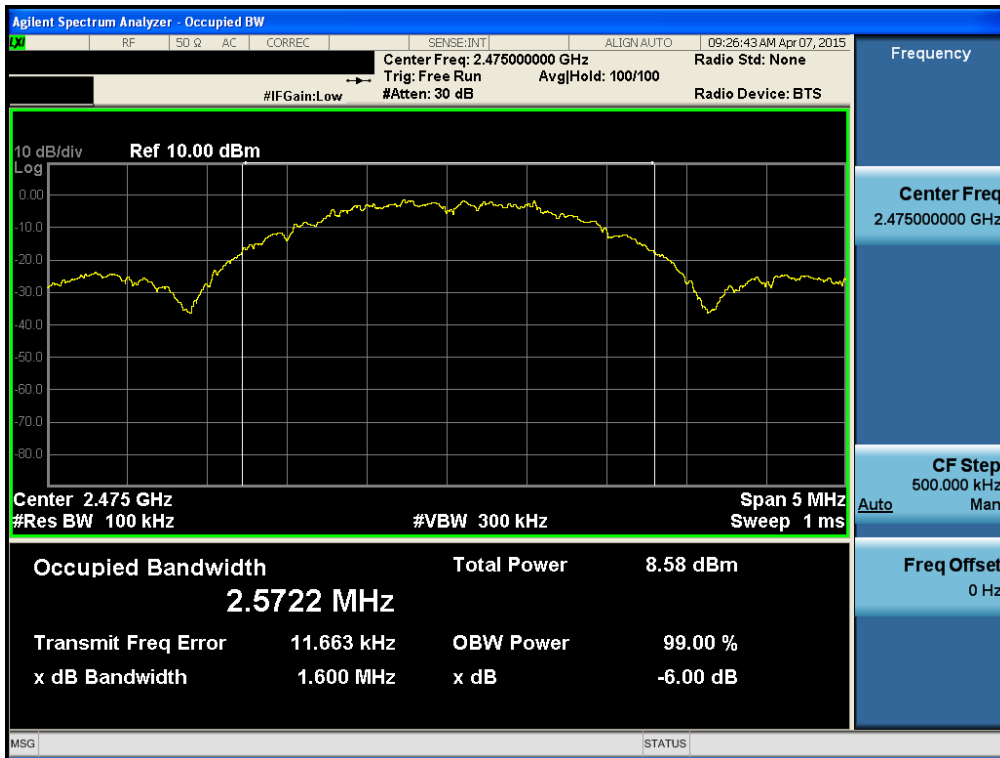
6 dB Bandwidth

Middle channel



6 dB Bandwidth

Highest channel



7.2 Maximum Peak Conducted Output Power

■ Test Requirements and limit, §15.247(b) & RSS-210[A8.4]

The maximum permissible conducted output power is **1 Watt**.

■ Test Configuration

Refer to the APPENDIX I.

■ Test Procedure

Maximum Peak Conducted Output Power is measured using the following procedure(RBW \geq DTS bandwidth).

1. Set the RBW \geq DTS bandwidth.
2. Set VBW \geq 3 x RBW.
3. Set span \geq 3 x RBW.
4. Sweep time = auto couple
5. Detector = peak
6. Trace mode = max hold
7. Allow trace to fully stabilize
8. Use peak marker function to determine the peak amplitude level.

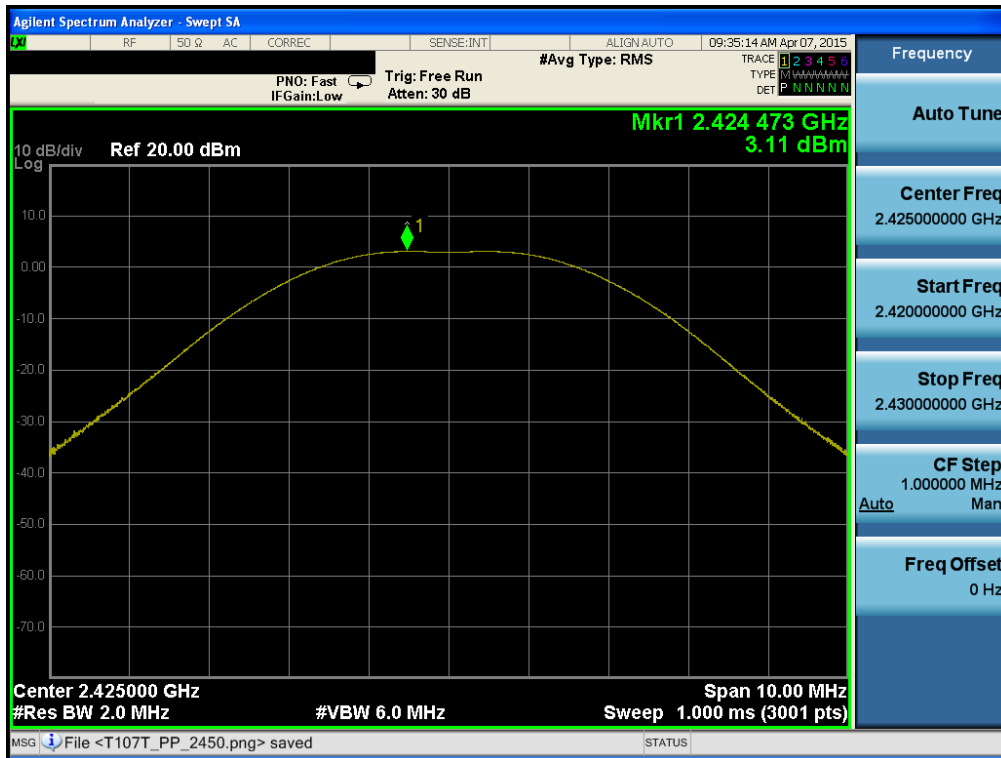
■ Test Results: **Comply**

Test Mode	Channel	Results [dBm]
O-QPSK	Lowest	3.11
	Middle	2.86
	Highest	2.79

Result Plots

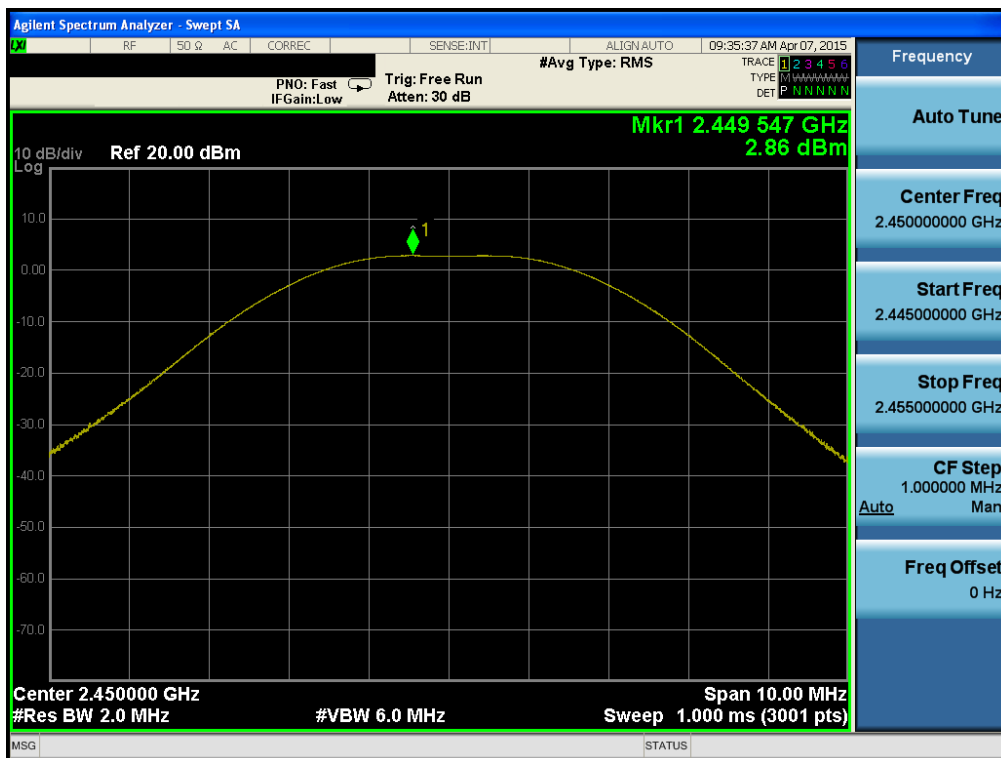
Maximum Peak Conducted Output Power

Lowest channel



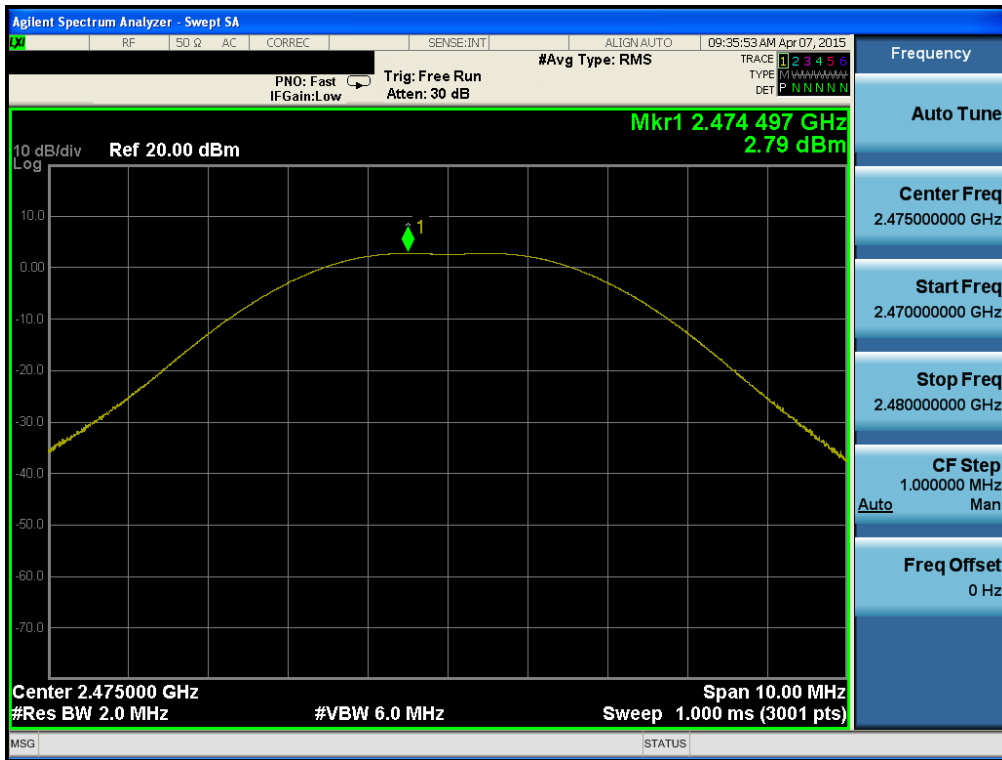
Maximum Peak Conducted Output Power

Middle channel



Maximum Peak Conducted Output Power

Highest channel



7.3 Maximum Power Spectral Density.

■ Test requirements and limit, §15.247(e) & RSS-210[A8.2]

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

Minimum Standard –specifies a conducted power spectral density (PSD) limit of 8 dBm in any 3 kHz Band segment within the fundamental EBW during any time interval of continuous transmission.

■ Test Configuration

Refer to the APPENDIX I.

■ Test Procedure

The power spectral density is measured using the following procedure(PKPSD method).

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
4. Set the VBW $\geq 3 \times \text{RBW}$.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

■ Test Results: *Comply*

Test Mode	Channel	Result [dBm]
O-QPSK	Lowest	-0.38
	Middle	-0.65
	Highest	-0.73

Result Plots

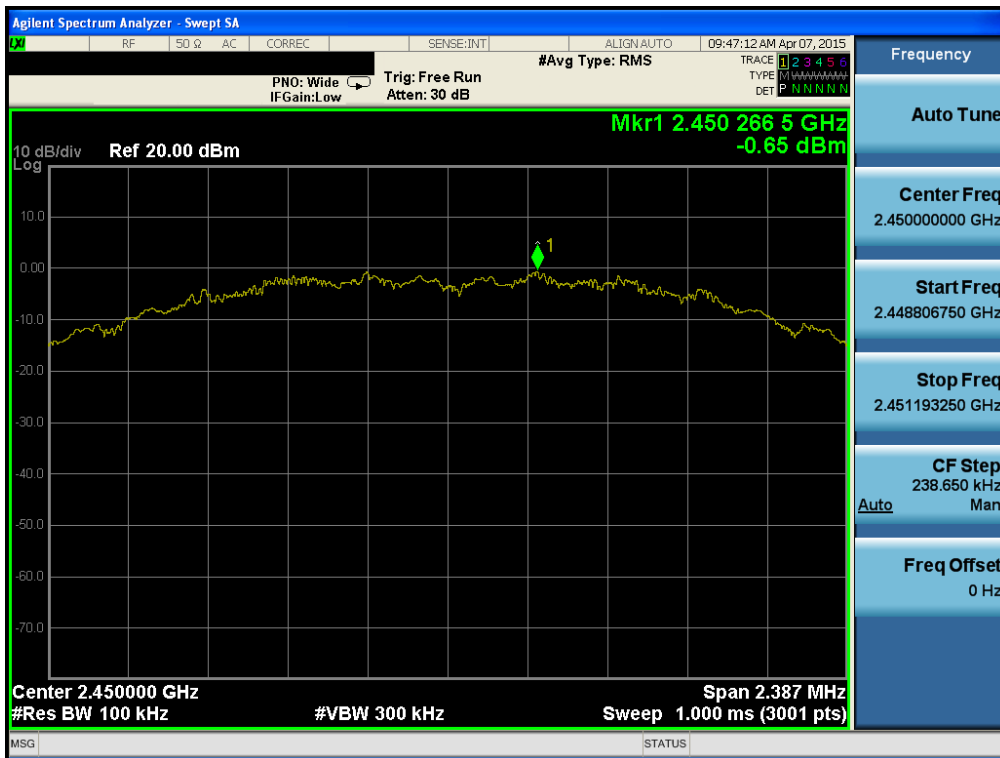
Maximum Power Spectral Density

Lowest channel



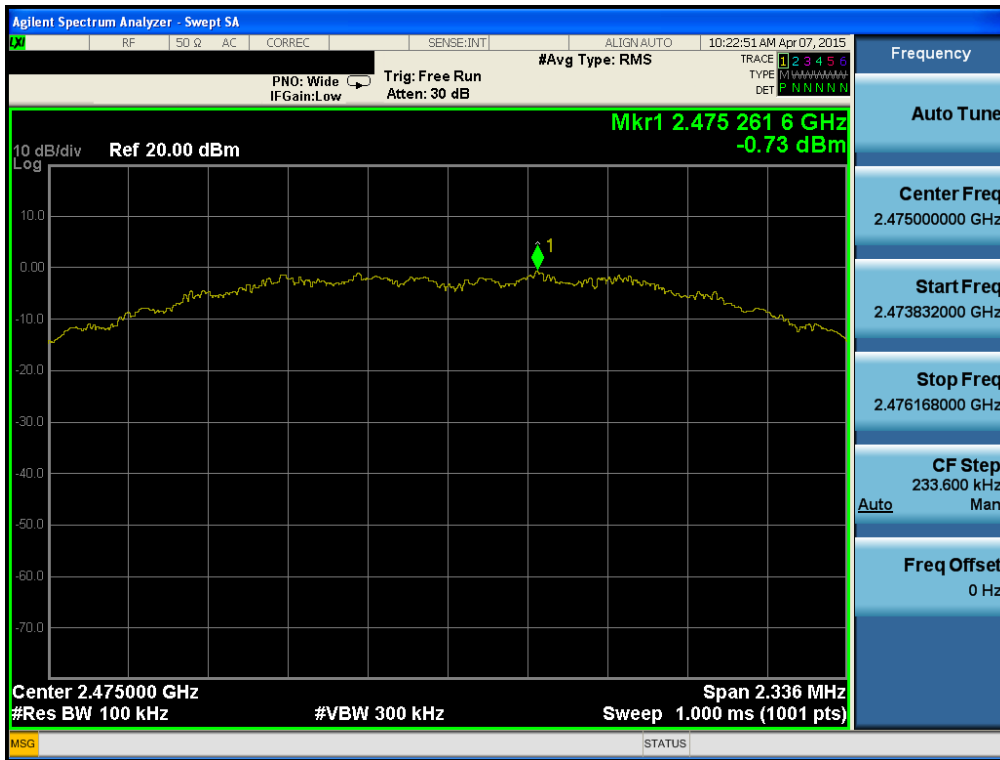
Maximum Power Spectral Density

Middle channel



Maximum Power Spectral Density

Highest channel



7.4 Out of Band Emissions at the Band Edge/ Conducted Spurious Emissions

■ Test requirements and limit, §15.247(d) & RSS-210[A8.5]

§15.247(d) specifies that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

If **the peak output power procedure** is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated **by at least 20dB** relative to the maximum measured in-band peak PSD level.

If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured inband average PSD level.

In either case, attenuation to levels below the general emission limits specified in §15.209(a) is not required.

■ Test Configuration

Refer to the APPENDIX I.

■ Test Procedure

The transmitter output is connected to a spectrum analyzer.

■ Measurement Procedure 1 – Reference level measurement

1. Set instrument center frequency to DTS channel center frequency.
2. Set the span to ≥ 1.5 times the DTS bandwidth.
3. Set the RBW = 100 kHz.
4. Set the VBW $\geq 3 \times$ RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum PSD level

- Measurement Procedure 2 - Unwanted Emissions

1. Set the center frequency and span to encompass frequency range to be measured.
2. Set the RBW = **100 kHz.(Actual 1 MHz , See below note)**
3. Set the VBW $\geq 3 \times$ RBW.(Actual 3 MHz, See below note)
4. Detector = **peak**.
5. Ensure that the number of measurement points \geq span/RBW
6. Sweep time = **auto couple**.
7. Trace mode = **max hold**.
8. **Allow the trace to stabilize** (this may take some time, depending on the extent of the span).
9. Use the peak marker function to determine the maximum amplitude level.

Note : The conducted spurious emission was tested with below settings.

Frequency range: 9 kHz ~ 30 MHz

RBW= 100 kHz, VBW= 300kHz, SWEEP TIME = AUTO, DETECTOR = PEAK, TRACE = MAX HOLD, SWEEP POINT: 40001

Frequency range: 30 MHz ~ 10 GHz, 10 GHz~25 GHz

RBW= 1MHz, VBW= 3MHz, SWEEP TIME = AUTO, DETECTOR = PEAK, TRACE = MAX HOLD, SWEEP POINT: 40001

LIMIT LINE = 20 dB below of the reference level of above measurement procedure Step 2. (RBW = 100 kHz, VBW = 300 kHz)

If the emission level with above setting was close to the limit (ie, less than 3 dB margin) then zoom scan is required using RBW = 100 kHz, VBW = 300 kHz, SAPN = 100 MHz and BINS = 2001 to get accurate emission level within 100 kHz BW.

Also the path loss for conducted measurement setup was used as described on the Appendix I of this test report.

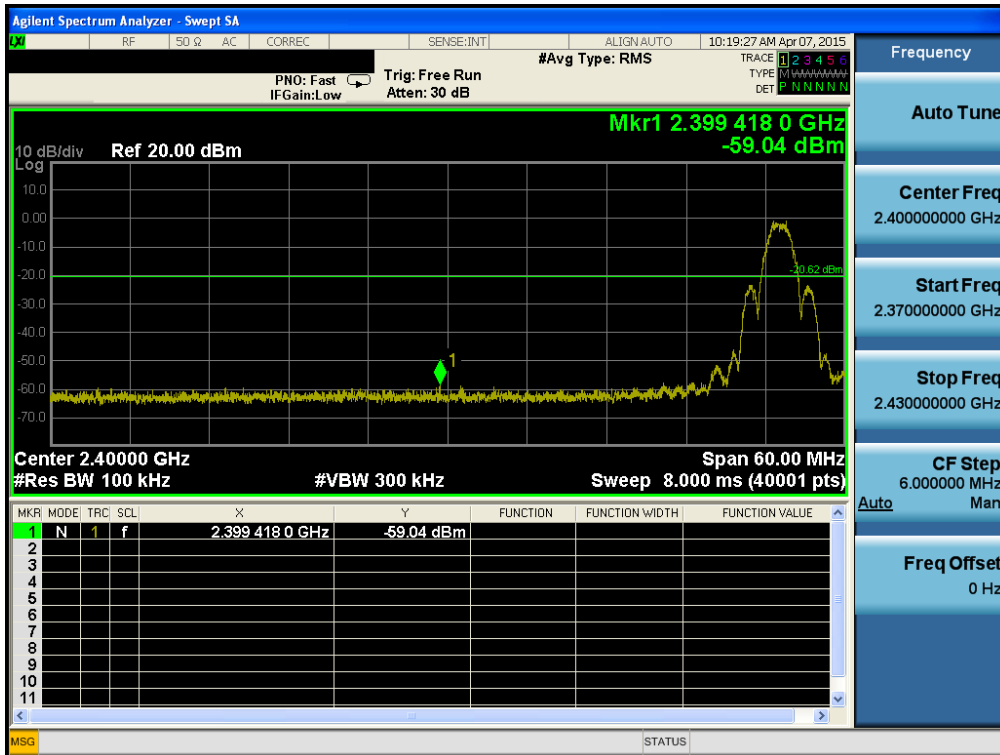
Test Results: **Comply**

Lowest channel

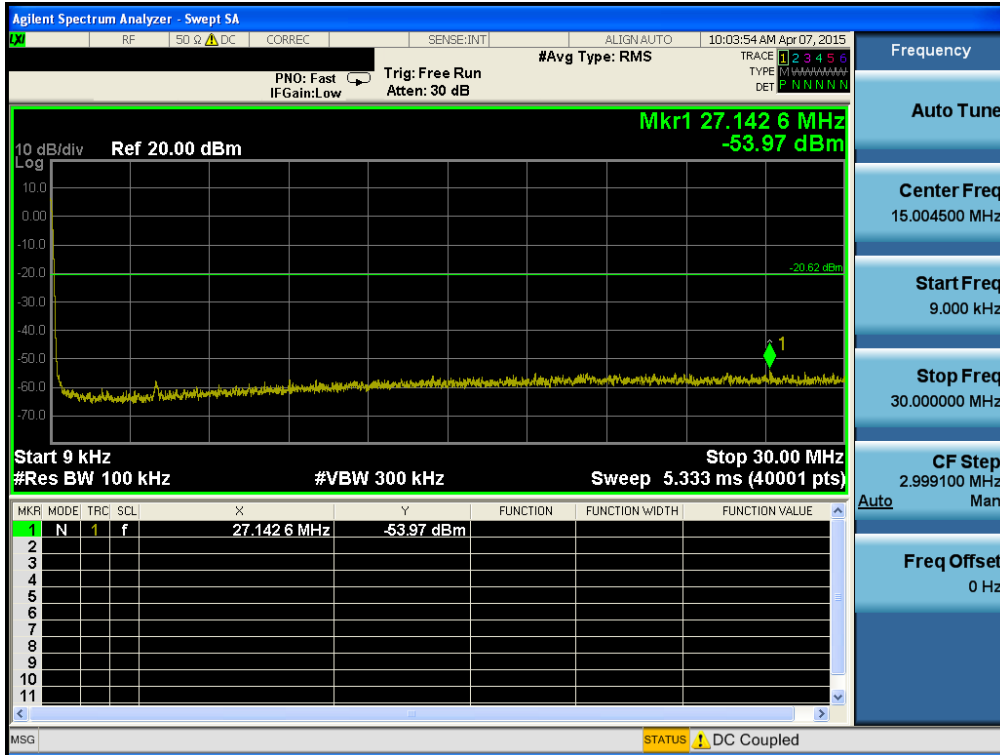
Reference level measurement



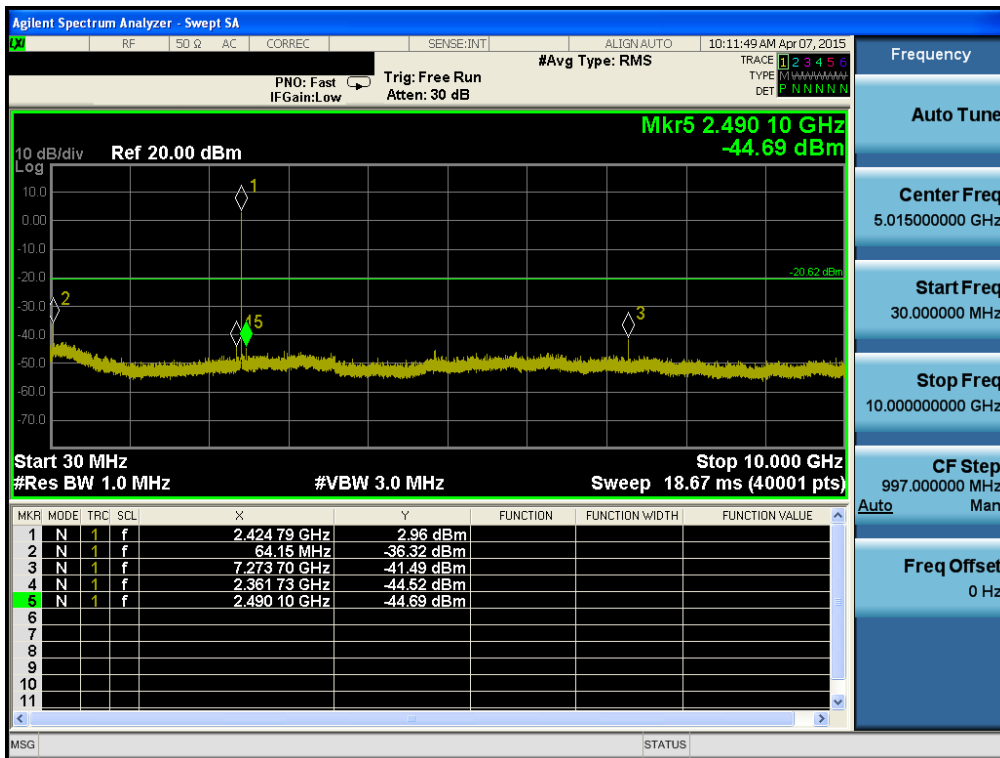
Low Band-edge



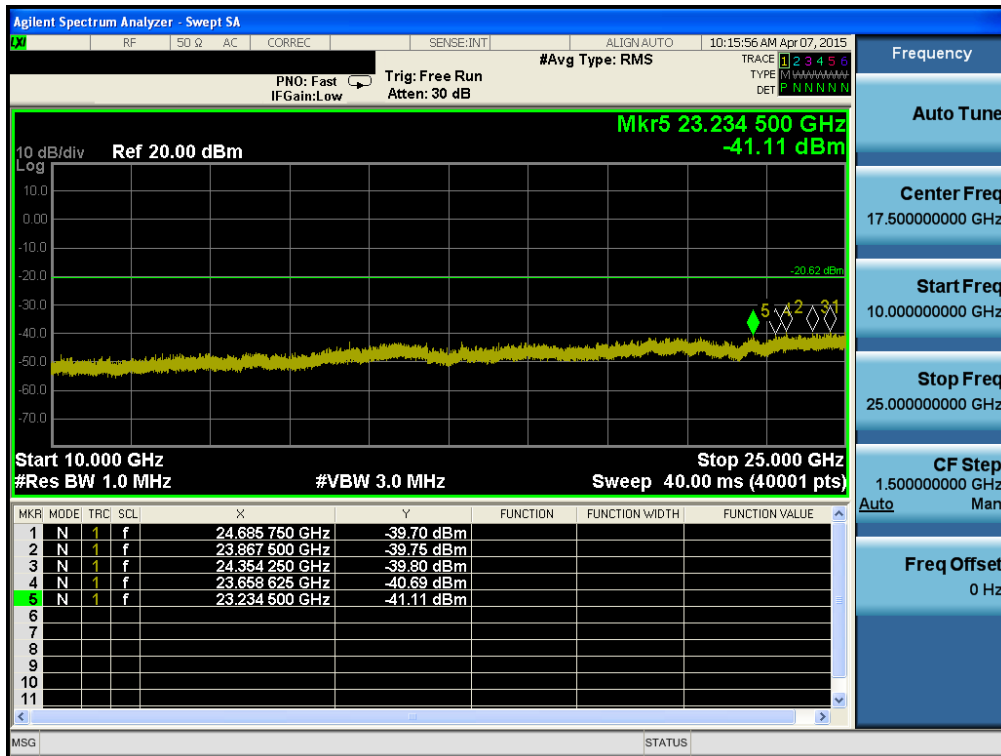
Emissions level measurement 1



Emissions level measurement 2

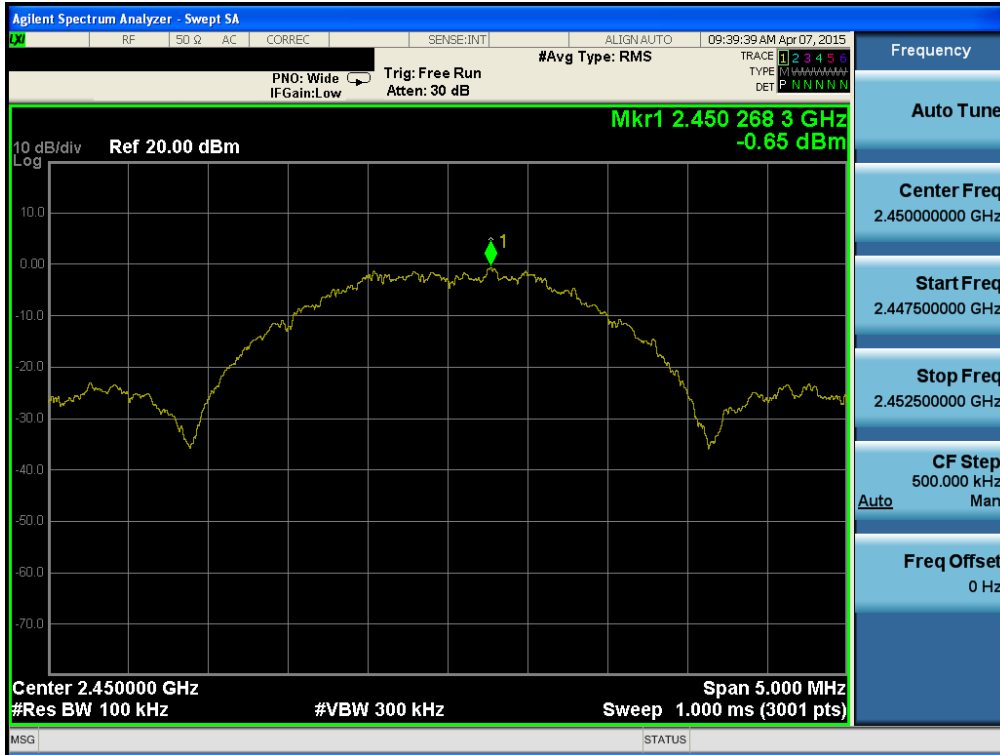


Emissions level measurement 3

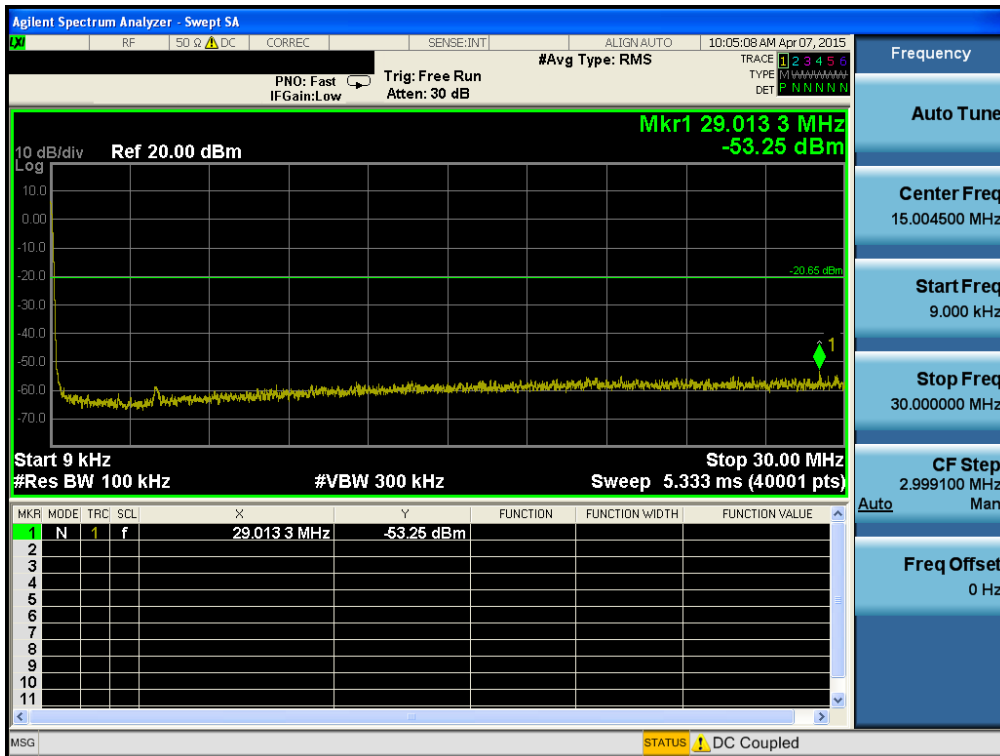


Middle channel

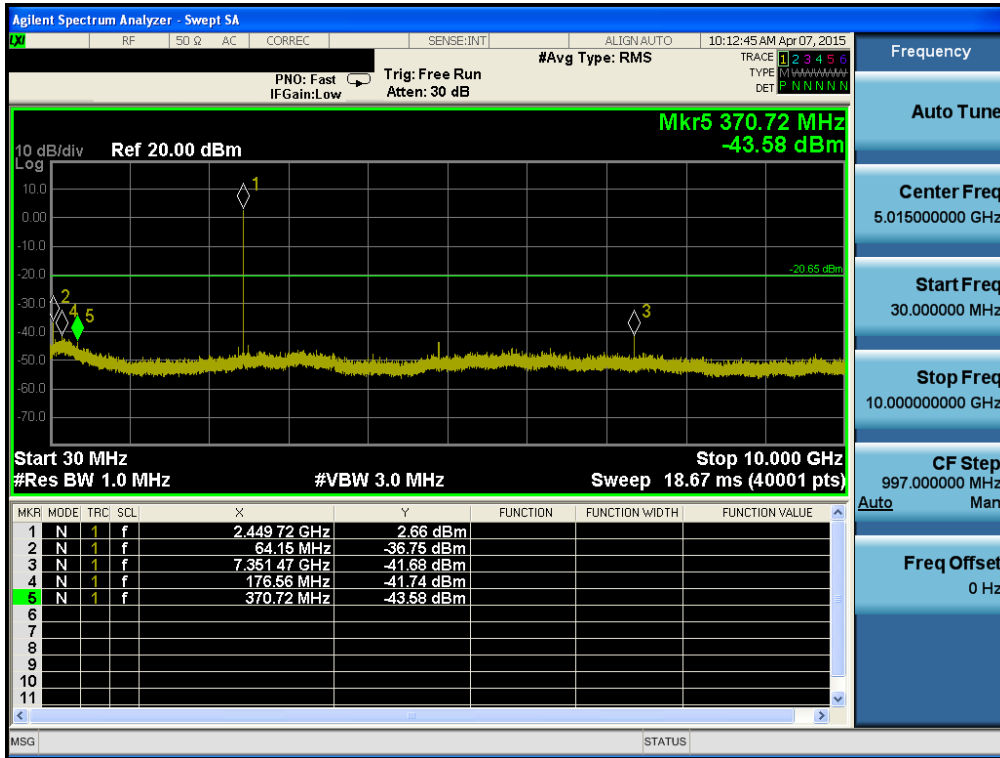
Reference level measurement



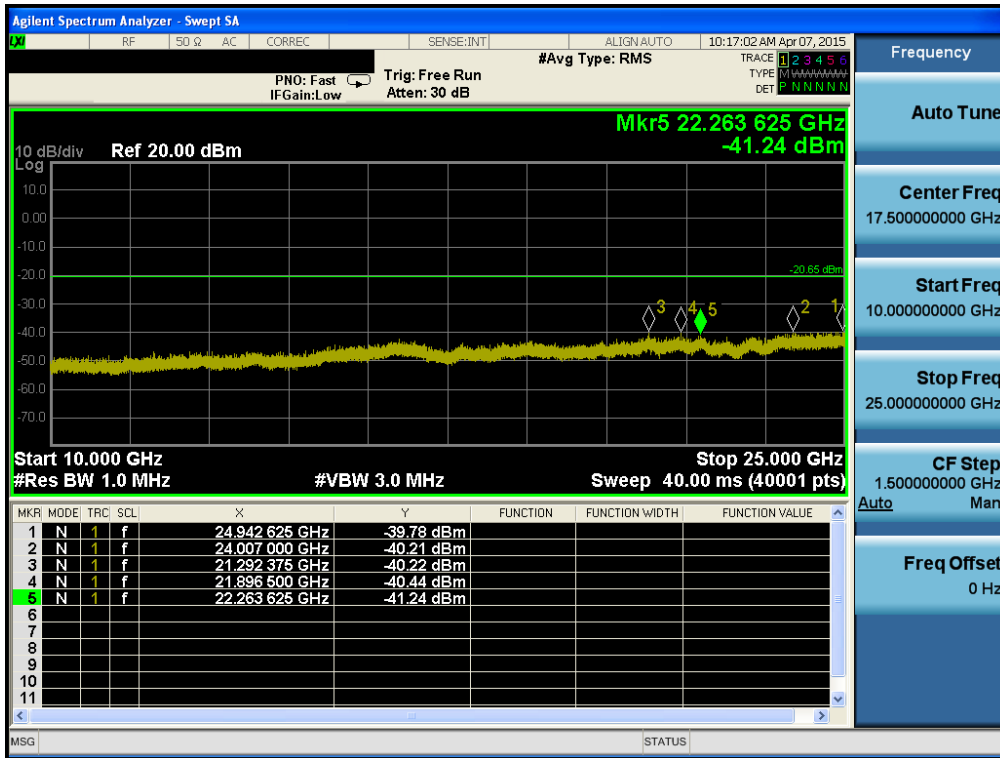
Emissions level measurement 1



Emissions level measurement 2



Emissions level measurement 3



Highest channel

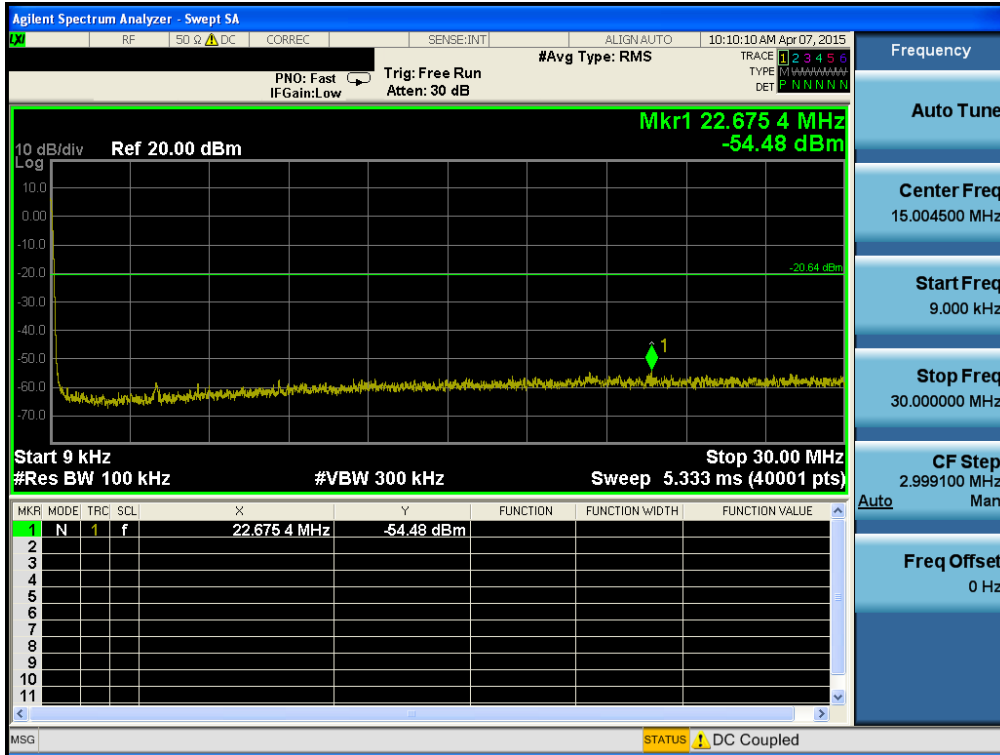
Reference level measurement



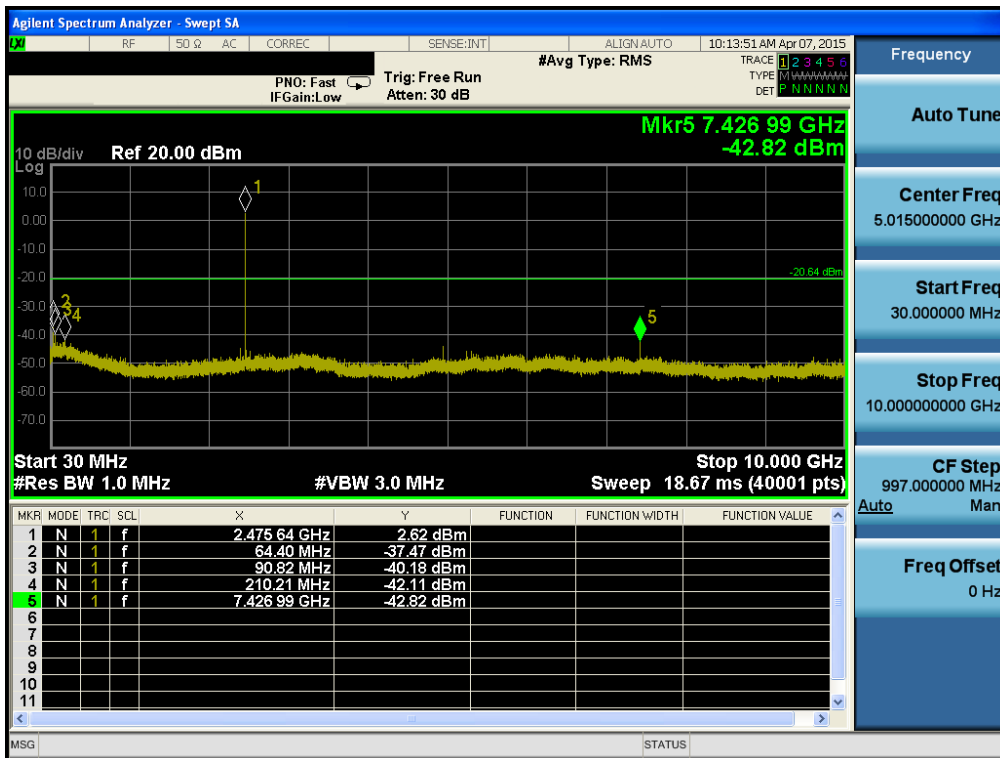
High Band-edge



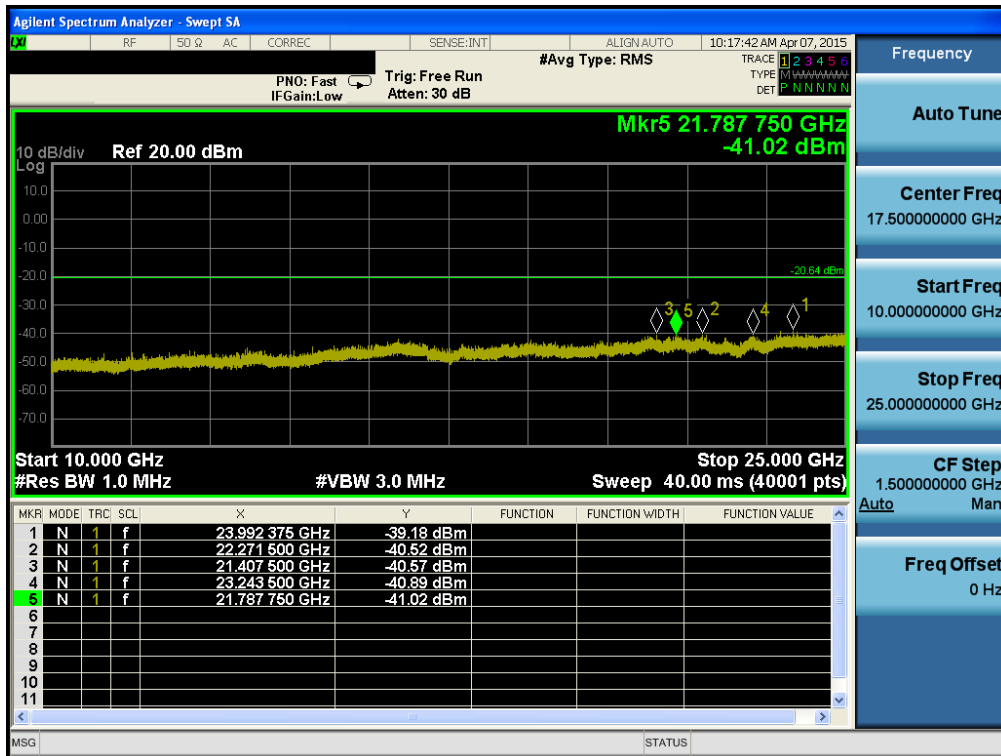
Emissions level measurement 1



Emissions level measurement 2



Emissions level measurement 3



7.5 Radiated Measurement.

■ Test Requirements and limit,

§15.247(d), §15.205, §15.209 & RSS-210 [A8.5], RSS-Gen [8.9], RSS-Gen [8.10]

In any 100kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a) and (b), then the 15.209(a) limit in the table below has to be followed

▪ FCC Part 15.209(a) and (b)

Frequency (MHz)	Limit (uV/m)	Measurement Distance (meter)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 ~ 88	100 **	3
88 ~ 216	150 **	3
216 ~ 960	200 **	3
Above 960	500	3

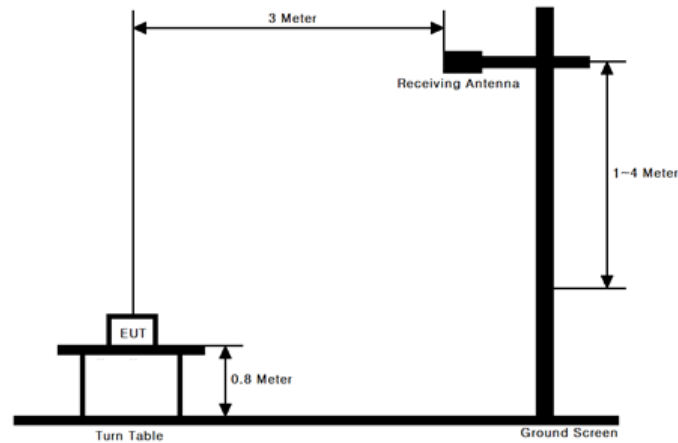
** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

▪ FCC Part 15.205 (a): Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~ 12.52025	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.57675 ~ 12.57725	156.52475 ~	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	13.36 ~ 13.41	156.52525	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	16.42 ~ 16.423	156.7 ~ 156.9	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	16.69475 ~ 16.69525	162.0125 ~ 167.17	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.80425 ~ 16.80475	167.72 ~ 173.2	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	25.5 ~ 25.67	240 ~ 285	2655 ~ 2900		
8.291 ~ 8.294	37.5 ~ 38.25	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	73 ~ 74.6	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	74.8 ~ 75.2	608 ~ 614	3345.8 ~ 3358		
		960 ~ 1240	3600 ~ 4400		

▪ **FCC Part 15.205(b):** The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

■ Test Configuration



■ TEST PROCEDURE

1. The EUT is placed on a non-conductive table, which is 0.8 m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

■ Measurement Instrument Setting for Radiated Emission Measurements.

The radiated emission was tested according to the section 6.3 6.4, 6.5 and 6.6 of the ANSI C63.10-2009 with following settings.

Peak Measurement :

RBW = As specified in below table , VBW $\geq 3 \times$ RBW, Sweep = Auto, Detector = Peak, Trace mode = Max Hold until the trace stabilizes.

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

Average Measurement :

1. RBW = 1 MHz (unless otherwise specified).
2. VBW $\geq 3 \times$ RBW.
3. Detector = RMS (Number of points $\geq 2 \times$ Span / RBW)
4. Averaging type = power (i.e., RMS).
5. Sweep time = auto.
6. Perform a trace average of at least 100 traces.
7. A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:
 - 1) If power averaging (RMS) mode was used in step 4, then the applicable correction factor is $10 \log(1/x)$, where x is the duty cycle.
 - 2) If linear voltage averaging mode was used in step 4, then the applicable correction factor is $20 \log(1/x)$, where x is the duty cycle.
 - 3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

■ Test Results: **Comply**

9 kHz ~ 25GHz Data

▪ Lowest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2360.69	V	Z	PK	48.11	2.76	-	50.87	74.00	23.13
2360.88	V	Z	AV	37.43	2.76	-	40.19	54.00	13.81
4849.97	H	X	PK	48.02	9.68	-	57.70	74.00	16.30
4850.05	H	X	AV	42.96	9.68	-	52.64	54.00	1.36

▪ Middle Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4900.10	H	X	PK	47.03	9.58	-	56.61	74.00	17.39
4900.03	H	X	AV	43.30	9.58	-	52.88	54.00	1.12
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-

▪ Highest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.53	V	Y	PK	45.33	2.83	-	48.16	74.00	25.84
2483.90	V	Y	AV	37.48	2.83	-	40.31	54.00	13.69
4950.09	H	X	PK	47.24	10.09	-	57.33	74.00	16.67
4949.97	H	X	AV	42.70	10.09	-	52.79	54.00	1.21

Note.

1. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.
So Distance Correction Factor :- $9.54\text{dB} = 20 \cdot \log(1\text{m}/3\text{m})$
2. No other spurious and harmonic emissions were found greater than listed emissions on above table.
3. Above listed point data is the worst case data.
4. Sample Calculation.

Margin = Limit – Result / Result = Reading + T.F+ DCF + Distance Factor / T.F = AF + CL – AG

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

DCF = Duty Cycle Correction Factor.

7.6 AC Power-line Conducted Emissions

■ Test Requirements and limit, §15.207& RSS-Gen [8.8]

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

■ Test Configuration

See test photographs for the actual connections between EUT and support equipment.

■ Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to the test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.

■ Test Results: **N/A**

This device is used Battery for power supplying.(DC 3.0 V(Lithium Ion Battery))

7.7 Occupied Bandwidth

■ Test Requirements, RSS-Gen [6.6]

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

■ Test Configuration

Refer to the APPENDIX I.

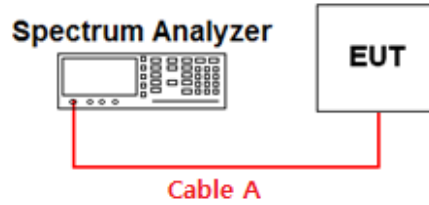
■ Test Procedure

- The 99% power bandwidth was measured with a calibrated spectrum analyzer.
- Spectrum analyzer plots are included on the following pages.

■ Test Results: **N/A**

8. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
MXA Signal Analyzer	Agilent	N9020A	14/09/15	15/09/15	MY50200834
Digital Multimeter	H.P	34401A	15/01/06	16/01/06	US36099541
Dynamic Measurement DC Source	Agilent	66332A	14/09/11	15/09/11	MY43000440
Thermohygrometer	BODYCOM	BJ5478	14/05/13	15/05/13	120612-2
Vector Signal Generator	Rohde Schwarz	SMBV100A	15/01/06	16/01/06	255571
Signal Generator	R&S	SMF100A	14/07/01	15/07/01	102341
High-pass filter	Wainwright	WHKX3.0	15/01/06	16/01/06	12
LOOP Antenna	Schwarzbeck	FMZB1513	14/04/29	16/04/29	1513-128
TRILOG Broadband Test-Antenna(30MHz-1GHz)	Schwarzbeck	VULB 9160	14/04/30	16/04/30	3358
Double-Ridged Guide Antenna	ETS	3117	14/05/12	16/05/12	00140394
Horn Antenna	A.H.Systems	SAS-574	13/05/27	15/05/27	155
Low Noise Pre Amplifier	tsj	MLA-010K01-B01-27	14/04/09	15/04/09	1844538
Amplifier (30dB)	Agilent	8449B	15/02/26	16/02/26	3008A00370
EMI TEST RECEIVER	R&S	ESR7	14/10/21	15/10/21	101109

APPENDIX I**Conducted Test set up Diagram & Path loss Information**▪ **Conducted Measurement****Path loss information**

Frequency (GHz)	Path Loss (dB)	Frequency (GHz)	Path Loss (dB)
0.03	0.482	15	1.261
1	0.588	20	1.410
2.425 ~ 2475	0.683	25	1.680
5	0.944		
10	1.234		

Note. 1: The path loss from EUT to Spectrum analyzer was measured and used for test.

APPENDIX II Duty cycle plots

■ TEST PROCEDURE

Duty Cycle measured using **section 6.0 b) of KDB558074 v03r02:**

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal.

Set the center frequency of the instrument to the center frequency of the transmission. Set $RBW \geq OBW$ if possible; otherwise, set RBW to the largest available value. Set $VBW \geq RBW$. Set detector = peak or average.

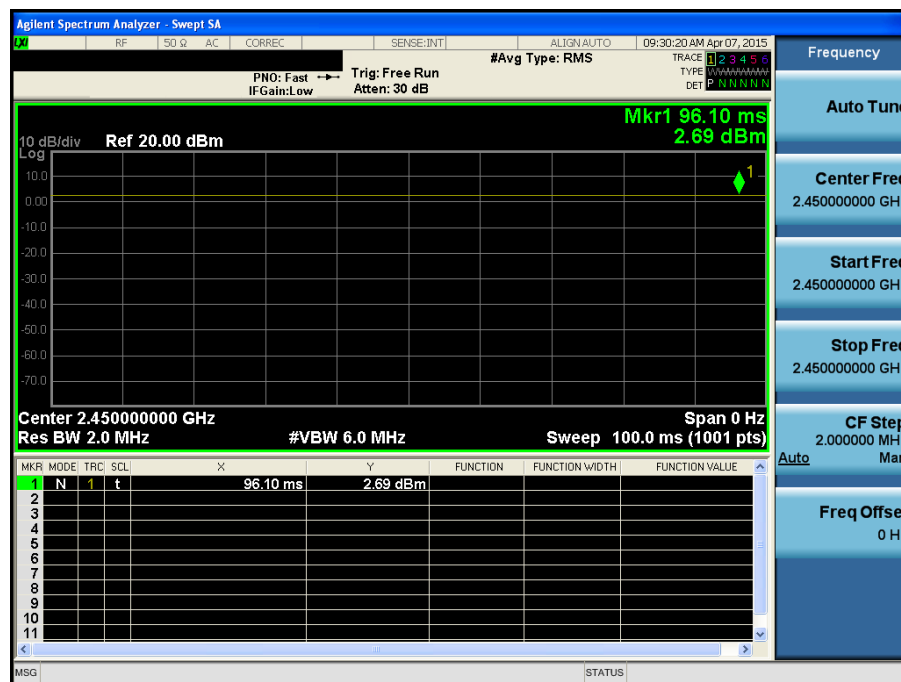
The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$ and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if $T \leq 16.7$ microseconds.)

Measurement set-up of RBW

Mode	T	50/T	RBW ($\leq VBW$)
-	-	-	-
-	-	-	-

Test Plots : Duty Cycle

Test Mode: O-QPSK & 2450MHz



Duty Cycle = 100%