RF TEST REPORT

Test item	:	Mobile Phone
Model No.	:	KYY21
Order No.	:	DEMC1303-01111
Date of receipt	:	2013-03-26
Test duration	:	2013-04-22 ~ 2013-05-13
Date of issue	:	2013-05-14
Use of report	:	FCC Original Grant

Applicant : KYOCERA Corporation
2-1-1 Kagahara, Tsuzuki-ku, Yokohama-Shi, Kanagawa 224-8502, Japan

Test laboratory : Digital EMC Co., Ltd.
683-3, Yubang-Dong, Cheoin-Gu, Yongin-Si, Gyeonggi-Do, 449-080, Korea

Test specification	:	FCC Part 15 Subpart C 247 KDB558074 v03r01
Test environment	:	See appended test report
Test result	:	☒ Pass ☐ Fail

Tested by:	Witnessed by:	Reviewed by:
Engineer Hyun-Su Son	N/A	Deputy General Manager WonJung Lee

Test Report Version

Test Report No.	Date	Description
DRTFCC1305-0491	May. 14, 2013	Initial issue

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1. GENERAL INFORMATION

Applicant	:	KYOCERA Corporation
Address	:	2-1-1 Kagahara, Tsuzuki-ku, Yokohama-Shi, Kanagawa 224-8502, Japan
FCC ID	:	JOYKYY21
EUT	:	Mobile Phone
Model	:	KYY21
Additional Model(s)	:	N/A
Data of Test	:	2013-04-22 ~ 2013-05-13
Contact person	:	Yoshikazu Yamamoto

2. EUT DESCRIPTION

Product	Mobile Phone
Model Name	KYY21
Power Supply	DC 3.8 V
Battery type	Standard Battery: Lithium Ion Battery
Frequency Range	2402 ~ 2480 MHz(40 channels)
Max. RF Output Power	-0.72 dBm
Modulation Type	GFSK
Antenna Specification	Antenna Type: Internal Antenna Gain: 0 dBi(PK)

3. TEST METHODOLOGY

The measurement procedure described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2009) and KDB558074

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet theCommissions requirement and operating in a manner that intends to maximize its emissioncharacteristics 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 ofthe measurements. According to its specifications, the EUT must comply with the requirements ofthe 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 therequirements 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 theEUT are measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peakand Average detector.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate360 degrees to determine the position of maximum emission level. EUT is set 3 m away from thereceiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, eachemission was to be maximized by changing the polarization of receiving antenna both horizontaland vertical. In order to find out the max.emission, the relative positions of this hand-heldtransmitter (EUT) was rotated through three orthogonal axes according to the requirements inSection6.3 of ANSI C63.10

3.4 DESCRIPTION OF TEST MODES

The EUT has been tested withthe operating condition for maximizing the emission characteristics. Atest program is used to control the EUT forstaying in continuous transmitting. The Bluetooth low energy mode and below low, middle and high channels were tested and reported.

Test Mode	Channel	Frequency [MHz]
BT LE	0	2402
	19	2440
	39	2480

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 683-3, Yubang-Dong, Yongin-Si, Gyunggi-Do, 449-080, South Korea. The site is constructed in conformance with the requirements.

- Semi anechoic chamber registration Number :678747

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, 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:

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

* The internal antenna of this E.U.T is permanently attached using the unique coupling method.

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

7. TEST RESULT

7.1 6dB Bandwidth Measurement

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

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies.

The minimum permissible 6dB bandwidth is 500 kHz.

▣TEST CONFIGURATION

Refer to the APPENDIX I.

▣ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer and used following test procedure of KDB558074.

1. Set resolution bandwidth (RBW) = 100 KHz
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
   (RBW:100KHz/VBW:300KHz)
3. Detector = **Peak**.
4. Trace mode = **max hold**.
5. Sweep = **auto couple**.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associatedwith the two outermost amplitude points (upper and lower) that are attenuated by 6 dBrelative to the maximum level measured in the fundamental emission.

▣TEST RESULTS: Comply

Test Mode	Frequency [MHz]	Test Results [KHz]
LE	2402	673.900
	2440	676.100
	2480	674.200

▣RESULTPLOTS

6 dB Bandwidth Test Mode: LE&1Mbps&2402MHz

6 dB Bandwidth Test Mode: LE&1Mbps&2440MHz

6 dB Bandwidth Test Mode: LE&1Mbps&2480MHz

7.2 Maximum Peak Conducted Output Power

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

A transmitter antenna terminal of EUT is connected to the input of a spectrum analyzer.

Measurement is made while the EUT is operating in transmission mode at the appropriatefrequencies.

The maximum permissible conducted output power is 1 Watt.

▣TEST CONFIGURATION

Refer to the APPENDIX I.

▣TEST CONFIGURATION:

Maximum Peak Conducted Output Power is measured using Measurement Procedure Option1 of KDB558074.

1. Set the RBW ≥ DTS bandwidth. **Actual RBW = 2 MHz**
2. Set VBW ≥ 3 x RBW. **Actual VBW = 6 MHz**
3. Set span **≥ 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.

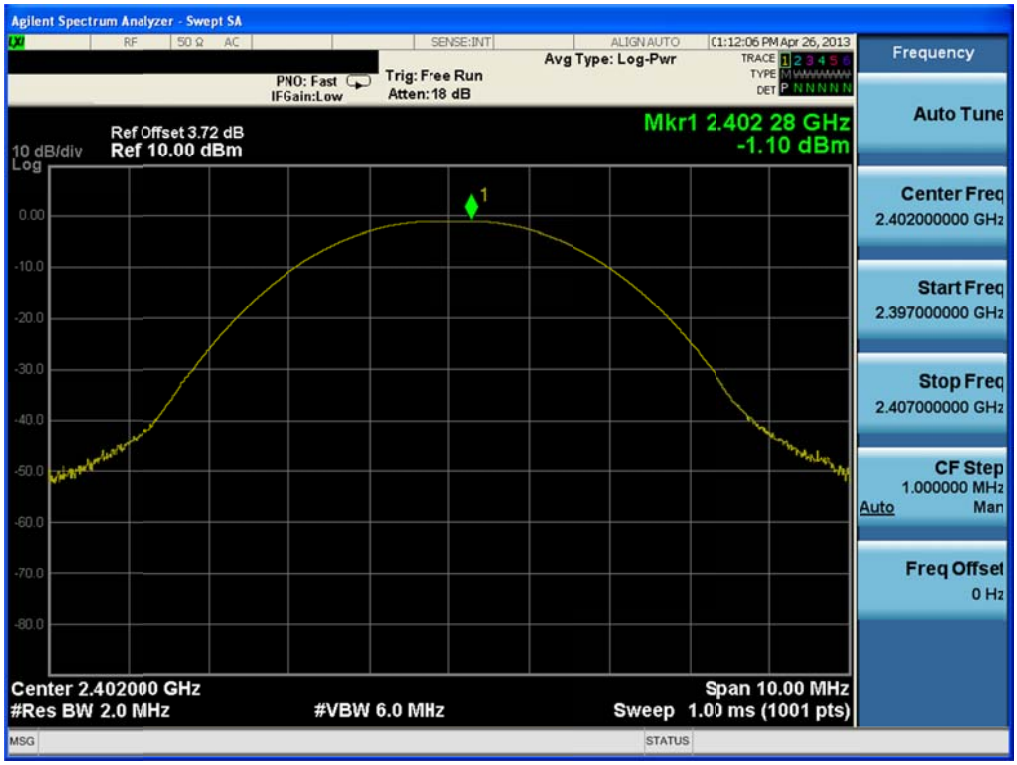
▣TEST RESULTS: Comply

Test Mode	Test Results[dBm]		
	2402MHz	2440MHz	2480MHz
LE	-1.10	-1.17	-0.72

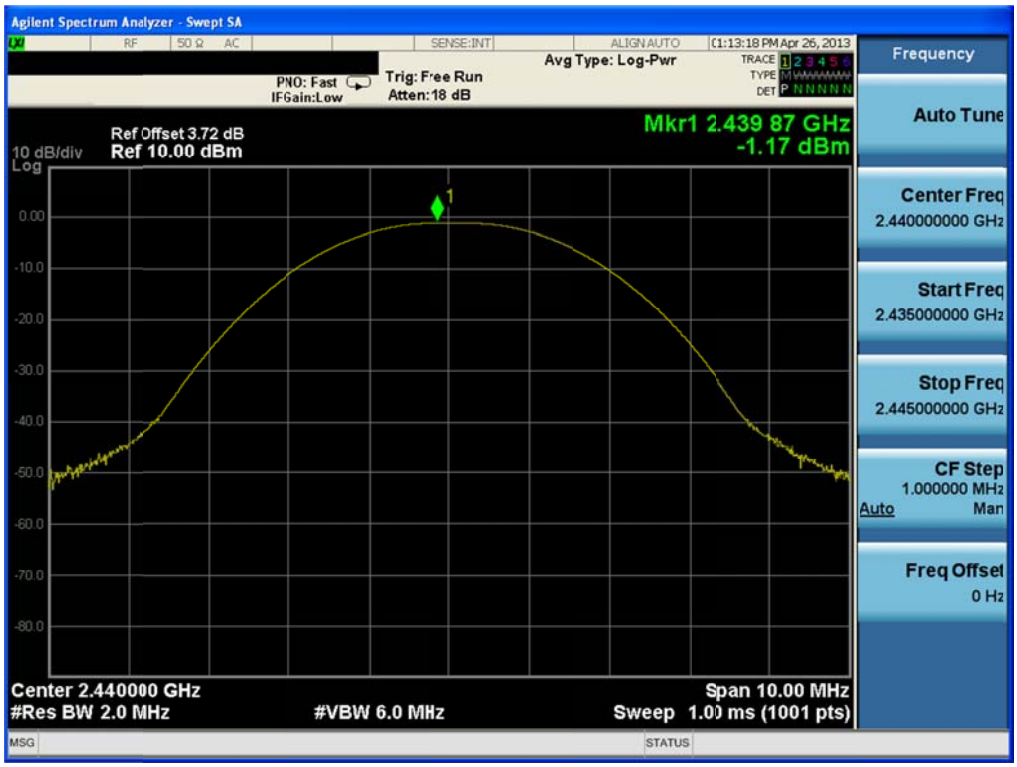
Note : The path loss was corrected using the offset value of the spectrum analyzer.

▣RESULT PLOTS

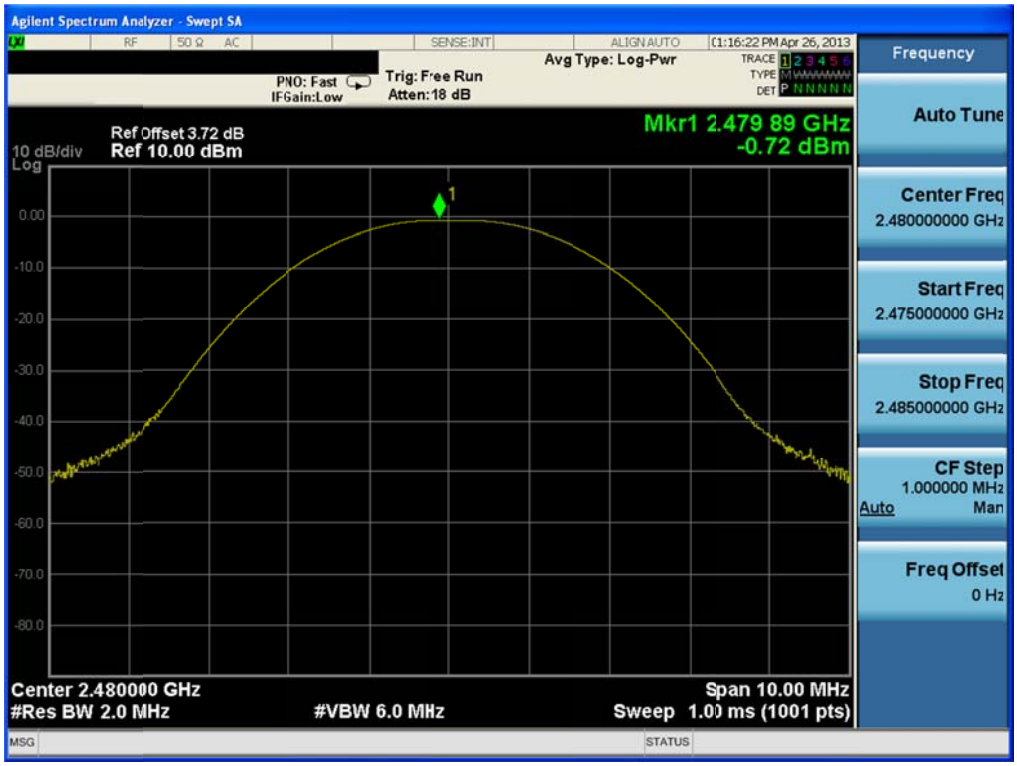
Peak Output Power Test Mode: LE&2402MHz



Peak Output Power Test Mode:LE&2440MHz



Peak Output Power Test Mode: LE&2480MHz



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 segmentwithin the fundamental EBW during any time interval of continuous transmission.

▣TEST CONFIGURATION

Refer to the APPENDIX I.

▣TEST PROCEDURE:

The Measurement Procedure **Method PKPSDof KDB558074** is used.
1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to **1.5 times** the DTSbandwidth.
3. Set the RBW to: **3 kHz ≤ RBW ≤ 100 kHz**.
4. Set the VBW ≥**3 x 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.

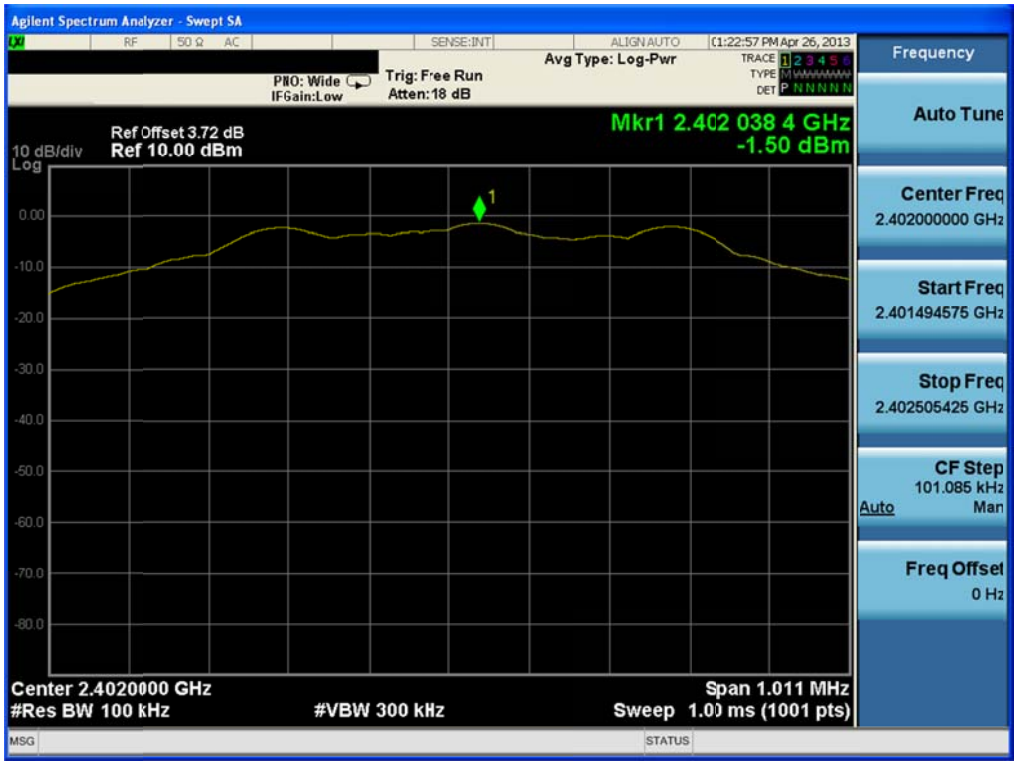
▣TEST RESULTS: Comply

Test Mode	Data Rate	Frequency [MHz]	PKPSD [dBm]
LE	1Mbps	2402	-1.50
		2440	-1.57
		2480	-1.11

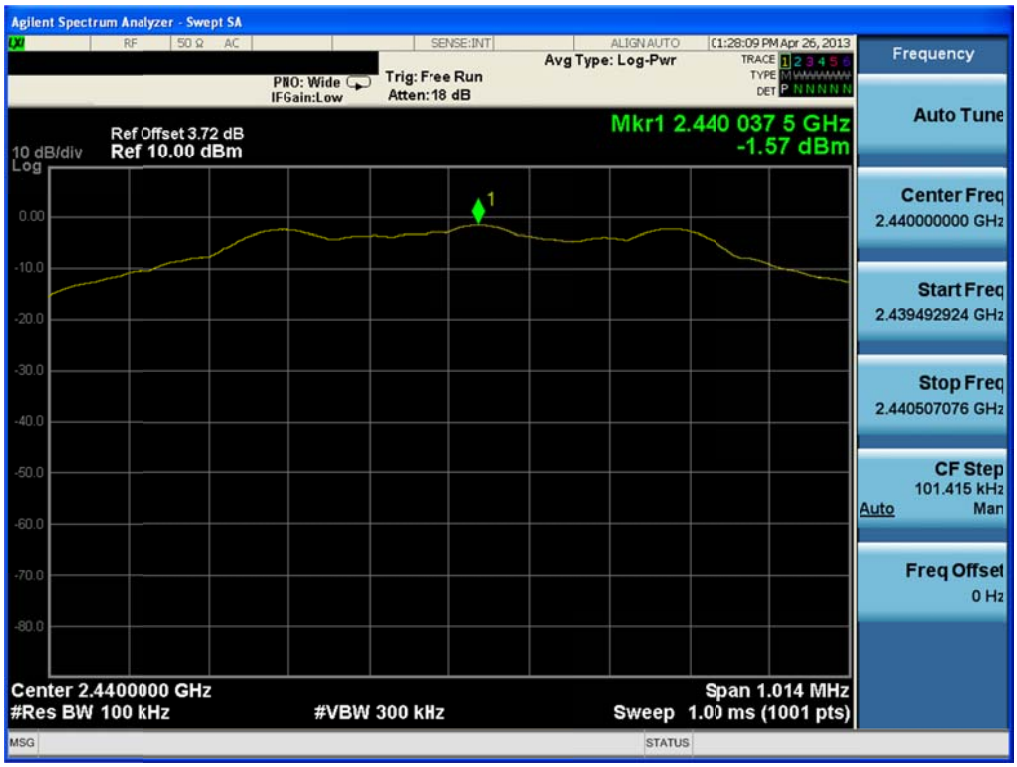
Note : The path loss was corrected using the offset value of the spectrum analyzer.

▣RESULT PLOTS

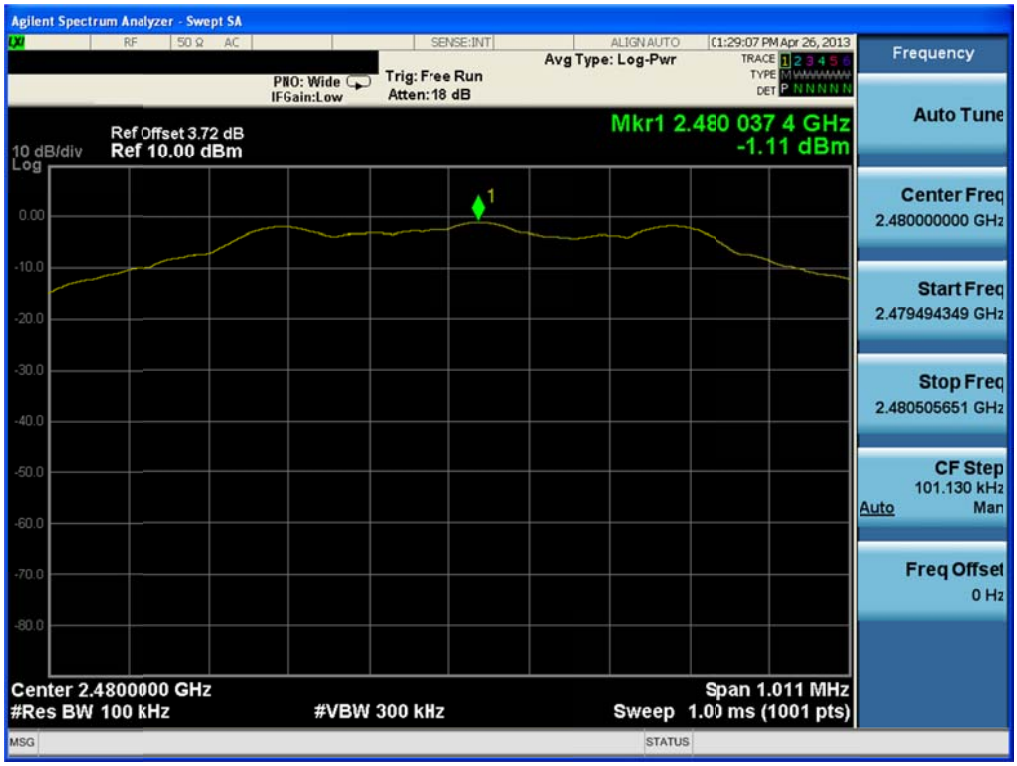
Maximum PKPSD Test Mode:LE&2402MHz



Maximum PKPSD Test Mode: LE&2440MHz



Maximum PKPSD Test Mode:LE&2480MHz



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, thepower 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

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 ≥ 3 x 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 ≥**3 x RBW.(Actual 3 MHz, See below note)**
4. Detector = **peak**.
5. Ensure that the number of measurement points ≥ 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 :Actually the conducted unwanted emission was tested using S/A's measurement function with total 12 sub ranges. The each sub ranges were set as below.

RBW= 1 MHz, VBW= 3 MHz, SWEEP TIME = AUTO, DETECTOR = PEAK, TRACE = MAX HOLD, SPAN = MAX 3 GHz for Below 10 GHz and MAX 5 GHzfor Above 10 GHz , BINS = 10001 for Each sub range below 10 GHz and 20001 for Each sub rangeabove 10 GHz

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 = 300KHz, SAPN = 100 MHz and BINS = 2001 to get accurate emission level within 100 KHz BW.

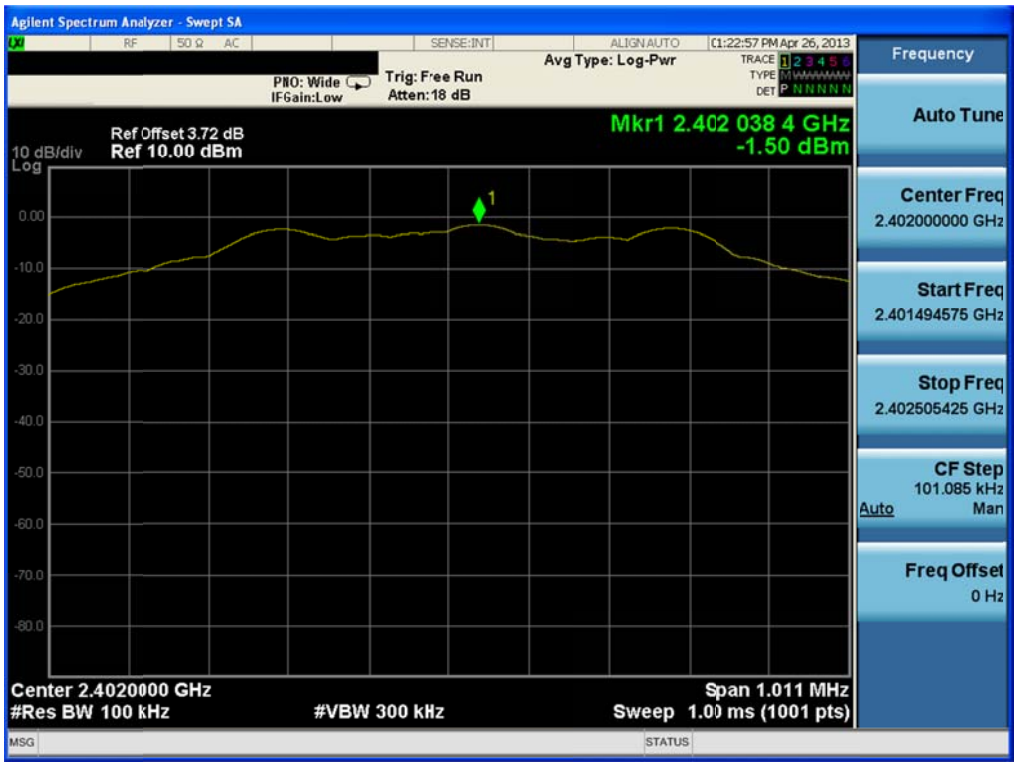
Also the path loss for conducted measurement setup was used as described on the Appendix I of this test report.

▣TEST RESULTS: Comply

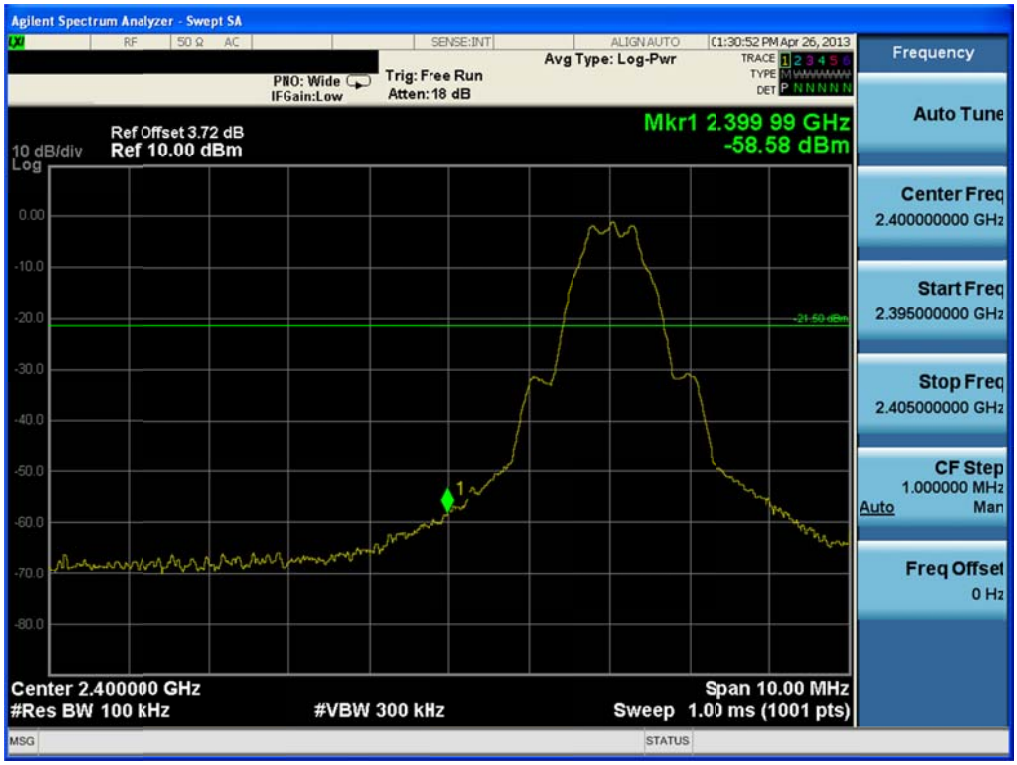
▣RESULT PLOTS

LE& 2402MHz

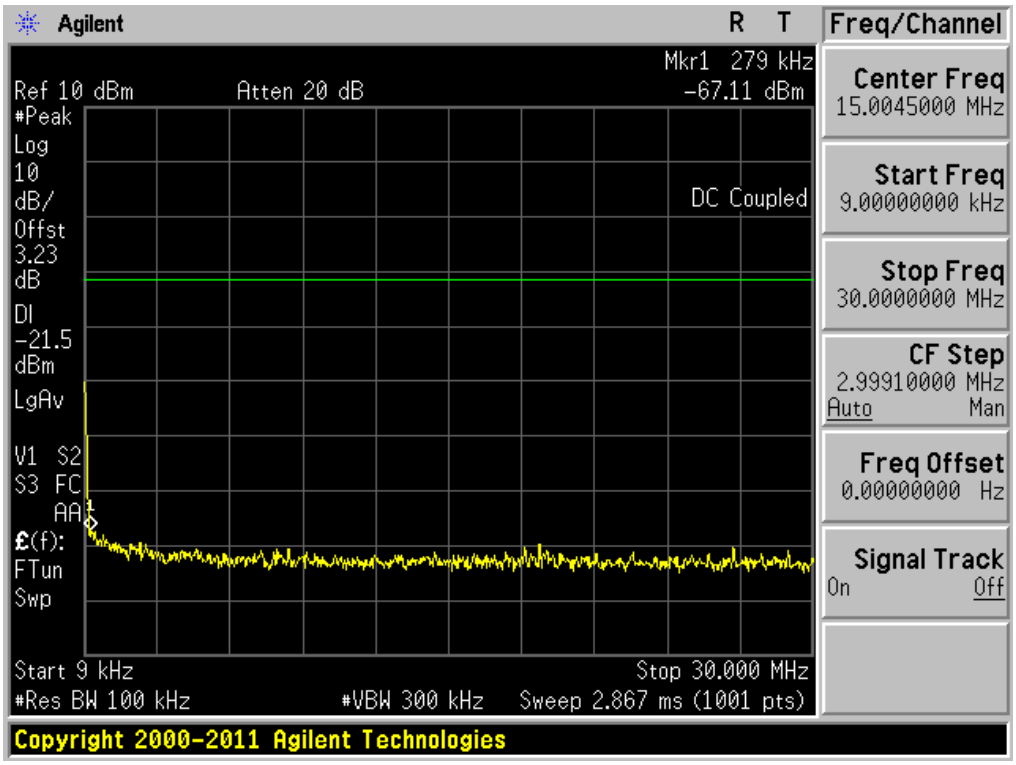
Reference

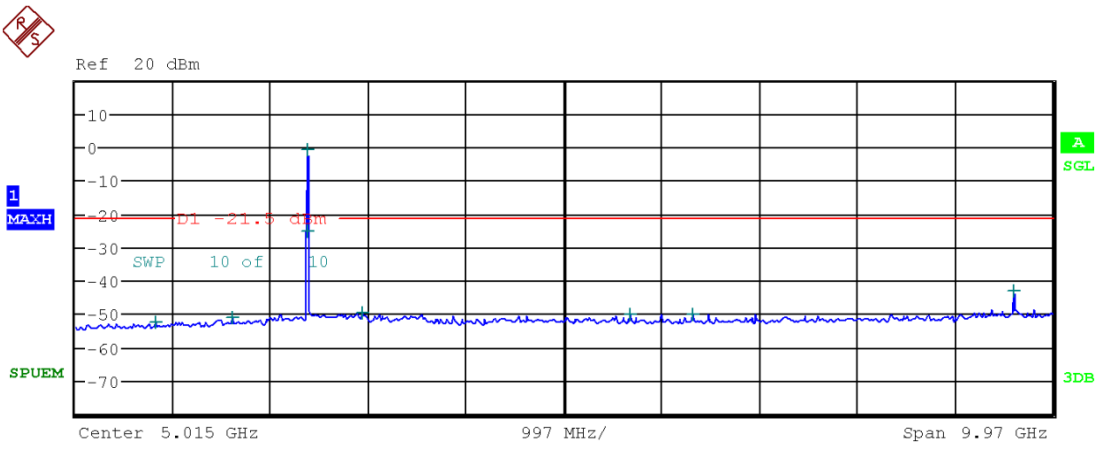


Low Band-edge

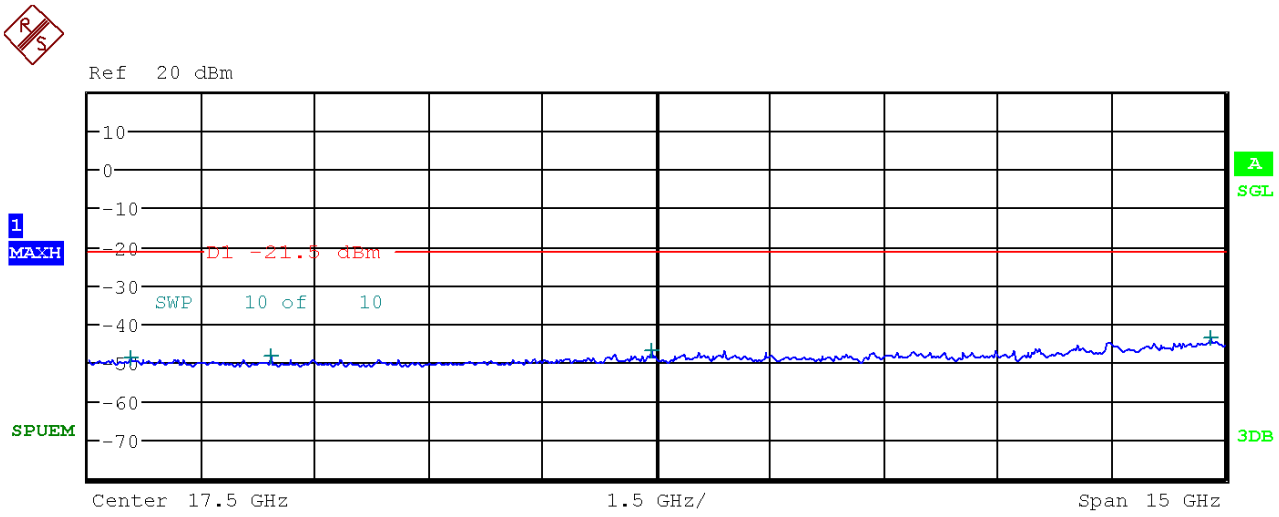


Conducted Spurious Emissions





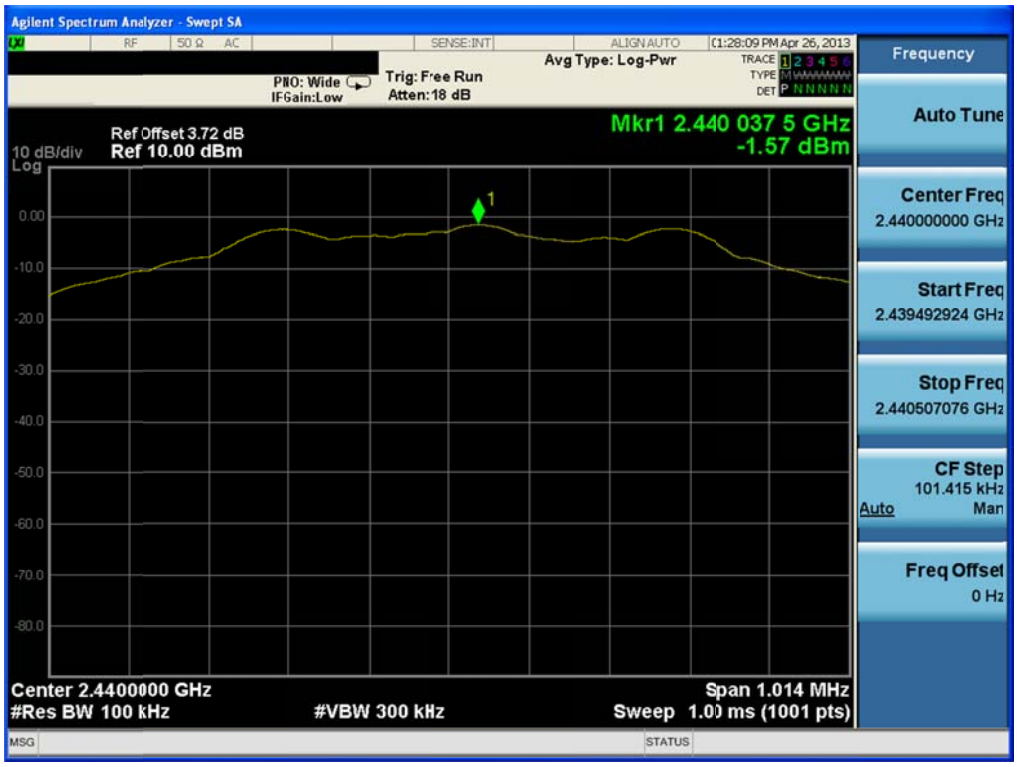
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	846.061000 M	-52.61	-200.00
1.000 G	2.000 G	1.00 M	1.621400 G	-51.10	-200.00
2.000 G	2.400 G	1.00 M	2.400000 G	-25.53	-200.00
2.400 G	2.483 G	1.00 M	2.402179 G	-0.92	-200.00
2.483 G	3.000 G	1.00 M	2.951759 G	-49.80	-200.00
3.000 G	6.000 G	1.00 M	5.687400 G	-50.08	-200.00
6.000 G	9.000 G	1.00 M	6.329400 G	-49.99	-200.00
9.000 G	10.000 G	1.00 M	9.608300 G	-42.97	-200.00



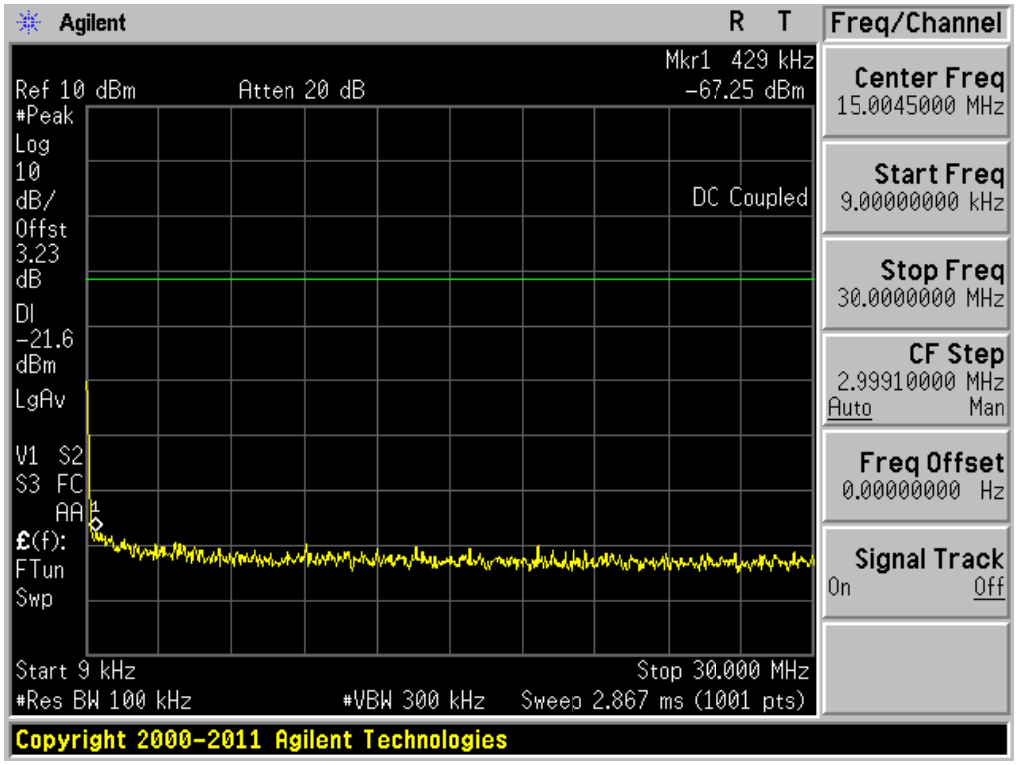
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
10.000 G	12.000 G	1.00 M	10.559300 G	-48.68	-200.00
12.000 G	15.000 G	1.00 M	12.402300 G	-48.47	-200.00
15.000 G	20.000 G	1.00 M	17.435750 G	-47.05	-200.00
20.000 G	25.000 G	1.00 M	24.806750 G	-43.64	-200.00

LE & 2440MHz

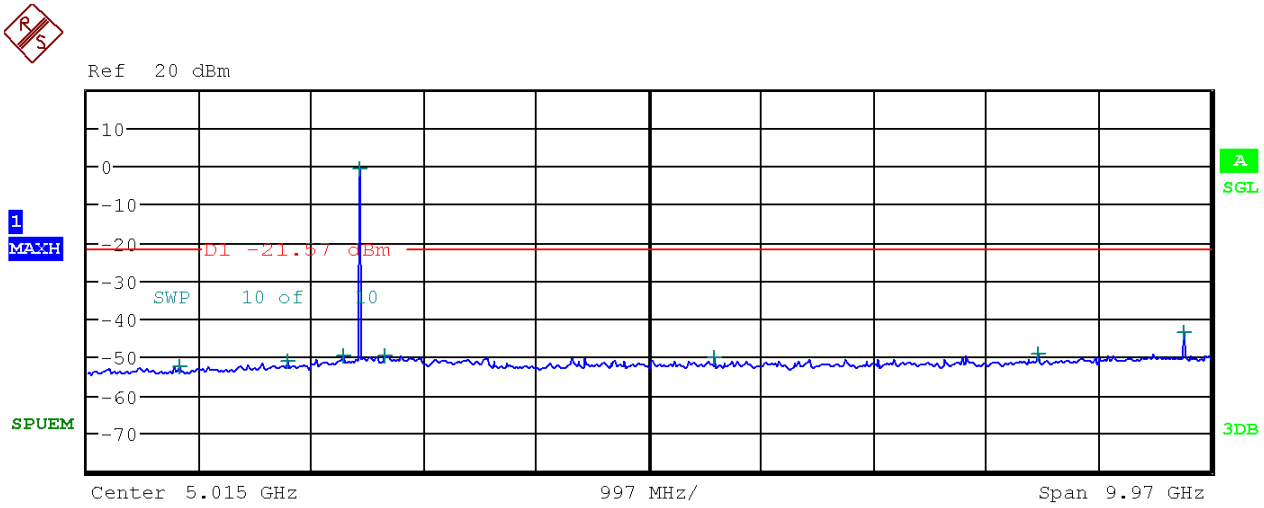
Reference



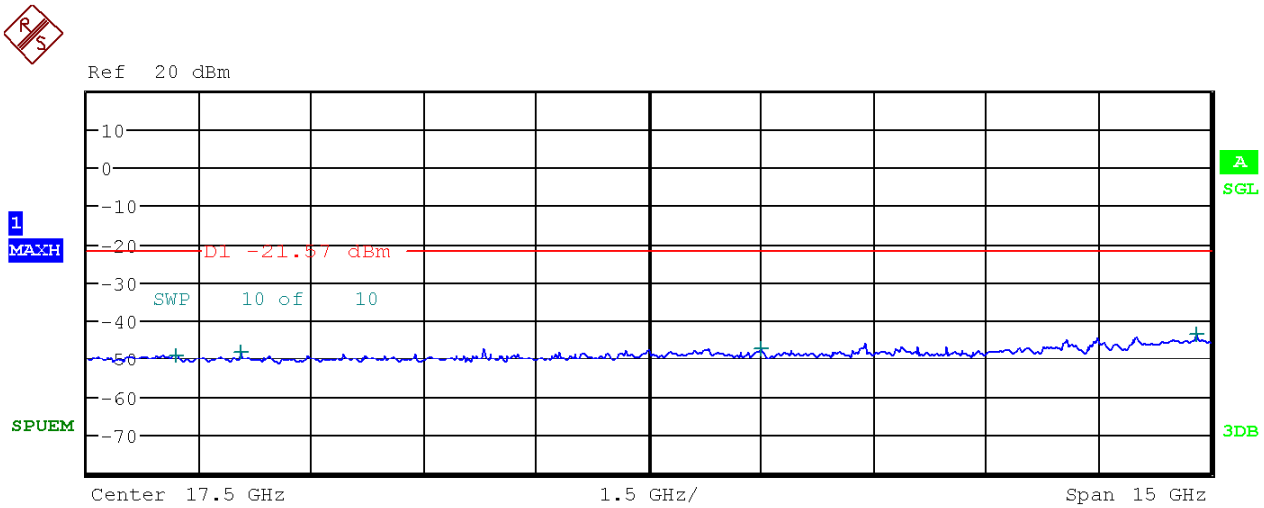
Conducted Spurious Emissions



Conducted Spurious Emissions



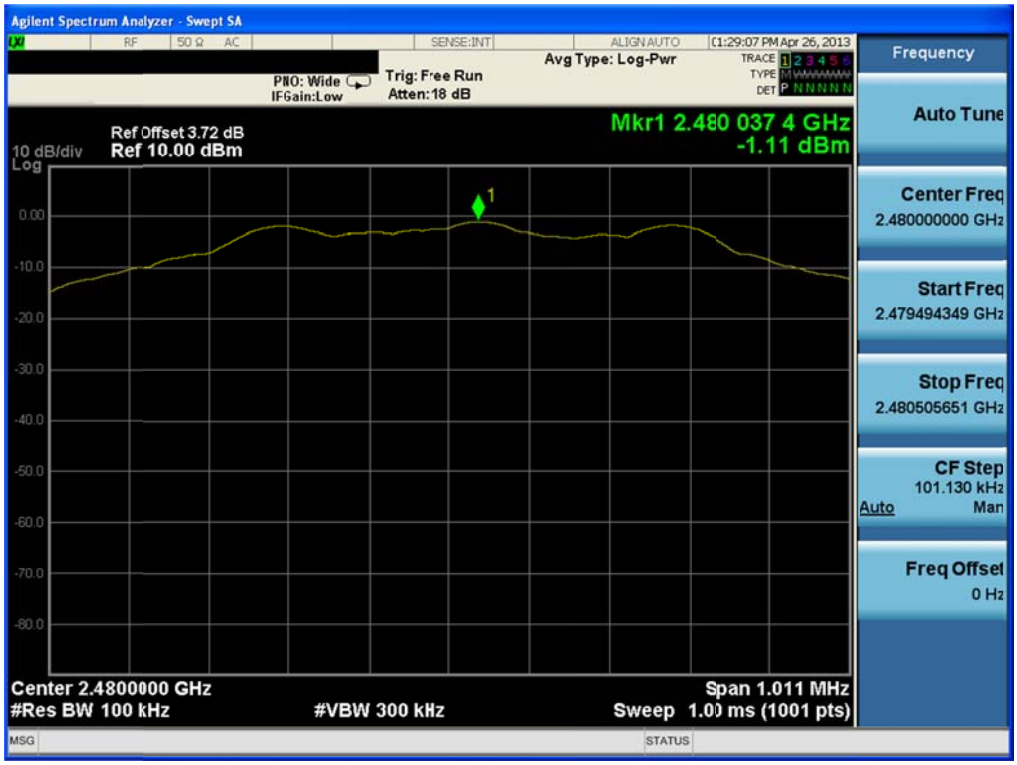
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	849.650000 M	-52.48	-200.00
1.000 G	2.000 G	1.00 M	1.797000 G	-51.01	-200.00
2.000 G	2.400 G	1.00 M	2.301920 G	-49.82	-200.00
2.400 G	2.483 G	1.00 M	2.440063 G	-0.88	-200.00
2.483 G	3.000 G	1.00 M	2.669027 G	-49.51	-200.00
3.000 G	6.000 G	1.00 M	5.597100 G	-50.21	-200.00
6.000 G	9.000 G	1.00 M	8.458800 G	-49.32	-200.00
9.000 G	10.000 G	1.00 M	9.759900 G	-43.83	-200.00



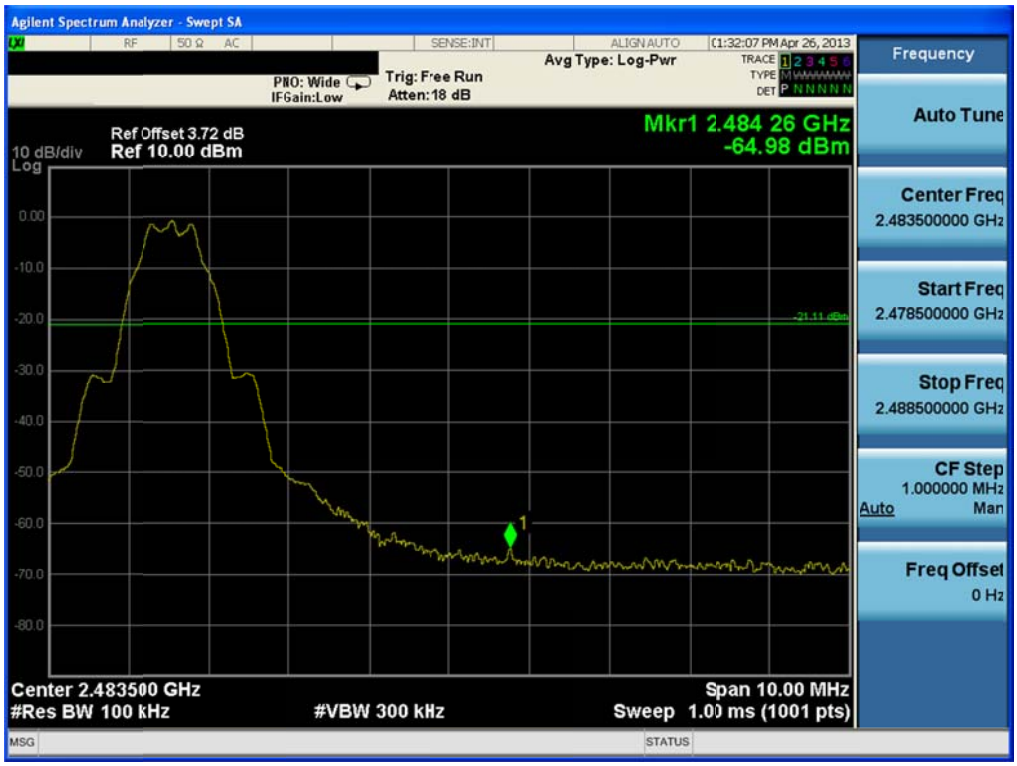
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
10.000 G	12.000 G	1.00 M	11.183800 G	-49.21	-200.00
12.000 G	15.000 G	1.00 M	12.040800 G	-48.27	-200.00
15.000 G	20.000 G	1.00 M	18.996000 G	-47.36	-200.00
20.000 G	25.000 G	1.00 M	24.796000 G	-43.80	-200.00

LE & 2480MHz

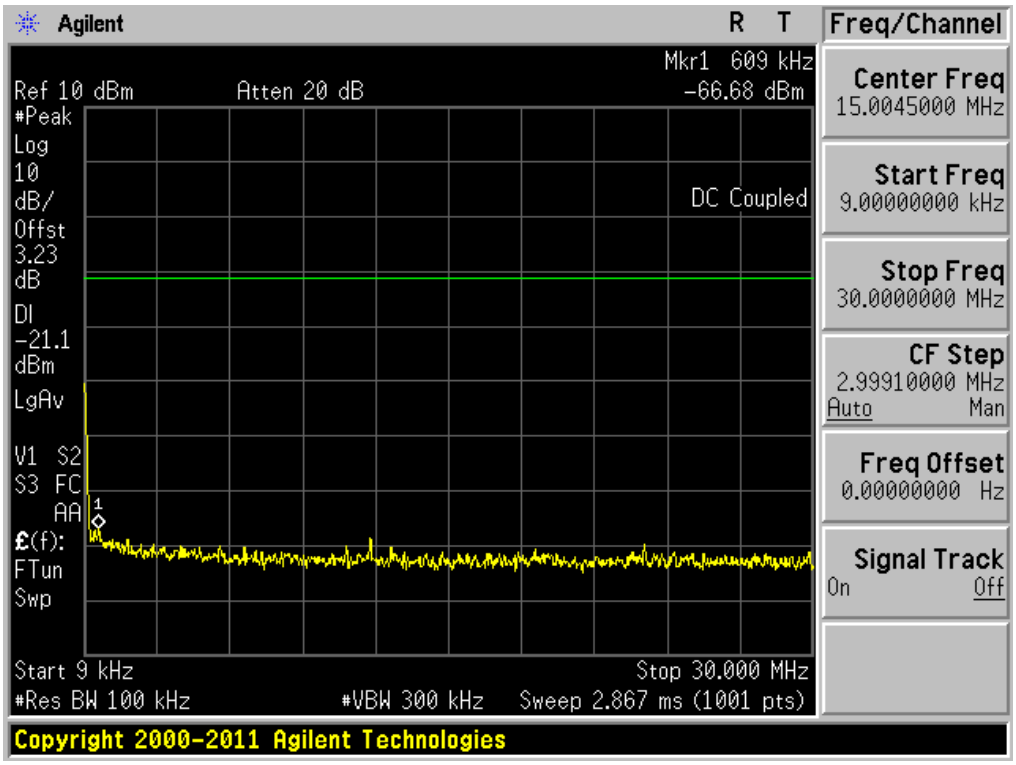
Reference

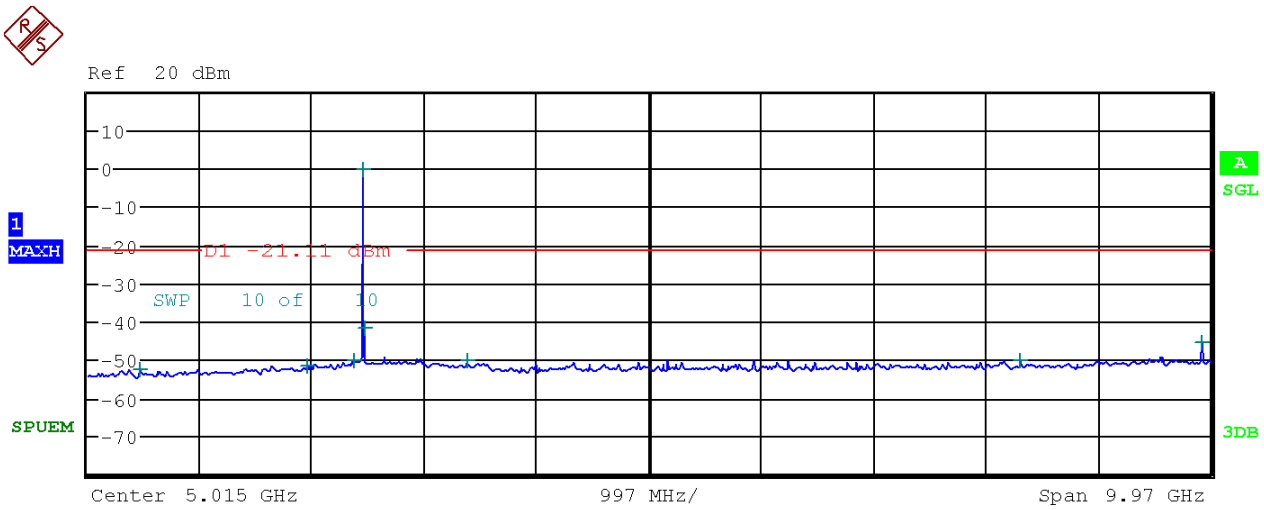


High Band-edge

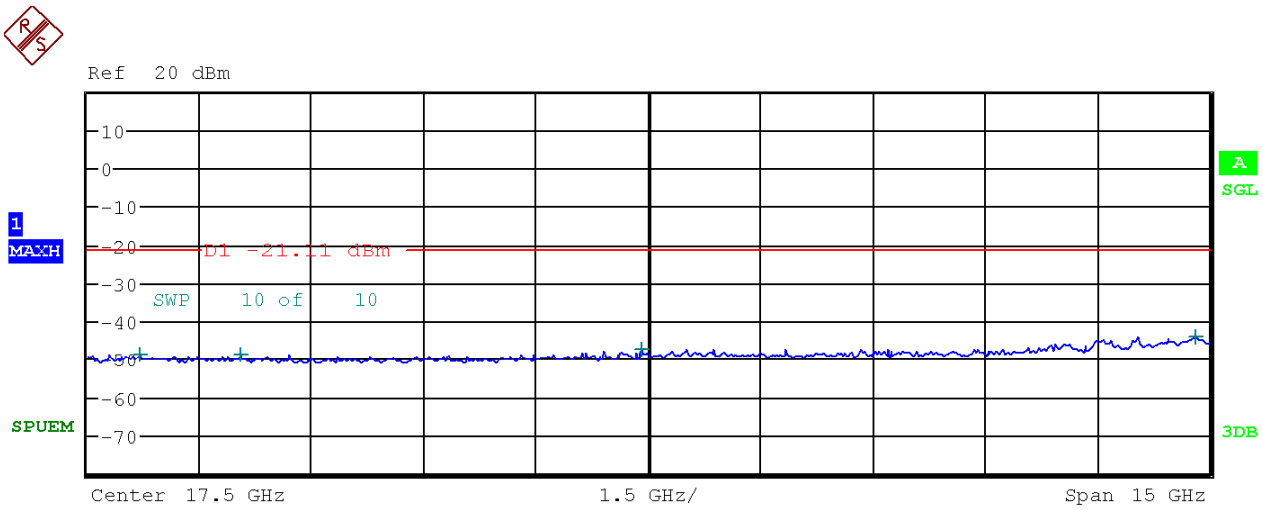


Conducted Spurious Emissions





Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
30.000 M	1.000 G	1.00 M	493.854000 M	-52.63	-200.00
1.000 G	2.000 G	1.00 M	1.981300 G	-51.59	-200.00
2.000 G	2.400 G	1.00 M	2.388200 G	-50.32	-200.00
2.400 G	2.483 G	1.00 M	2.480210 G	-0.56	-200.00
2.483 G	3.000 G	1.00 M	2.483500 G	-41.73	-200.00
3.000 G	6.000 G	1.00 M	3.399600 G	-50.37	-200.00
6.000 G	9.000 G	1.00 M	8.313300 G	-50.11	-200.00
9.000 G	10.000 G	1.00 M	9.920000 G	-45.46	-200.00



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
10.000 G	12.000 G	1.00 M	10.696800 G	-48.72	-200.00
12.000 G	15.000 G	1.00 M	12.053100 G	-48.62	-200.00
15.000 G	20.000 G	1.00 M	17.407250 G	-47.37	-200.00
20.000 G	25.000 G	1.00 M	24.801500 G	-44.11	-200.00

7.5 Radiated Measurement.

7.5.1 Radiated Spurious Emissions.

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

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

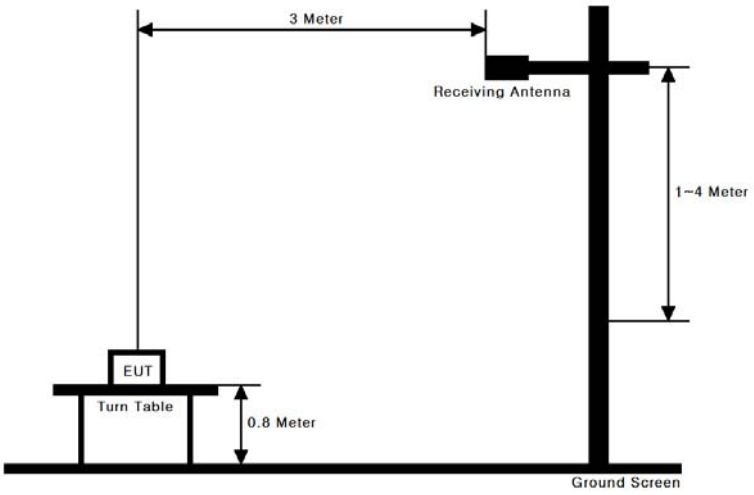
** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, 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	3600 ~ 4400	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	4.5 ~ 5.15	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~	149.9 ~ 150.05	1645.5 ~ 1646.5	5.35 ~ 5.46	17.7 ~ 21.4
4.125 ~ 4.128	12.52025	156.52475 ~	1660 ~ 1710	7.25 ~ 7.75	22.01 ~ 23.12
4.17725 ~ 4.17775	12.57675 ~	156.52525	1718.8 ~ 1722.2	8.025 ~ 8.5	23.6 ~ 24.0
4.20725 ~ 4.20775	12.57725	156.7 ~ 156.9	2200 ~ 2300	9.0 ~ 9.2	31.2 ~ 31.8
6.215 ~ 6.218	13.36 ~ 13.41	162.0125 ~ 167.17	2310 ~ 2390	9.3 ~ 9.5	36.43 ~ 36.5
6.26775 ~ 6.26825	16.42 ~ 16.423	167.72 ~ 173.2	2483.5 ~ 2500	10.6 ~ 12.7	Above 38.6
6.31175 ~ 6.31225	16.69475 ~	240 ~ 285	2655 ~ 2900	13.25 ~ 13.4	
8.291 ~ 8.294	16.69525	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	16.80425 ~	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	16.80475	608 ~ 614	3345.8 ~ 3358		
	25.5 ~ 25.67	960 ~ 1240			
	37.5 ~ 38.25				
	73 ~ 74.6				
	74.8 ~ 75.2				

▪ **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 turntable, 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.

Note : Measurement Instrument Setting for Radiated Emission Measurements.

1. **Frequency Range Below 1 GHz**
   RBW = 100 or 120 KHz, VBW = 3 x RBW , Detector = Peak or Quasi Peak

2. **Frequency Range > 1 GHz**

   Peak Measurement > 1 GHz
   RBW = 1 MHz , VBW = 3 MHz, Detector = Peak, Sweep time = Auto, Trace mode = Max Hold until the trace stabilizes

   Average Measurement > 1GHz
   RBW = 1MHz, VBW ≥ 1/T, Detector = Peak, Sweep Time = Auto, Trace Mode = Max Hold for at least 50 * (1/Duty cycle) traces

Mode	Duty Cycle(%)	T_{on}(us)	1/T_{on}(kHz)	Determined VBW Setting
BT(LE)	62.50	390	2.564	3 kHz

9 KHz ~ 25GHz Data(*LE*)

▪ Lowest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2388.88	V	Z	PK	49.96	-5.24	44.72	74.00	29.28
2388.08	V	Z	AV	38.97	-5.24	33.73	54.00	20.27
4804.35	H	Z	PK	49.55	2.11	51.66	74.00	22.34
4804.20	H	Z	AV	43.13	2.11	45.24	54.00	8.76
-	-	-	-	-	-	-	-	-

▪ Middle Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4880.48	H	Z	PK	49.68	2.16	51.84	74.00	22.16
4880.19	H	Z	AV	43.71	2.16	45.87	54.00	8.13
-	-	-	-	-	-	-	-	-

▪ Highest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2484.47	H	Y	PK	50.64	-4.99	45.65	74.00	28.35
2484.33	H	Y	AV	39.47	-4.99	34.48	54.00	19.52
4960.11	H	Z	PK	49.51	1.70	51.21	74.00	22.79
4960.12	H	Z	AV	43.42	1.70	45.12	54.00	8.88
-	-	-	-	-	-	-	-	-

Note.

1.No other spurious and harmonic emissions were reportedgreater than listed emissions above table.
2.Above listed point data is the worst case data.
3.Sample Calculation.
Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain

7.6 POWERLINE CONDUCTED EMISSIONS

Test Requirements and limit, §15.207&RSS-Gen[7.2.2]

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 supportequipment.

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 a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.

▣RESULT PLOTS

AC Line Conducted Emissions (Graph)

Test Mode: LE& 2440MHz

Digital EMC

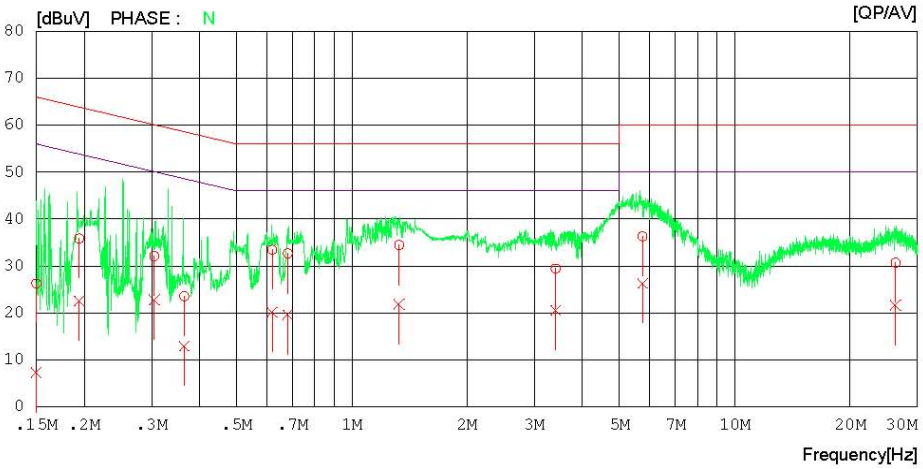
Results of Conducted Emission

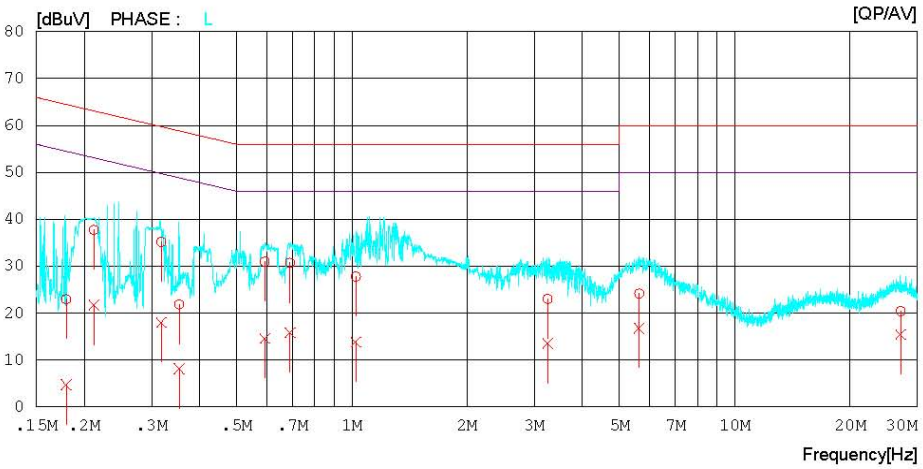
Digital EMC
Date : 2013-05-10

Model No.	:	KYY21	Referrence No.	:	
Type	:		Power Supply	:	120 V 60 Hz
Serial No.	:	Identical prototype	Temp/Humi.	:	23 'C 45 % R.H.
Test Condition	:	BT	Operator	:	H.S SON

Memo : LE

LIMIT : FCC P15.207 QP
FCC P15.207 AV





AC Line Conducted Emissions (List)

Test Mode: LE& 2440MHz

Results of Conducted Emission

Digital EMC
Date : 2013-05-10

Model No.	: KYY21	Referrence No.	:
Type	:	Power Supply	: 120 V 60 Hz
Serial No.	: Identical prototype	Temp/Humi.	: 23 'C 45 % R.H.
Test Condition	: BT	Operator	: H.S SON

Memo : LE

LIMIT : FCC P15.207 QP
FCC P15.207 AV

NO	FREQ	READING QP	READING AV	C.FACTOR	RESULT QP	RESULT AV	LIMIT QP	LIMIT AV	MARGIN QP	MARGIN AV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.15000	26.2	7.2	0.1	26.3	7.3	66.0	56.0	39.7	48.7	N
2	0.19409	35.8	22.5	0.1	35.9	22.6	63.9	53.9	28.0	31.3	N
3	0.30514	32.0	22.7	0.1	32.1	22.8	60.1	50.1	28.0	27.3	N
4	0.36504	23.4	12.8	0.1	23.5	12.9	58.6	48.6	35.1	35.7	N
5	0.61923	33.4	20.0	0.1	33.5	20.1	56.0	46.0	22.5	25.9	N
6	0.68096	32.5	19.5	0.1	32.6	19.6	56.0	46.0	23.4	26.4	N
7	1.32850	34.3	21.7	0.1	34.4	21.8	56.0	46.0	21.6	24.2	N
8	3.40400	29.3	20.4	0.1	29.4	20.5	56.0	46.0	26.6	25.5	N
9	5.74850	36.1	26.1	0.2	36.3	26.3	60.0	50.0	23.7	23.7	N
10	26.29650	30.2	21.1	0.5	30.7	21.6	60.0	50.0	29.3	28.4	N
11	0.17945	22.9	4.7	0.1	23.0	4.8	64.5	54.5	41.5	49.7	L
12	0.21211	37.6	21.6	0.1	37.7	21.7	63.1	53.1	25.4	31.4	L
13	0.31815	35.1	17.9	0.1	35.2	18.0	59.8	49.8	24.6	31.8	L
14	0.35399	21.8	8.1	0.1	21.9	8.2	58.9	48.9	37.0	40.7	L
15	0.59274	30.9	14.5	0.1	31.0	14.6	56.0	46.0	25.0	31.4	L
16	0.68920	30.6	15.7	0.1	30.7	15.8	56.0	46.0	25.3	30.2	L
17	1.02550	27.7	13.7	0.1	27.8	13.8	56.0	46.0	28.2	32.2	L
18	3.24700	23.0	13.4	0.1	23.1	13.5	56.0	46.0	32.9	32.5	L
19	5.63050	24.0	16.6	0.2	24.2	16.8	60.0	50.0	35.8	33.2	L
20	27.12500	20.0	15.0	0.5	20.5	15.5	60.0	50.0	39.5	34.5	L

7.7Occupied Bandwidth

Test Requirements, RSS-Gen [4.6.1]

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

▣TEST PROCEDURE

The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%.
The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted.
Where practical,a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual.

▣TEST RESULTS:- Measurement Data: N/A

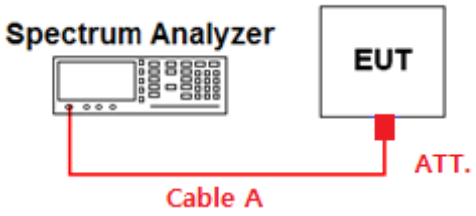
8. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent	N9020A	13/01/08	14/01/08	MY49100833
Spectrum Analyzer	Agilent	E4440A	12/10/22	13/10/22	US45303051
Spectrum Analyzer	Rohde Schwarz	FSQ26	13/02/14	14/02/14	200445
Power Sensor	Rohde Schwarz	NRP-Z81	12/06/28	13/06/28	1137.9009.02-101001-EA
Virtual Power Meter(S/W)	Rohde Schwarz	R&S Power Viewer Plus	-	-	V 4.1.0
Digital Multimeter	H.P	34401A	13/02/27	14/02/27	3146A13475
Signal Generator	Rohde Schwarz	SMR20	13/02/27	14/02/27	101251
Vector Signal Generator	Rohde Schwarz	SMJ100A	13/01/08	14/01/08	100148
Thermo hygrometer	BODYCOM	BJ5478	12/06/20	13/06/20	120612-2
DC Power Supply	HP	6622A	13/02/27	14/02/27	3448A03760
High-pass filter	Wainwright	WHNX3.0	12/09/17	13/09/17	9
BILOG ANTENNA	SCHAFFNER	CBL6112B	12/11/06	14/11/06	2737
LOOP Antenna	Schwarzbeck	FMZB1513	12/09/24	13/09/24	1513-128
HORN ANT	ETS	3115	12/02/20	14/02/20	6419
HORN ANT	A.H.Systems	SAS-574	13/03/20	15/03/20	154
Attenuator (3dB)	WEINSCHEL	56-3	12/09/17	13/09/17	Y2342
Amplifier (22dB)	H.P	8447E	13/01/08	14/01/08	2945A02865
Amplifier (30dB)	Agilent	8449B	13/02/27	14/02/27	3008A00370
EMI TEST RECEIVER	R&S	ESCI	13/02/27	14/02/27	100364
EMI TEST RECEIVER	R&S	ESU	13/01/08	14/01/08	100014
CVCF	KIKUSUI	PCR1000L	12/09/15	13/09/15	14110610
LISN	R&S	ESH2-Z5	12/09/18	13/09/18	828739/006

APPENDIX I

Conducted Test set up Diagram &Path lossInformation

▪Conducted Measurement



Offset value information

Frequency (GHz)	Path Loss (dB)	Frequency (GHz)	Path Loss (dB)
0.03	3.23	15	5.21
1	3.51	20	5.32
2402& 2440 & 2480	3.72	26.5	6.45
5	4.27	-	-
10	5.06	-	-

Note. 1: The path loss (= S/A's offset value) from EUT to Spectrum analyzer was measured and used for test.
Note. 2: For conducted spurious emissions, the offset values were saved as the transducer factors on the spurious measurement function of the spectrum analyzer and the transducer factor of tested frequency is calculated and corrected automatically by the spectrum analyzer's measurement function.

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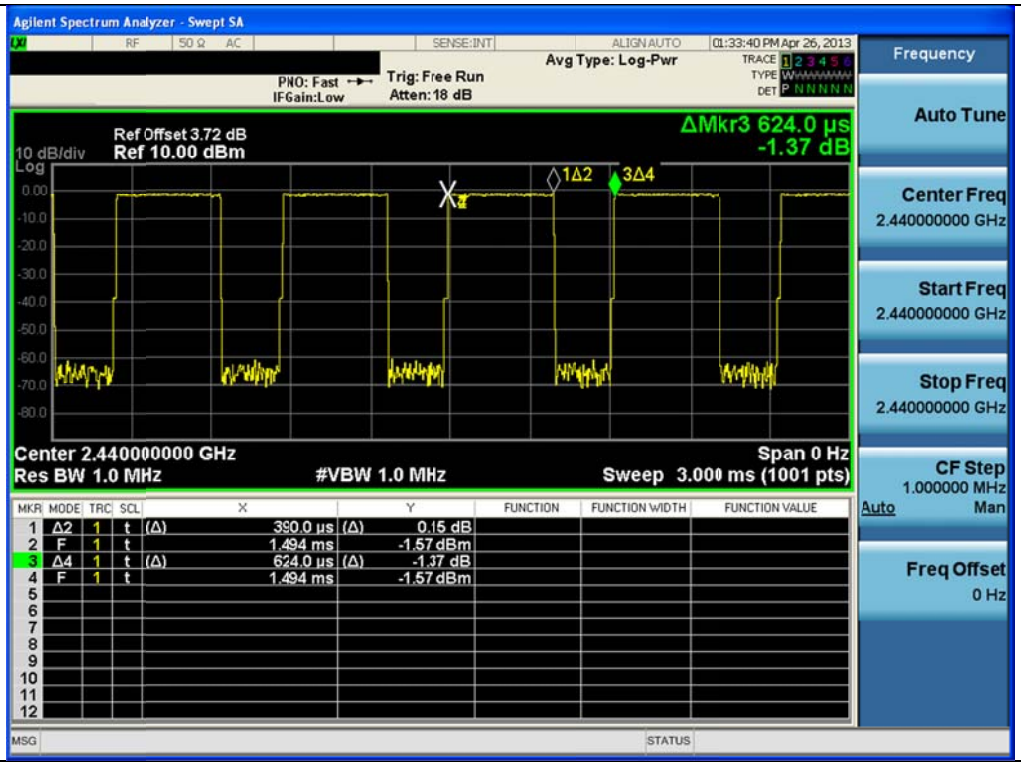
APPENDIX II

Duty Cycle Plot & Calculation



Duty Cycle = T_{on} / (T_{on} + T_{off}) =390 us / 624 us = 62.50 %