



RF TEST REPORT

Applicant Huawei Technologies Co., Ltd.
FCC ID QISLYO-L02
Product Smart Phone
Model HUAWEI LYO-L02
Report No. RHA1606-0039RF04
Issue Date June 16, 2016

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15C (2015)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Lingling Kang

Reviewed by: lingling Kang/Manager

Kai Xu

Approved by: Kai Xu/Director



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国际互认
检测
TESTING
CNAS L2264

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Summary of Measurement Results

Number	Summary of measurements of results	Clause in FCC rules	Verdict
1	Peak Power Output -Conducted	15.247(b)(1)	PASS
2	Occupied Bandwidth (20dB)	15.247(a)(1)	PASS
3	Frequency Separation	15.247(a)(1)	PASS
4	Time of Occupancy (Dwell Time)	15.247(a)(1)(iii)	PASS
5	Band Edge Compliance	15.247(d)	PASS
6	Spurious Radiated Emissions in the restricted band	15.247(d),15.205,15.209	PASS
7	Number of Hopping Frequency	15.247(a)(1)(iii)	PASS
8	Spurious RF Conducted Emissions	15.247(d)	PASS
9	Radiates Emission	15.247(d),15.205,15.209	PASS
10	AC Power Line Conducted Emission	15.207	PASS
Date of Testing: June 8, 2016~ June 13, 2016			

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of TA technology (shanghai) co., Ltd. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above. This report must not be used by the client to claim product certification, approval, or endorsement by CNAS or any government agencies.

1.2 Test facility

CNAS (accreditation number: L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (recognition number is 428261)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
City: Shanghai
Post code: 201201
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Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2 General Description of Equipment under Test

Client Information

Applicant	Huawei Technologies Co., Ltd.
Applicant address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129 P.R.China
Manufacturer	Huawei Technologies Co., Ltd.
Manufacturer address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129 P.R.China

Accessory Equipment Details

Name	Model	Manufacturer	Note
Battery 1	HB4342A1RBC	Sunwoda electronic Co., Ltd	2200mAh
Battery 2	HB4342A1RBC	Scud (Fujian) Electronics Co., Ltd	2200mAh
Adapter 1	HW-050100B01	Huizhou BYD Electronic CO.,LTD	/
Adapter 2	HW-050100E01	Huizhou BYD Electronic CO.,LTD	/
Adapter 3	HW-050100B01	SHENZHEN HUNTKEY ELECTRIC CO., LTD	/
Adapter 4	HW-050100E01	SHENZHEN HUNTKEY ELECTRIC CO., LTD	/
Adapter 5	HW-050100B01	Dongguan Phitek Electronics Co.,Ltd	/
Adapter 6	HW-050100E01	Dongguan Phitek Electronics Co.,Ltd	/

General information

Model:	HUAWEI LYO-L02		
IMEI:	869325021672861		
HW Version:	Ver.A		
SW Version:	LYO-L02C000B009		
Power Supply:	Battery/AC adapter		
Antenna Type:	Internal Antenna		
Test Mode(s):	Basic Rate	Enhanced Data Rate(EDR)	
Modulation Type:	Frequency Hopping Spread Spectrum (FHSS)		
	GFSK	$\pi/4$ DQPSK	8DQPSK
Packet Type: (Maximum Payload)	DH5	2DH5	3DH5
Max. Conducted Power	5.83dBm		
Tested Frequency Range(s):	2400 ~ 2483.5 MHz		
Note: 1. The information of the EUT is declared by the manufacturer. Please refer to the			



specifications or user manual for details.



2.1 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards

FCC CFR47 Part 15C (2015) Radio Frequency Devices

ANSI C63.10 (2013)

DA00-705 Filing and Frequency Measurement Guidelines For Frequency Hopping Spread Spectrum System.(2000)

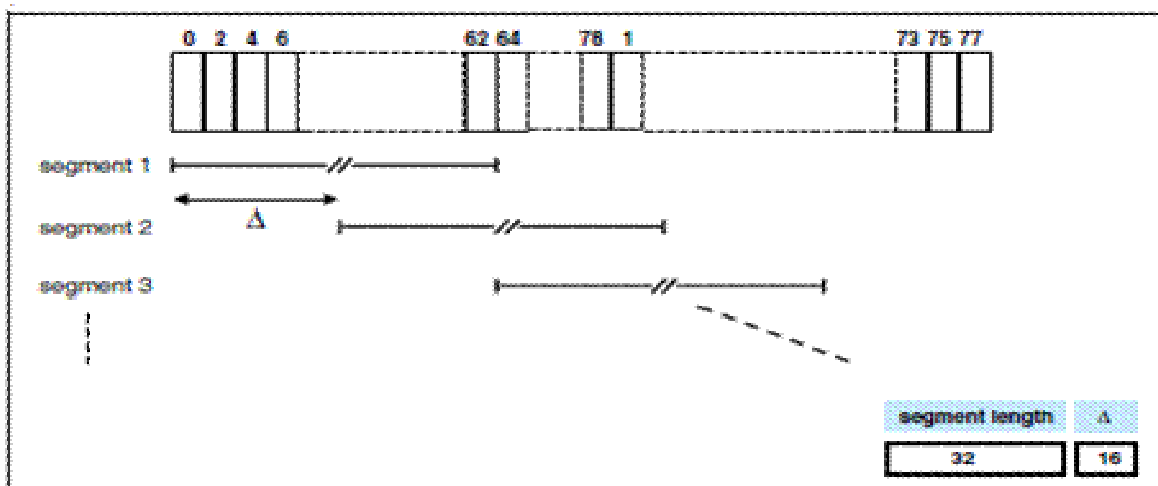
3 Information about the FHSS characteristics

3.1 Pseudorandom Frequency Hopping Sequence

Frequency Hopping Systems. A spread spectrum system in which the carrier is modulated with the coded information in a conventional manner causing a conventional spreading of the RF energy about the frequency carrier. The frequency of the carrier is not fixed but changes at fixed intervals under the direction of a coded sequence. The wide RF bandwidth needed by such a system is not required by spreading of the RF energy about the carrier but rather to accommodate the range of frequencies to which the carrier frequency can hop. The test of a frequency hopping system is that the near term distribution of hops appears random, the long term distribution appears evenly distributed over the hop set, and sequential hops are randomly distributed in both direction and magnitude of change in the hop set.

The selection scheme chooses a segment of 32 hop frequencies spanning about 64 MHz and visits these hops in a pseudo-random order. Next, a different 32-hop segment is chosen, etc. In the page, master page response, slave page response, page scan, inquiry, inquiry response and inquiry scan hopping sequences, the same 32-hop segment is used all the time (the segment is selected by the address; different devices will have different paging segments).

When the basic channel hopping sequence is selected, the output constitutes a pseudo-random sequence that slides through the 79 hops. The principle is depicted in the figure below.



Hop selection scheme in CONNECTION state.

Pseudorandom Frequency Hopping Sequence Table as below:

Channel: 08, 24, 40, 56, 40, 56, 72, 09, 01, 09, 33, 41, 33, 41, 65, 73, 53, 69, 06, 22, 04, 20, 36, 52, 38, 46, 70, 78, 68, 76, 21, 29, 10, 26, 42, 58, 44, 60, 76, 13, 03, 11, 35, 43, 37, 45, 69, 77, 55, 71, 08, 24, 08, 24, 40, 56, 40, 48, 72, 01, 72, 01, 25, 33, 12, 28, 44, 60, 42, 58, 74, 11, 05, 13, 37, 45, etc.

Each frequency used equally on the average by each transmitter.

The system receiver have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

3.2 Equal Hopping Frequency Use

All Bluetooth units participating in the Pico net are time and hop-synchronized to the channel. Each new transmission event begins on the next channel in the hopping sequence after the final channel used in the previous transmission event.

3.3 System Receiver Input Bandwidth

Each channel bandwidth is 1MHz. The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

4 Test Information

4.1 Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. There is more than one Battery and adapter, each one should be applied throughout the compliance test respectively, and however, only the worst case (Battery 2/Adapter 3) will be recorded in this report.

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

Test Modes		
Band	Radiated Test Cases	Conducted Test Cases
BT	DH5 GFSK (Channel 0/39/78)	DH5 GFSK(Channel 0/39/78) 2DH5 $\pi/4$ -DQPSK(Channel 0/39/78) 3DH5 8DQPSK(Channel 0/39/78)

Note: The maximum RF output power levels are DH5 for GFSK modulation, For RSE and CSE, only the maximum RF output power is chosen.

4.2 Peak Power Output –Conducted

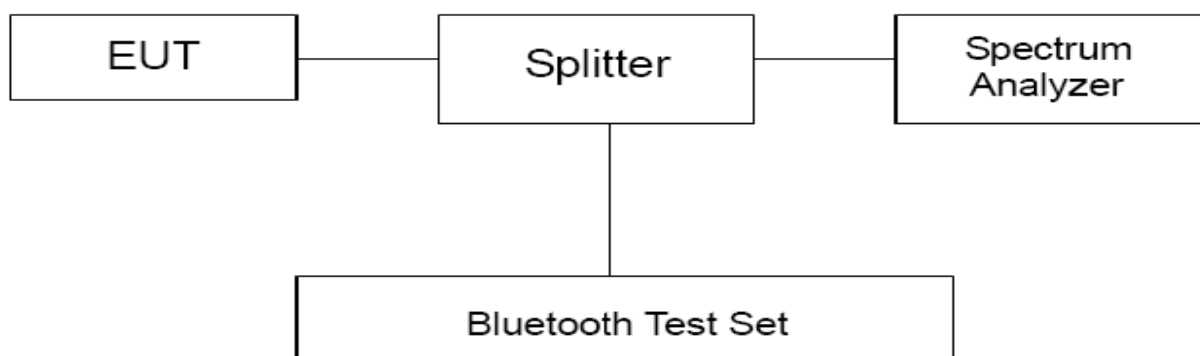
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The EUT is controlled by the Bluetooth test set to ensure max power transmission with proper modulation. The peak detector is used. RBW is set to 2 MHz; VBW is set to 6 MHz. These measurements have been tested at following channels: 0, 39, and 78.

Test Setup



Limits

Rule Part 15.247 (b) (1) specifies that " For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts."

Peak Output Power	≤ 0.125W (21dBm)
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U=0.44$ dB.

**Test Results**

Channel	Frequency (MHz)	Peak Output Power (dBm)			Conclusion
		DH5	2DH5	3DH5	
0	2402	5.83	4.86	5.04	PASS
39	2441	4.87	4.03	4.20	PASS
78	2480	5.58	4.83	4.99	PASS

Note: The measured power density (dBm) has the offset with cable loss already.

4.3 Occupied Bandwidth (20dB)

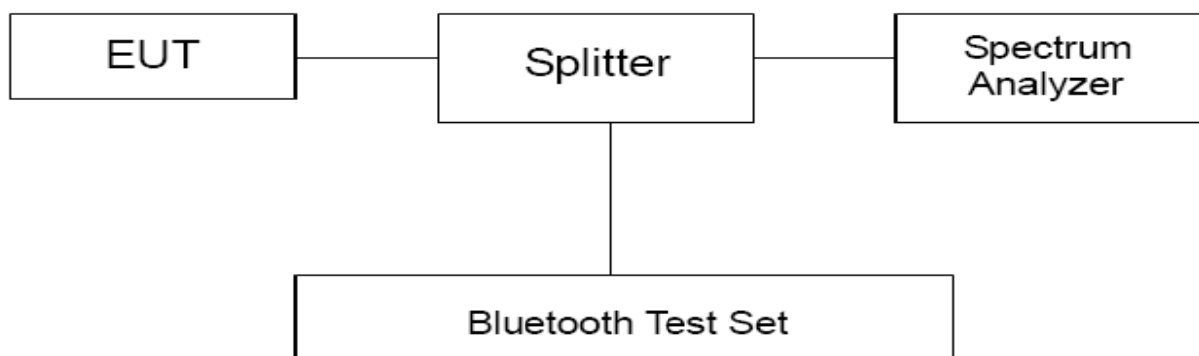
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The occupied bandwidth is measured using spectrum analyzer. RBW is set to 30kHz and VBW is set to 100kHz on spectrum analyzer. -20dB occupied bandwidths are recorded.

Test Setup



Limits

No specific occupied bandwidth requirements in part 15.247(a) (1).

Measurement Uncertainty

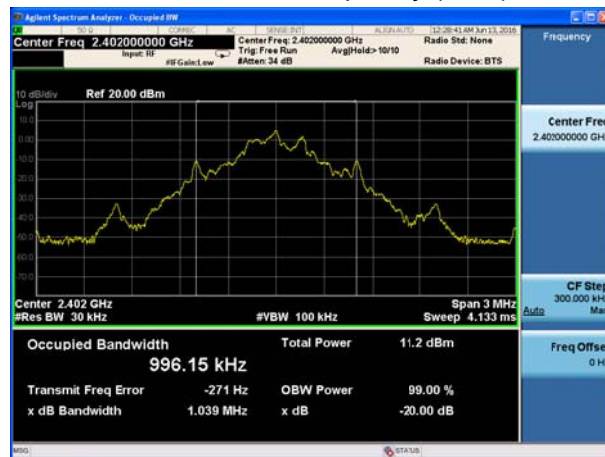
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U=936$ Hz.

**Test Results**

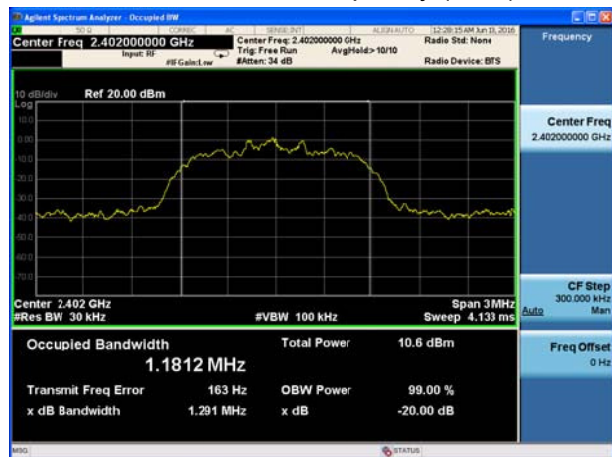
Mode	Channel	Frequency (MHz)	20dB Bandwidth(MHz)
DH5	0	2402	1.039
DH5	39	2441	1.039
DH5	78	2480	1.039
2DH5	0	2402	1.291
2DH5	39	2441	1.290
2DH5	78	2480	1.279
3DH5	0	2402	1.294
3DH5	39	2441	1.298
3DH5	78	2480	1.296



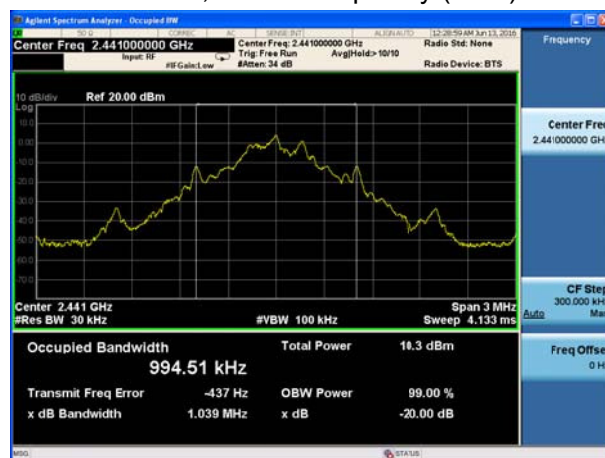
BT DH5 CH0, Carrier frequency (MHz): 2402



BT 2DH5 CH0, Carrier frequency (MHz): 2402



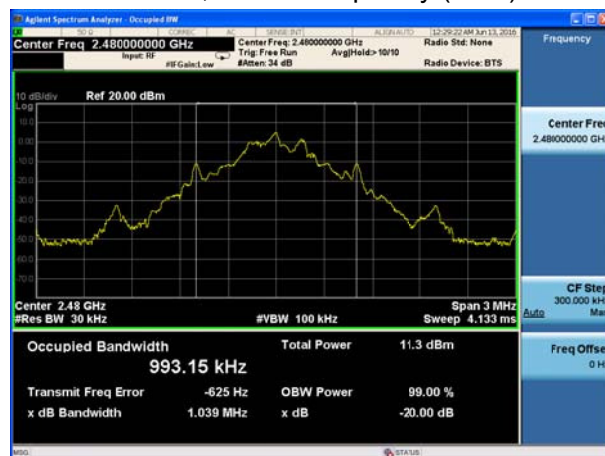
BT DH5 CH39, Carrier frequency (MHz): 2441



BT 2DH5 CH39, Carrier frequency (MHz): 2441



BT DH5 CH78, Carrier frequency (MHz): 2480

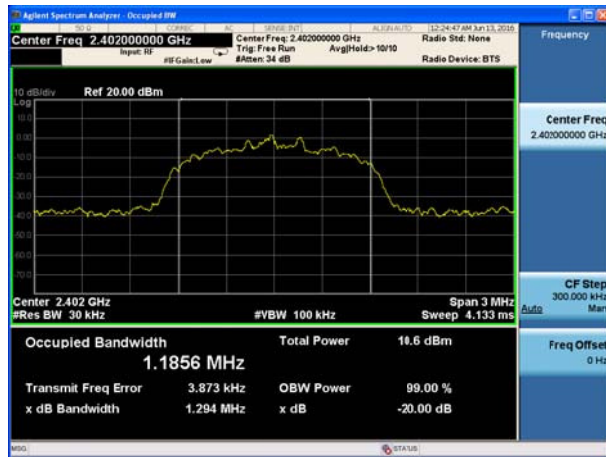


BT 2DH5 CH78, Carrier frequency (MHz): 2480





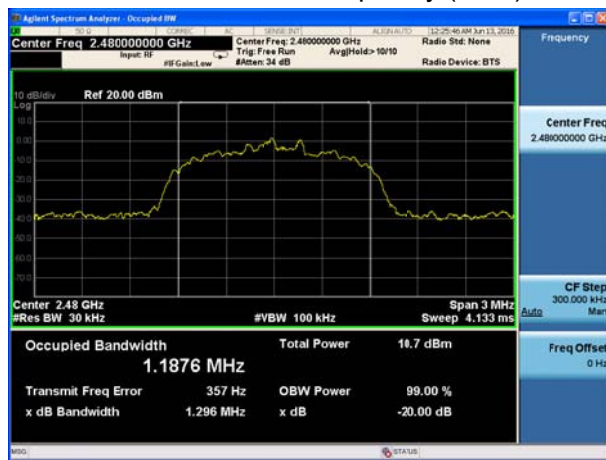
BT 3DH5 CH0, Carrier frequency (MHz): 2402



BT 3DH5 CH39, Carrier frequency (MHz): 2441



BT 3DH5 CH78, Carrier frequency (MHz): 2480



4.4 Frequency Separation

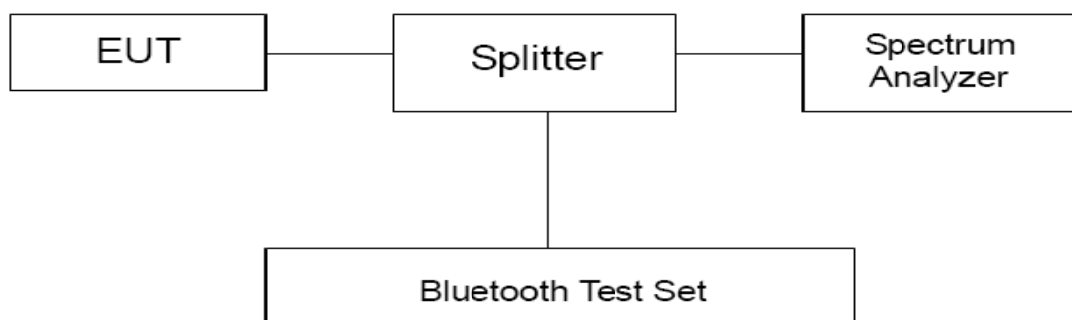
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. RBW is set to 30 kHz and VBW is set to 100 kHz on spectrum analyzer. Set EUT on Hopping on mode.

Test setup



Limits

Rule Part 15.247(a)(1) specifies that “Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. ”

Note: The value of two-thirds of 20 dB bandwidth is always greater than 25 kHz.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U=936$ Hz.

Test Results:

Packet type	Carrier frequency (MHz)	Carrier frequency separation(kHz)	20dB Bandwidth(kHz)	Limit (kHz)	Conclusion
DH5	2441	999	1039	692.67	PASS
2DH5	2441	999	1290	860.00	PASS
3DH5	2441	990	1298	865.33	PASS

Note: The limit is two-thirds of 20 dB bandwidth.

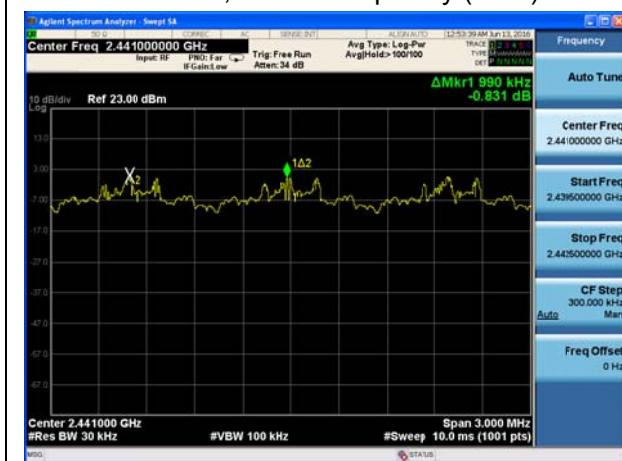
BT DH5 CH39, Carrier frequency (MHz): 2441



BT 2DH5 CH39, Carrier frequency (MHz): 2441



BT 3DH5 CH39, Carrier frequency (MHz): 2441



4.5 Time of Occupancy (Dwell Time)

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

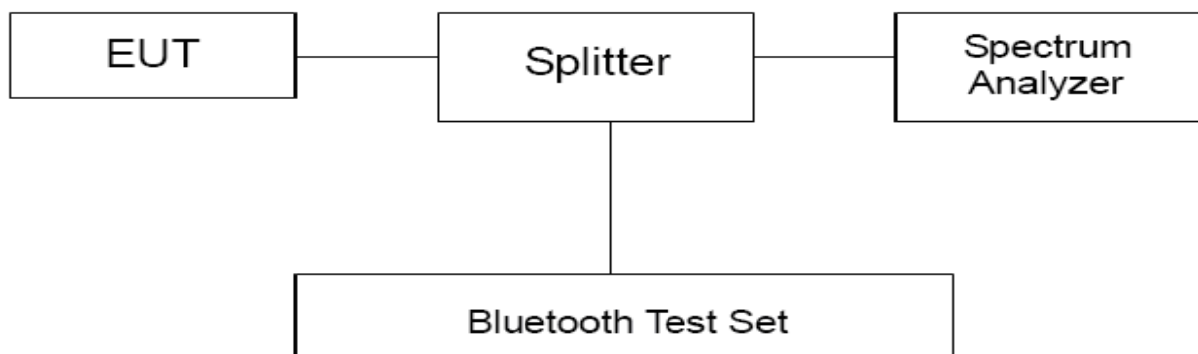
Methods of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. RBW is set to 1MHz and VBW is set to 1MHz on spectrum analyzer .The time slot length is measured of three different packet types, which are available in the Bluetooth technology. Those are DH1, DH3 and DH5 packets. The dwell time is calculated by:

Dwell time = time slot length * hop rate * 0.4s with:

- hop rate=1600 * 1/s for DH1 packet =1600
- hop rate=1600/3 * 1/s for DH3 packet =533.33
- hop rate=1600/5 * 1/s for DH5 packet =320

Test Setup



Limits

Rule Part 22.913(a) specifies that " Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed."

Dwell time	≤ 400ms
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$.

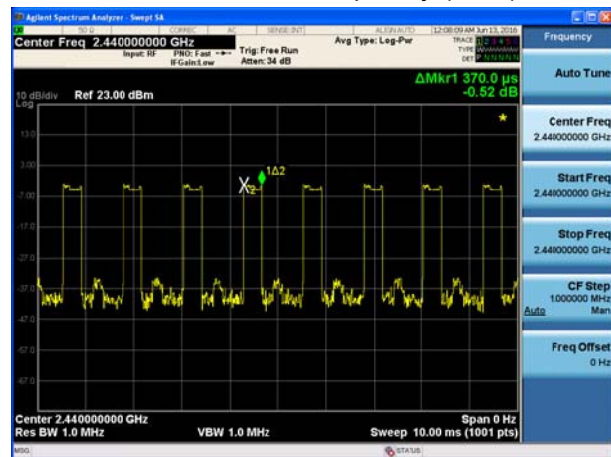
Requirements	Uncertainty	
Dwell Time	DH1	$U=0.64\text{ms}$
	DH3	$U=0.80\text{ms}$
	DH5	$U=0.70\text{ms}$
	2DH1	$U=0.64\text{ms}$
	2DH3	$U=0.80\text{ms}$
	2DH5	$U=0.70\text{ms}$
	3DH1	$U=0.64\text{ms}$
	3DH3	$U=0.80\text{ms}$
	3DH5	$U=0.70\text{ms}$

Test Results:

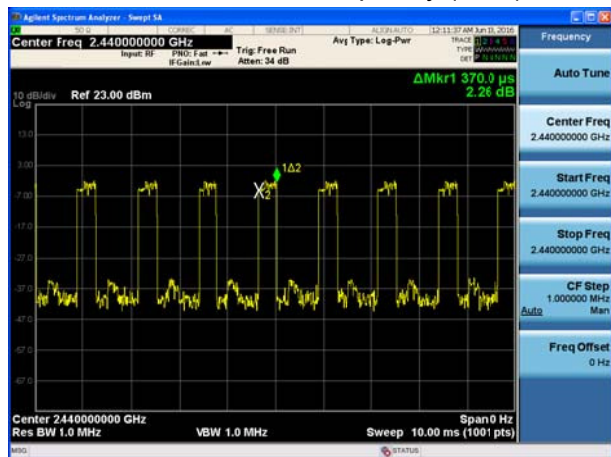
Channel 39					
Packet type	hop rate (1/s)	Time slot length(ms)	Dwell time (ms)	Limit (ms)	Conclusion
DH1	1600	0.37	236.80	400	PASS
DH3	533.33	1.62	345.60	400	PASS
DH5	320	2.85	364.80	400	PASS
2DH1	1600	0.37	236.80	400	PASS
2DH3	533.33	1.62	345.60	400	PASS
2DH5	320	2.88	368.64	400	PASS
3DH1	1600	0.37	236.80	400	PASS
3DH3	533.33	1.62	345.60	400	PASS
3DH5	320	2.87	367.36	400	PASS
Note: Dwell time = time slot length * hop rate * 0.4s					



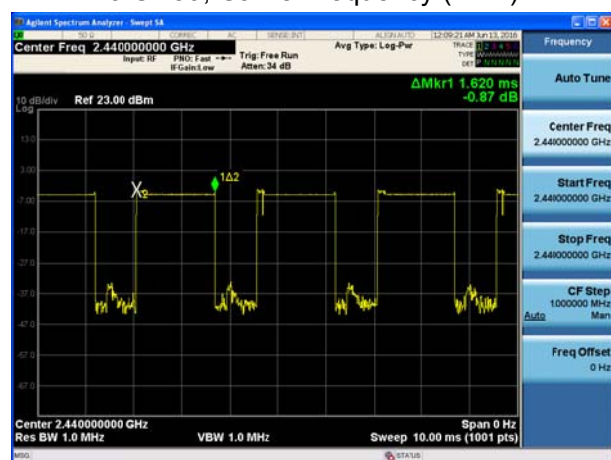
BT DH1 CH39, Carrier frequency (MHz): 2441



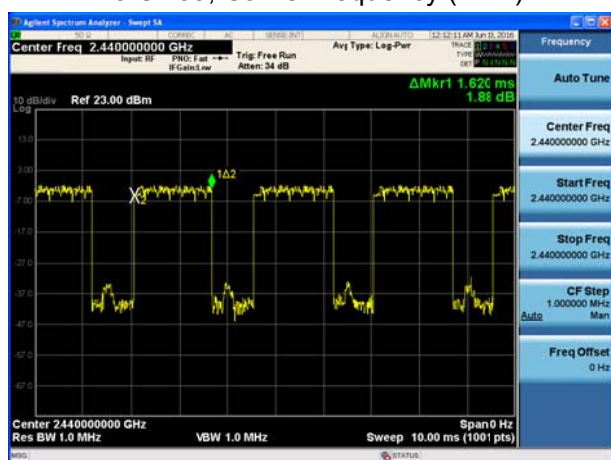
BT 2DH1 CH39, Carrier frequency (MHz): 2441



BT DH3 CH39, Carrier frequency (MHz): 2441



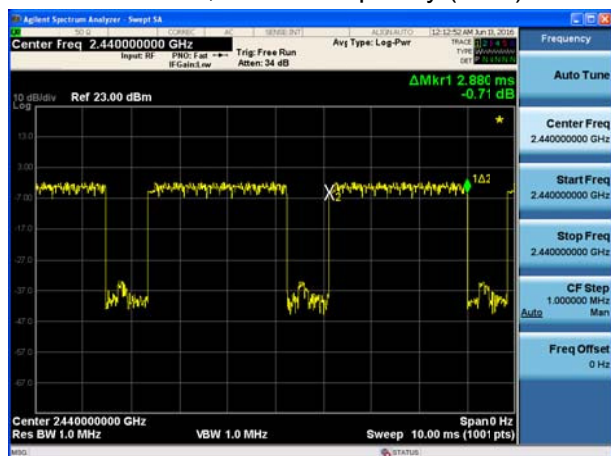
BT 2DH3 CH39, Carrier frequency (MHz): 2441



BT DH5 CH39, Carrier frequency (MHz): 2441

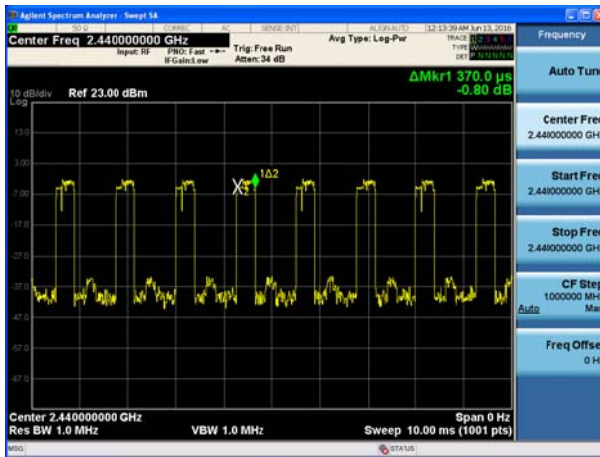


BT 2DH5 CH39, Carrier frequency (MHz): 2441

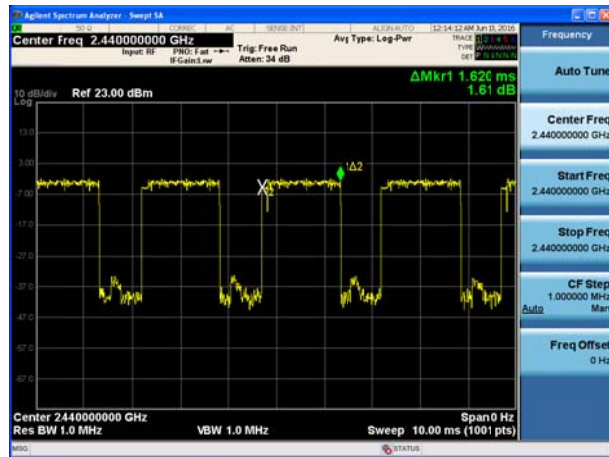




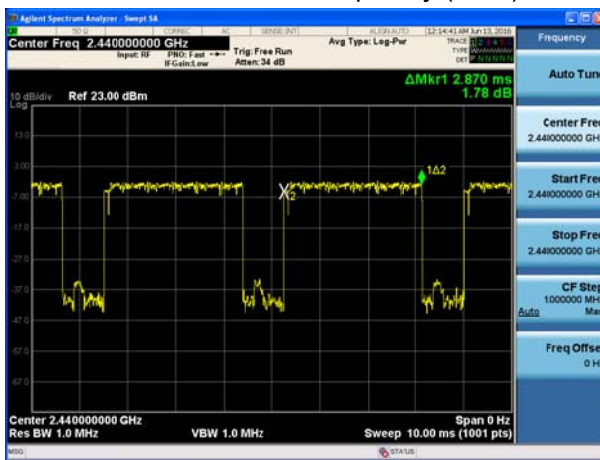
BT 3DH1 CH39, Carrier frequency (MHz): 2441



BT 3DH3 CH39, Carrier frequency (MHz): 2441



BT 3DH5 CH39, Carrier frequency (MHz): 2441



4.6 Band Edge Compliance

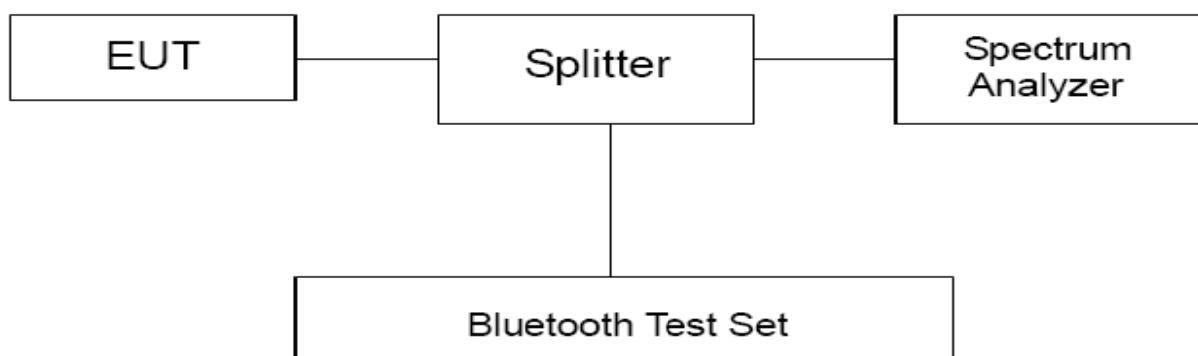
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The lowest and highest channels were measured. The peak detector is used. RBW is set to 100 kHz and VBW is set to 300 kHz on spectrum analyzer. EUT test for Hopping On mode and Hopping Off mode.

Test Setup



Limits

Rule Part 15.247(d) specifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.”

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

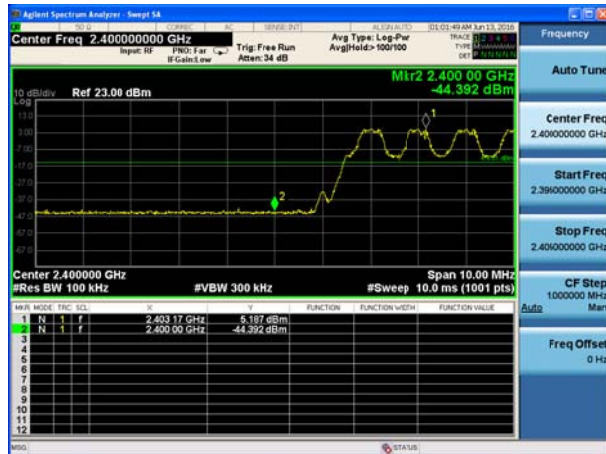
Frequency	Uncertainty
2GHz-3GHz	1.407 dB



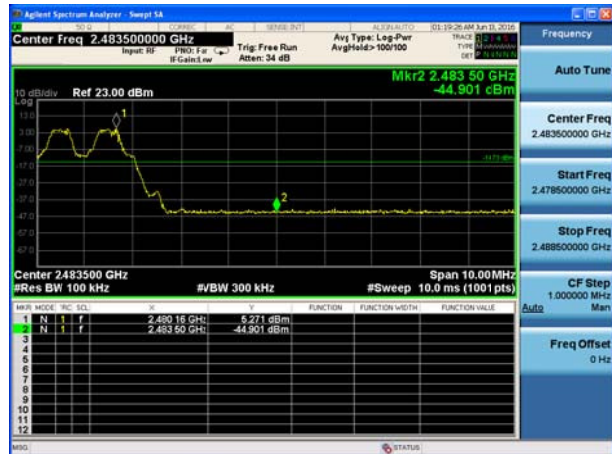
Test Results

Hopping On

BT DH5 CH0, Carrier frequency (MHz): 2402



BT DH5 CH78, Carrier frequency (MHz): 2480



BT 2DH5 CH0, Carrier frequency (MHz): 2402



BT 2DH5 CH78, Carrier frequency (MHz): 2480



BT 3DH5 CH0, Carrier frequency (MHz): 2402



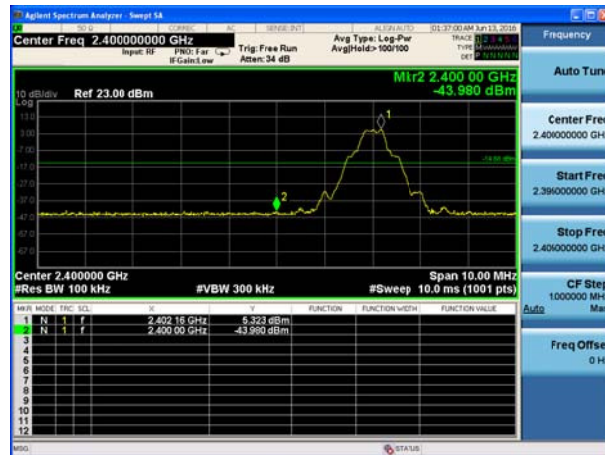
BT 3DH5 CH78, Carrier frequency (MHz): 2480



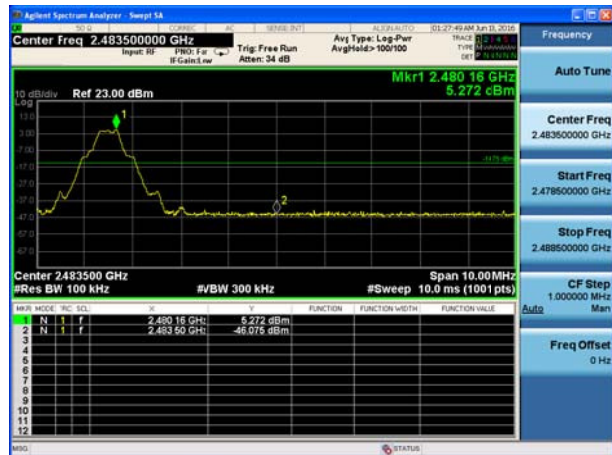


Hopping Off

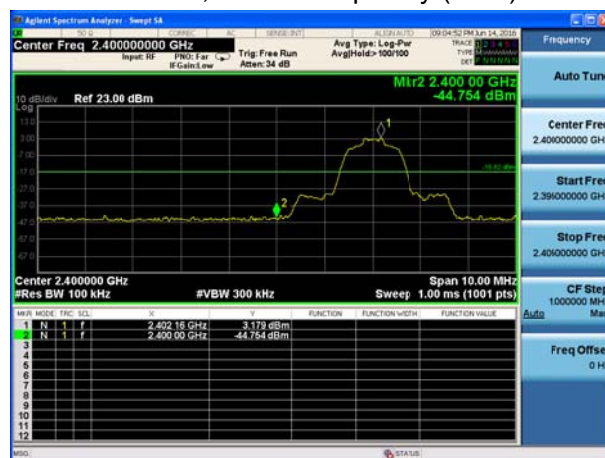
BT DH5 CH0, Carrier frequency (MHz): 2402



BT DH5 CH78, Carrier frequency (MHz): 2480



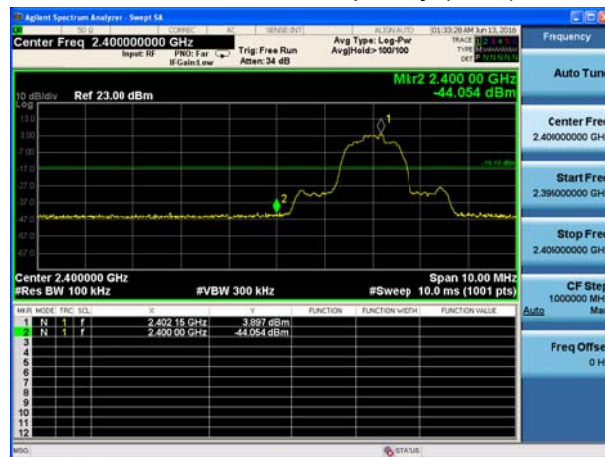
BT 2DH5 CH0, Carrier frequency (MHz): 2402



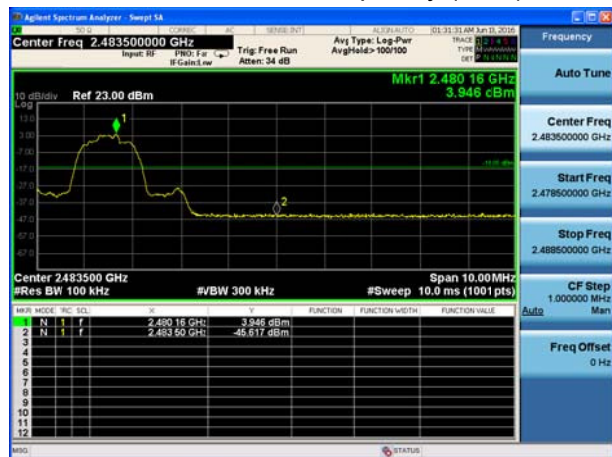
BT 2DH5 CH78, Carrier frequency (MHz): 2480



BT 3DH5 CH0, Carrier frequency (MHz): 2402



BT 3DH5 CH78, Carrier frequency (MHz): 2480



4.7 Spurious Radiated Emissions in the Restricted Band

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.

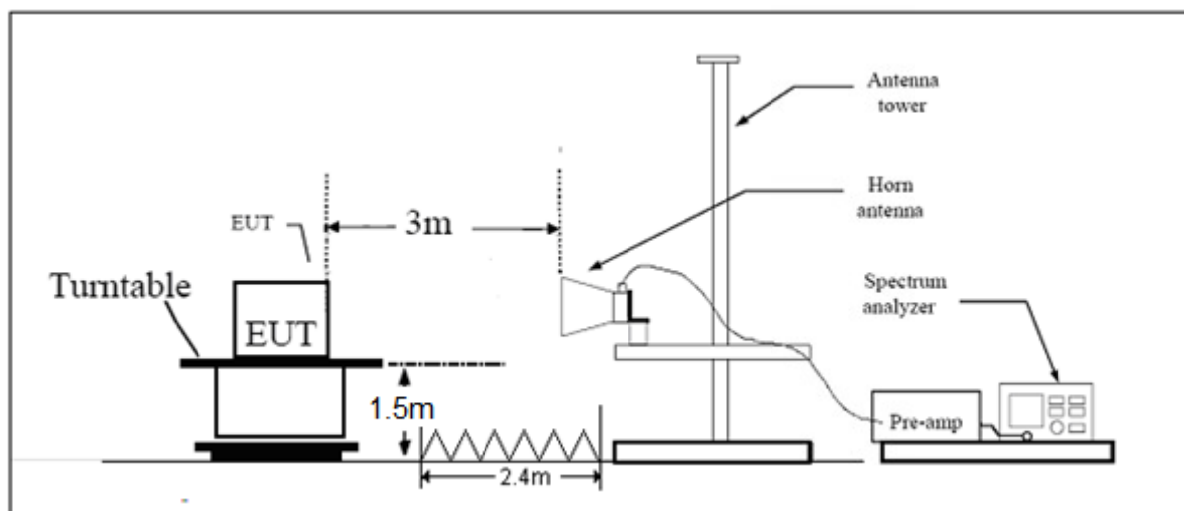
Set the spectrum analyzer in the following:

- (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
 - (b) The dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from $20\log(\text{dwell time}/100 \text{ ms})$, in an effort to demonstrate compliance with the 15.209 limit.
- If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak- average correction factor, derived from the appropriate duty cycle calculation.

This setting method can refer to **DA00-705**.

The test is in transmitting mode. The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis) and docking mode. The worst emission was found in stand-up position (Y axis) and the worst case was recorded.

Test setup



Note: Area side: 2.4mX3.6m

Limits

Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

Limit in restricted band

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54

§15.35(b)

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

Peak Limit=74dBuV/m

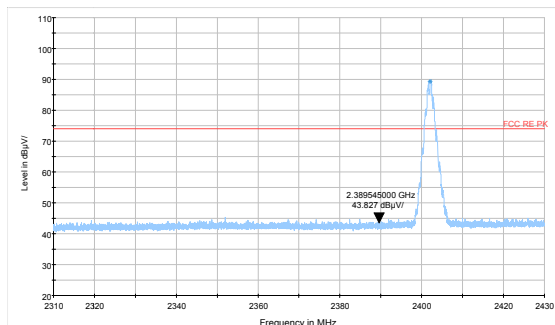
Average Limit=54dBuV/m

Measurement Uncertainty

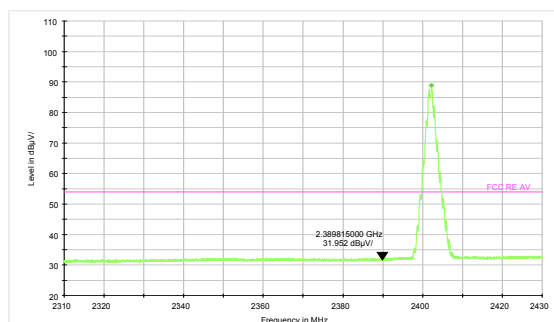
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U = 3.55$ dB.

Test Results:

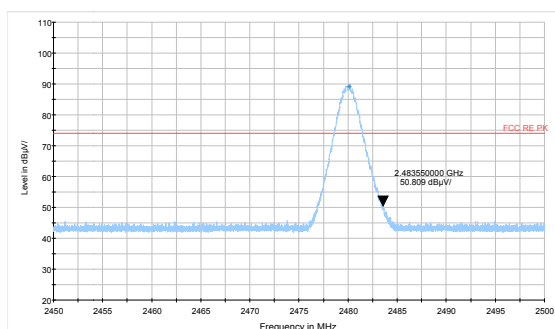
DH5-Channel 0: Peak



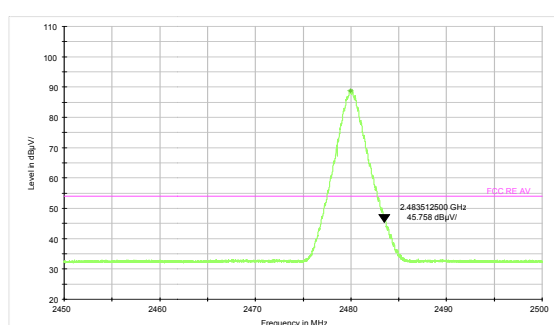
DH5-Channel 0: Average



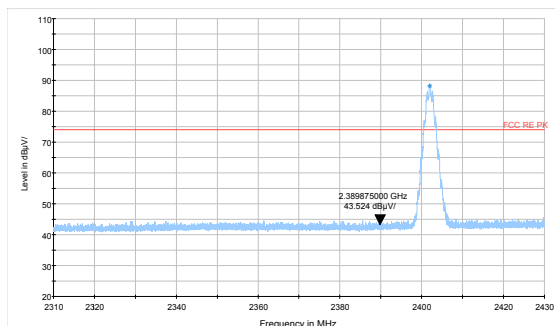
DH5-Channel 78: Peak



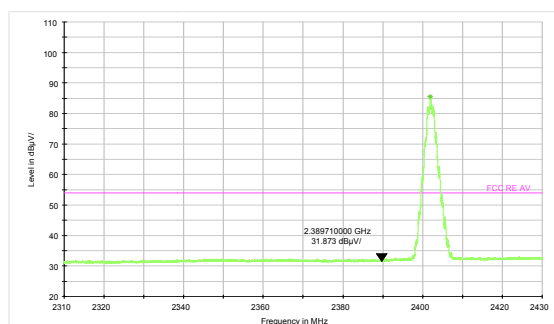
DH5-Channel 78: Average



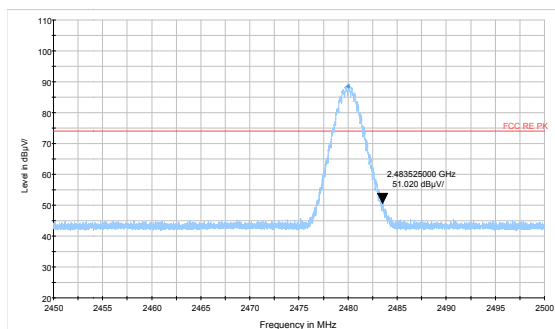
3DH5-Channel 0: Peak



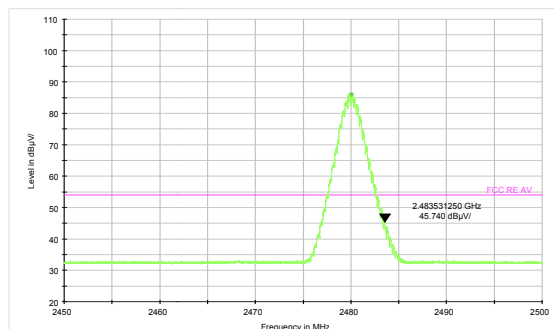
3DH5-Channel 0: Average



3DH5-Channel 78: Peak



3DH5-Channel 78: Average



4.8 Number of hopping Frequency

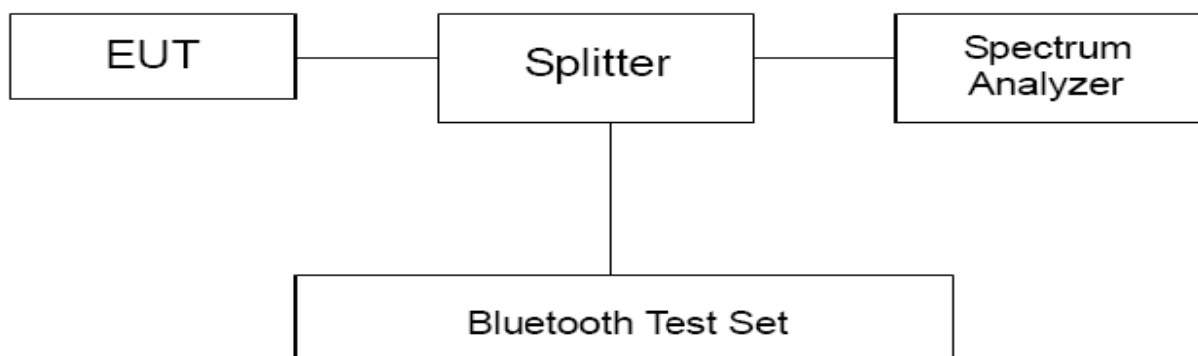
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. RBW is set to 1MHz and VBW is set to 1 MHz on spectrum analyzer. Set EUT on Hopping on mode.

Test setup



Limits

Rule Part 15.247(a) (1) (iii) specifies that” Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.”

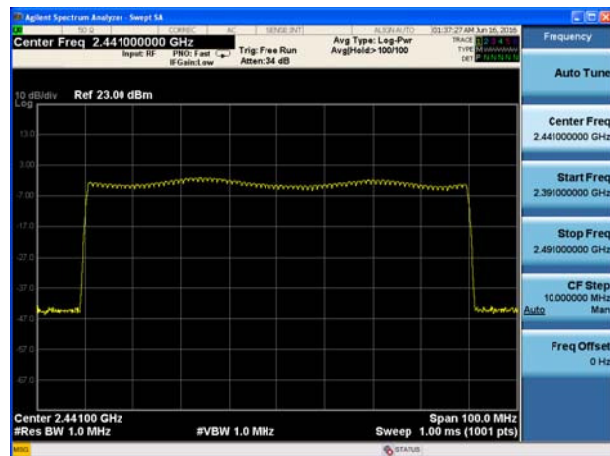
Limits	≥ 15 channels
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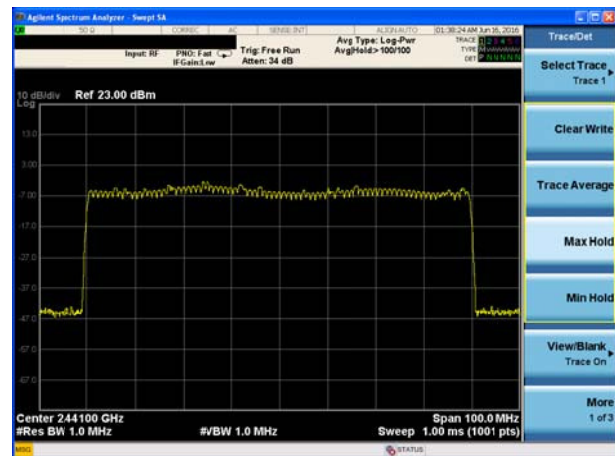
Test Results:

	Number of hopping channels	conclusion
DH5	79	PASS
2DH5	79	PASS
3DH5	79	PASS

DH5 2400 MHz – 2483.5 MHz



2DH5 2400 MHz – 2483.5 MHz



3DH5 2400 MHz – 2483.5 MHz



4.9 Spurious RF Conducted Emissions

Ambient condition

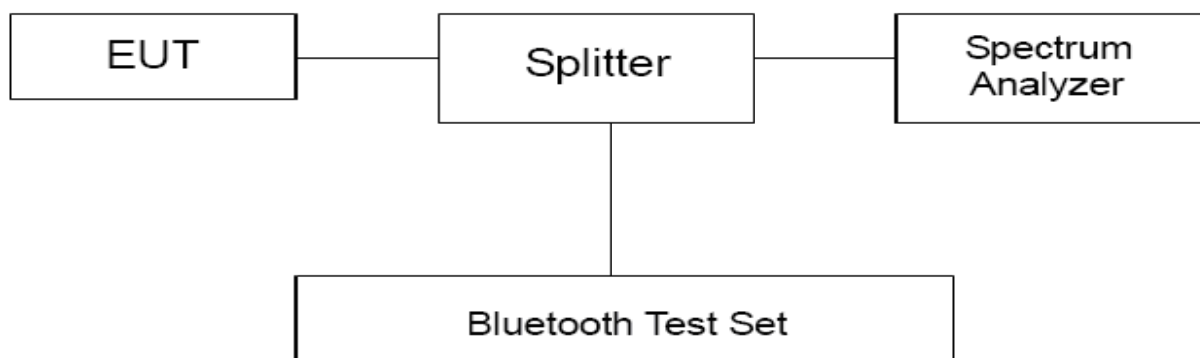
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. RBW and VBW are set to 100 kHz, Sweep is set to ATUO.

The test is in transmitting mode.

Test setup



Limits

Rule Part 15.247(d) pacifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.”

Mode	Carrier frequency (MHz)	Reference value (dBm)	Limit
DH5	2402	-1.934	-21.934
	2441	1.910	-18.090
	2480	-1.953	-21.953
EDR (3DH5)	2402	3.408	-16.592
	2441	-5.833	-25.833
	2480	0.003	-19.997

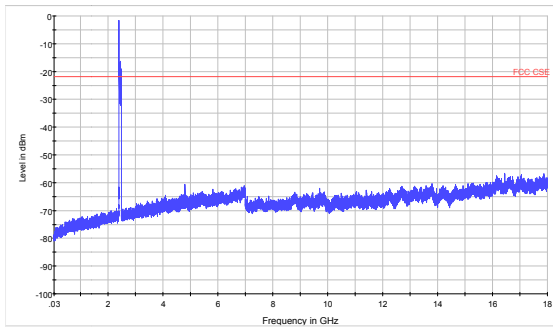
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

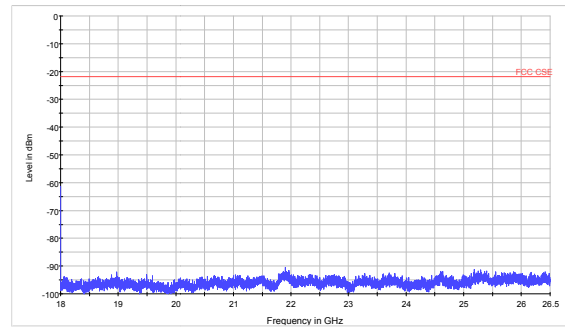
Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26GHz	1.407 dB

**Test Results:**

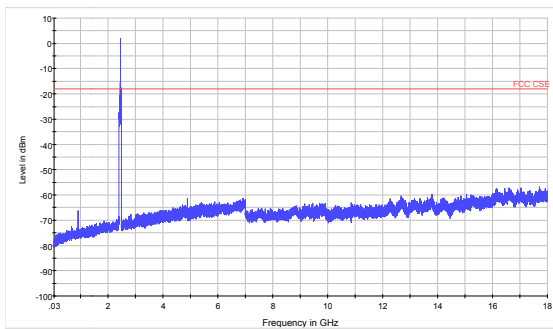
GFSK-CH0 30MHz to 18GHz



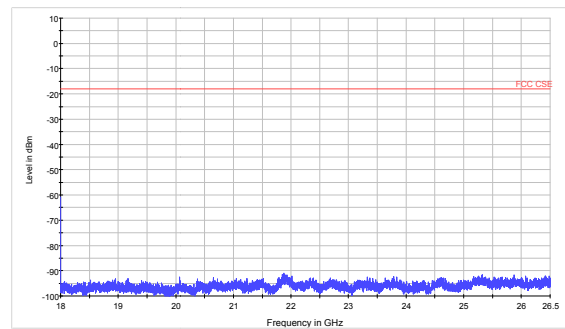
GFSK-CH0 18GHz to 26.5GHz



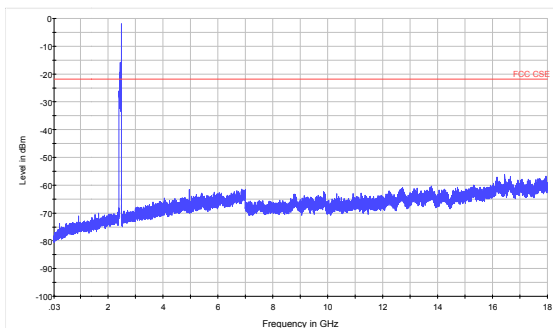
GFSK-CH39 30MHz to 18GHz



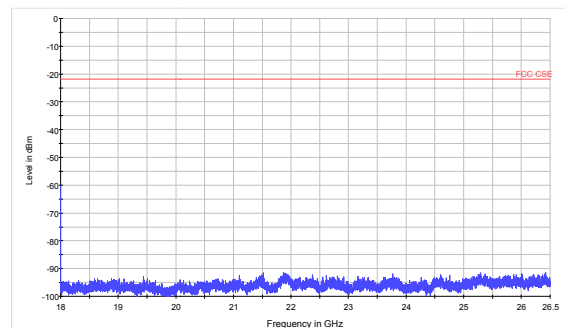
GFSK-CH39 18GHz to 26.5GHz



GFSK-CH78 30MHz to 18GHz

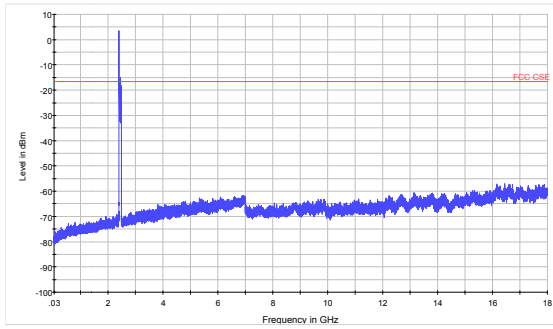


GFSK-CH78 18GHz to 26.5GHz

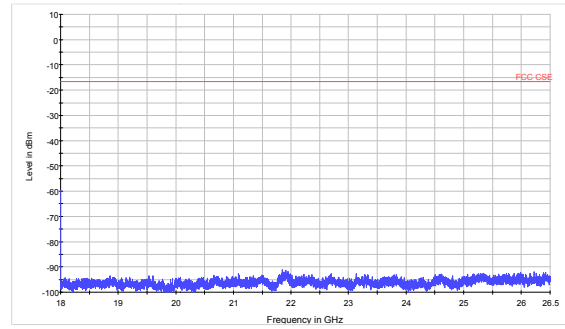




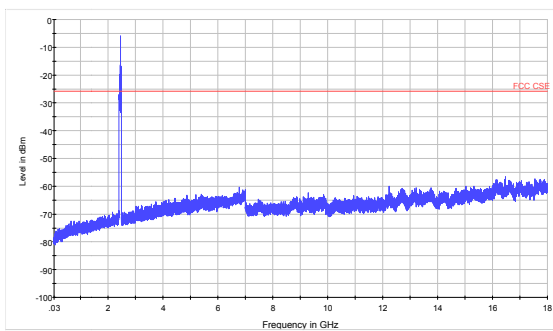
EDR-CH0 30MHz to 18GHz



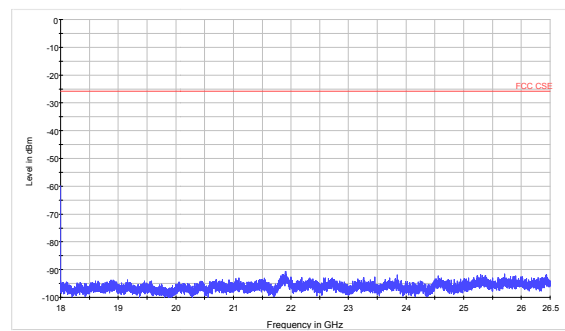
EDR-CH0 18GHz to 26.5GHz



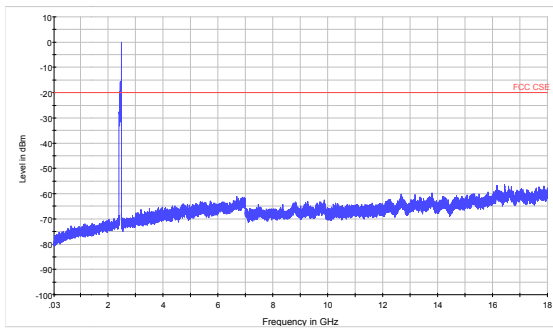
EDR-CH39 30MHz to 18GHz



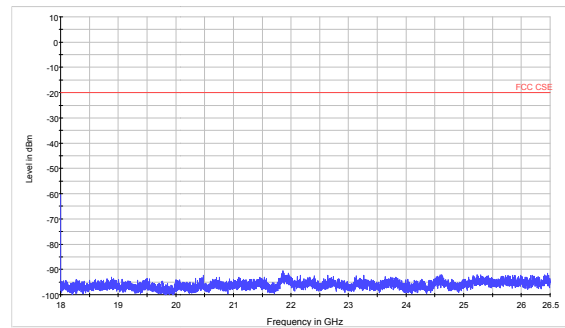
EDR-CH39 18GHz to 26.5GHz



EDR-CH78 30MHz to 18GHz



EDR-CH78 18GHz to 26.5GHz



4.10 Radiates Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	102.5kPa

Method of Measurement

The test set-up was made in accordance to the general provisions of ANSI C63.10-2013. The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The radiated emissions measurements were made in a typical installation configuration.

Sweep the whole frequency band through the range from 9 kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.

During the test, below 30MHz, the center of the loop shall be 1 meters; above 30MHz, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.

Set the spectrum analyzer in the following:

Below 1GHz (detector: Peak and Quasi-Peak)

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz(detector: Peak):

(a) PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO

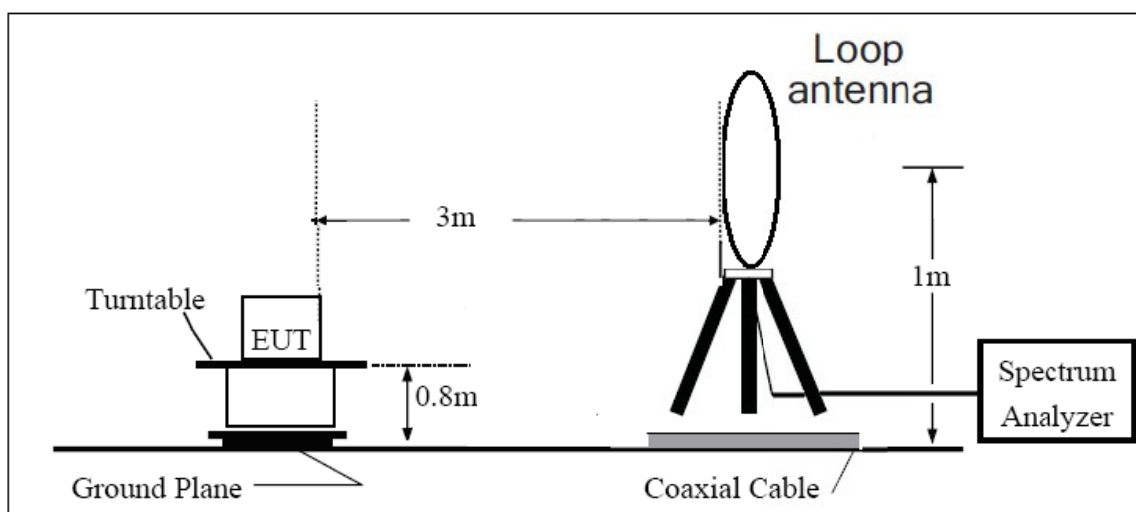
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded. Then this mode was measured in the following mode: EUT with cradle and EUT without cradle. The worst emission was found in EUT with cradle mode and the worst case was recorded.

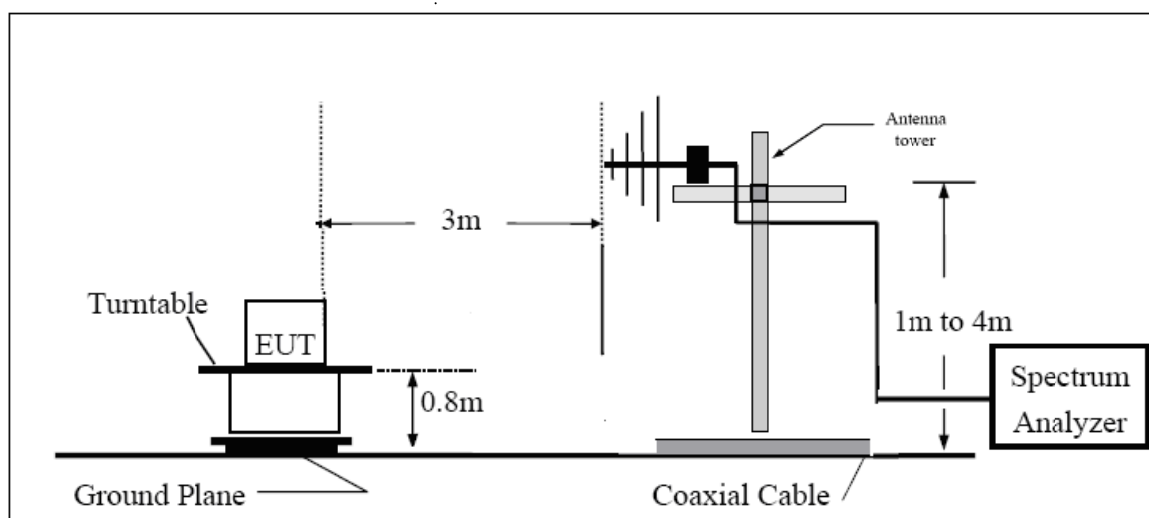
The test is in transmitting mode.

Test setup

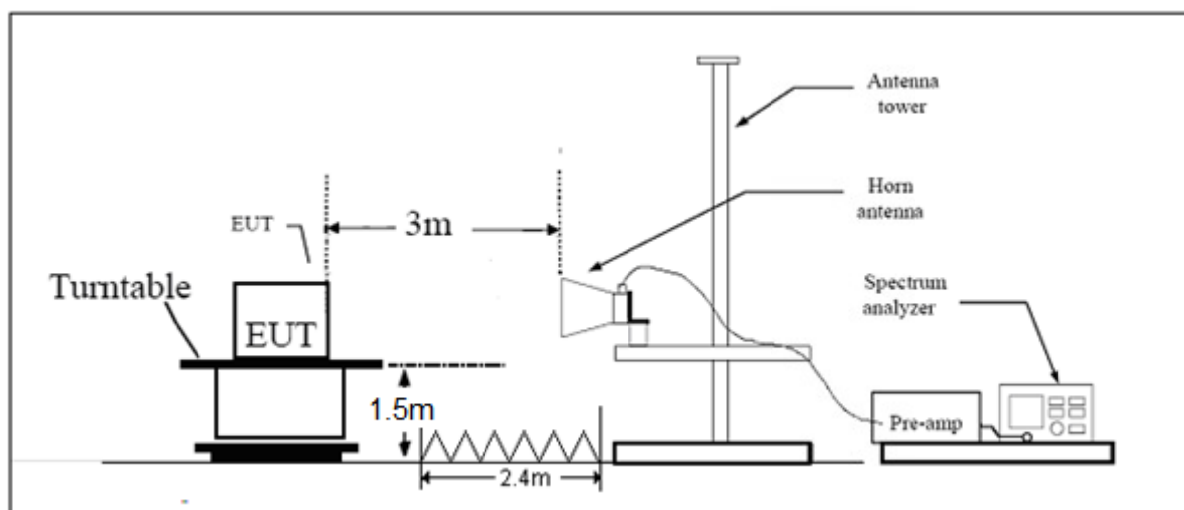
9KHz~~~ 30MHz



30MHz~~~ 1GHz



Above 1GHz



Limits

Rule Part 15.247(d) specifies that “In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).”

Limit in restricted band

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
0.009–0.490	2400/F(kHz)	/
0.490–1.705	24000/F(kHz)	/
1.705–30.0	30	/
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54

§15.35(b)

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.19 dB
200MHz-1GHz	3.63 dB
Above 1GHz	3.68 dB

Test result

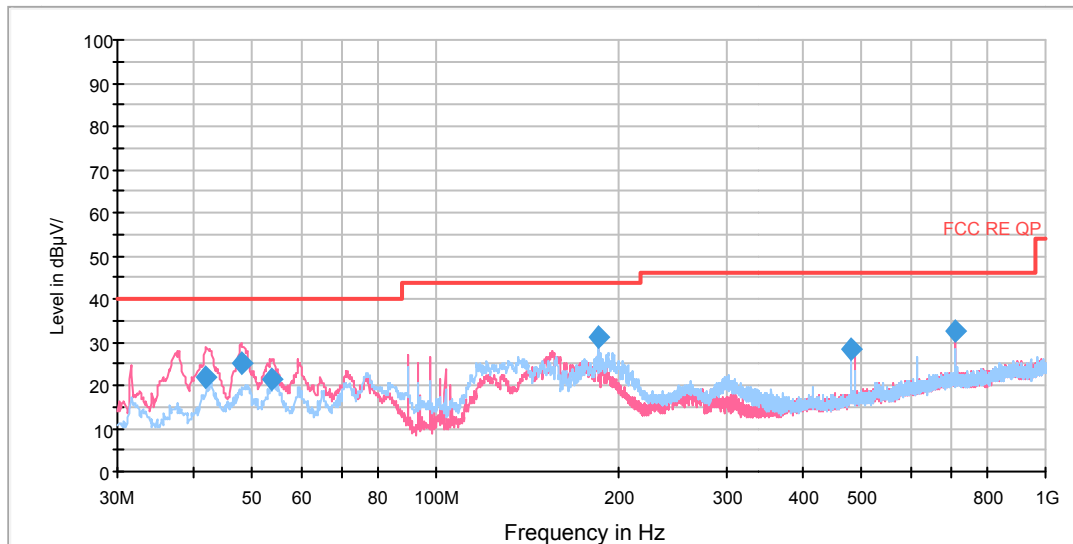
Sweep from 9 kHz to 30MHz, and the emissions more than 20 dB below the permissible value are not reported.

The following graphs display the maximum values of horizontal and vertical by software.

For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

GFSK-Channel 0

RE 30M-1GHz QP

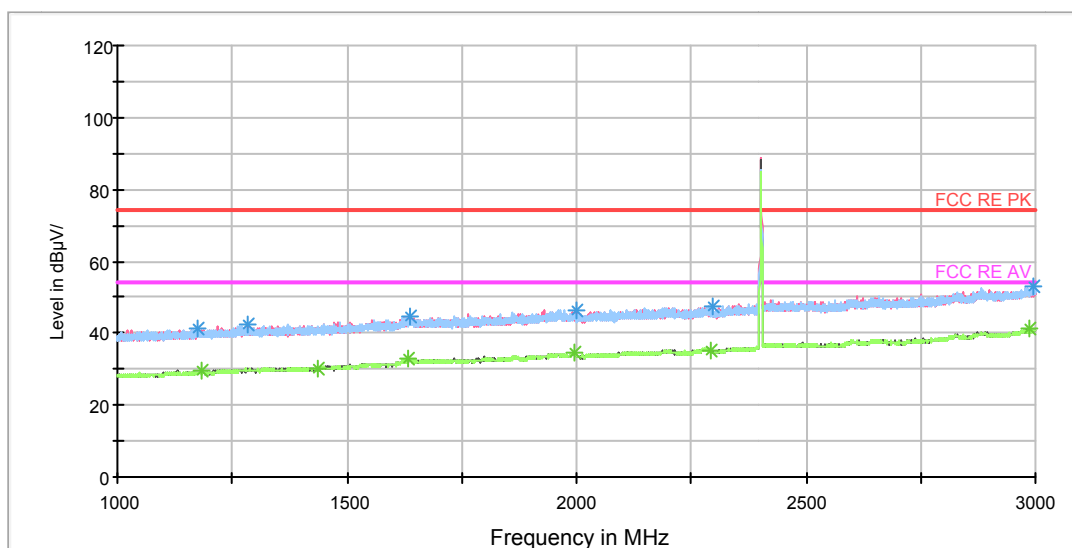


Radiates Emission from 30MHz to 1GHz

Note: This graph displays the maximum values of horizontal and vertical by software

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
41.977794	21.9	100.0	V	102.0	42.2	-20.3	18.1	40.0
47.943310	24.9	100.0	V	191.0	45.1	-20.2	15.1	40.0
53.872481	21.6	102.0	V	200.0	42.4	-20.8	18.4	40.0
184.249425	31.4	102.0	V	0.0	59.0	-27.6	12.1	43.5
479.233250	28.6	101.0	H	115.0	48.0	-19.4	17.4	46.0
711.245250	32.6	100.0	V	46.0	47.7	-15.1	13.4	46.0

RE 1G-3GHz PK+AV



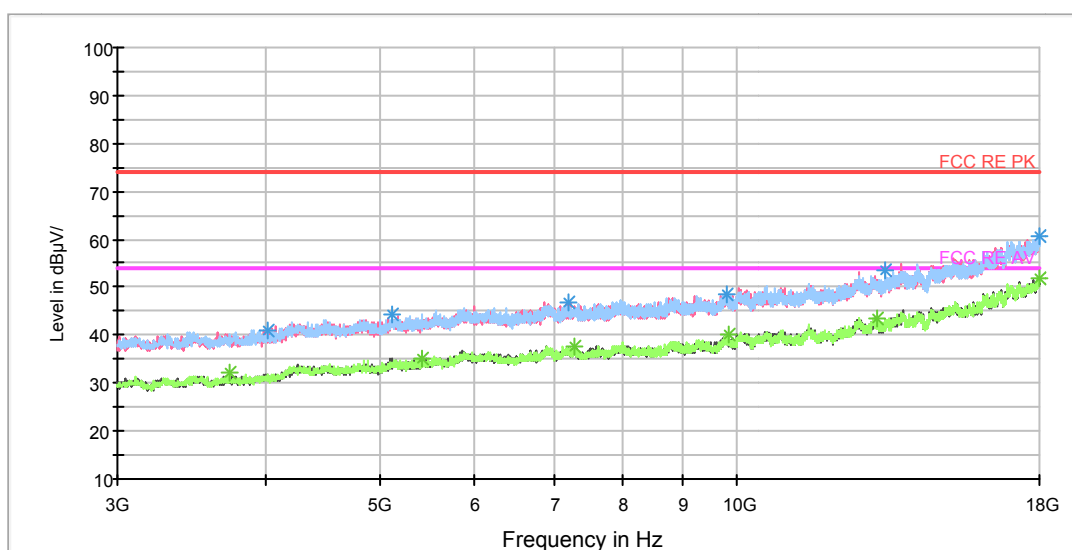
Radiates Emission from 1GHz to 3GHz
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1174.250000	41.0	201.0	H	341.0	49.0	-8.0	33.0	74
1284.500000	42.5	201.0	V	0.0	50.2	-7.7	31.5	74
1639.500000	44.9	201.0	V	0.0	49.6	-4.7	29.1	74
1999.250000	46.5	201.0	V	252.0	49.9	-3.4	27.5	74
2296.500000	47.7	201.0	H	202.0	49.7	-2.0	26.3	74
2995.000000	53.0	101.0	V	0.0	55.3	2.3	21.0	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1181.750000	29.4	101.0	V	146.0	37.4	-8.0	24.6	54
1438.500000	30.4	101.0	V	230.0	37.3	-6.9	23.6	54
1632.000000	32.7	201.0	V	0.0	37.4	-4.7	21.3	54
1993.750000	34.6	201.0	V	48.0	37.9	-3.3	19.4	54
2293.000000	35.3	101.0	H	24.0	37.2	-1.9	18.7	54
2987.750000	41.0	201.0	V	28.0	43.2	-2.2	13.0	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 3-18GHz PK+AV



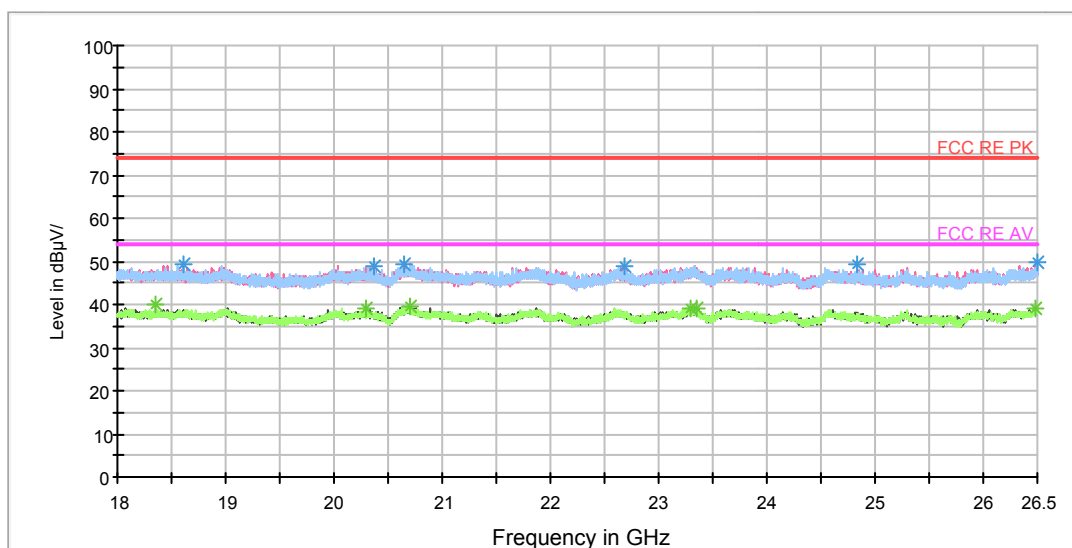
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4023.750000	41.1	202.0	H	231.0	41.7	-0.6	32.9	74
5113.125000	44.4	202.0	H	318.0	48.0	-3.6	29.6	74
7207.500000	46.7	202.0	V	29.0	55.4	-8.7	27.3	74
9808.125000	48.6	202.0	H	222.0	60.8	-12.2	25.4	74
13346.250000	53.5	101.0	H	27.0	69.3	-15.8	20.5	74
17990.625000	60.8	202.0	H	212.0	86.1	-25.3	13.2	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3735.000000	32.2	101.0	H	226.0	32.5	-0.3	21.8	54
5416.875000	35.2	202.0	V	1.0	39.0	3.8	18.8	54
7299.375000	37.6	101.0	H	75.0	46.3	8.7	16.4	54
9856.875000	40.2	202.0	H	77.0	51.9	11.7	13.8	54
13151.250000	43.6	101.0	H	306.0	59.2	15.6	10.4	54
17994.375000	52.1	202.0	H	298.0	77.4	25.3	1.9	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 18-26.5GHz PK+AV



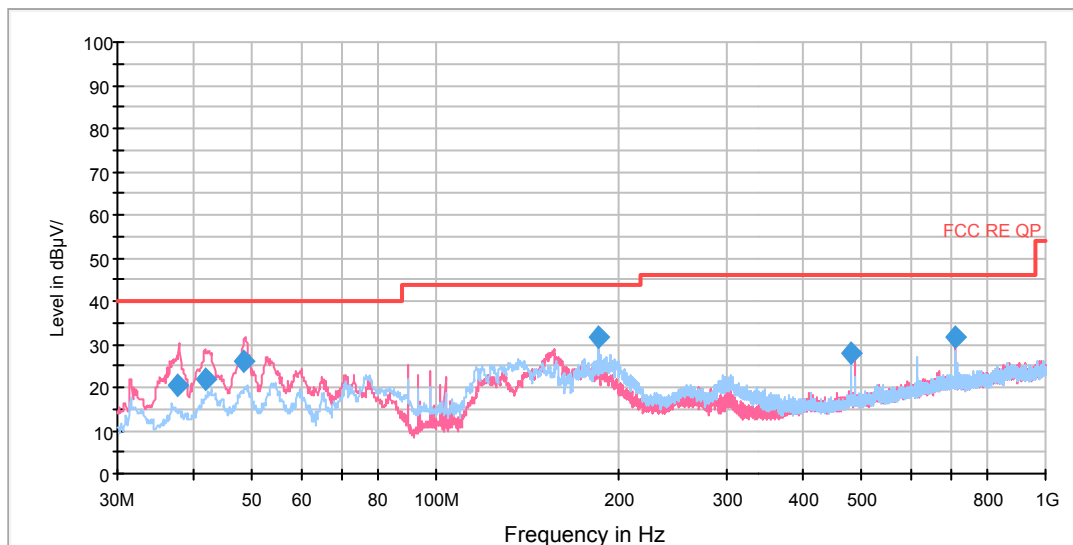
Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18602.437500	49.1	V	148.0	53.2	-4.1	24.9	74
20378.937500	49.0	H	213.0	55.1	-6.1	25.0	74
20653.062500	49.3	V	100.0	55.9	-6.6	24.7	74
22694.125000	48.8	H	172.0	55.4	-6.6	25.2	74
24839.312500	49.1	H	85.0	55.0	-5.9	24.9	74
26498.937500	49.7	H	220.0	55.1	-5.4	24.3	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18352.750000	39.8	H	241.0	43.1	-3.3	14.2	54
20293.937500	39.3	V	254.0	45.3	-6.0	14.7	54
20694.500000	39.7	H	234.0	46.4	-6.7	14.3	54
23294.437500	39.1	H	79.0	45.1	-6.0	14.9	54
23345.437500	39.2	H	247.0	45.1	-5.9	14.8	54
26476.625000	39.2	H	159.0	44.6	-5.4	14.8	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

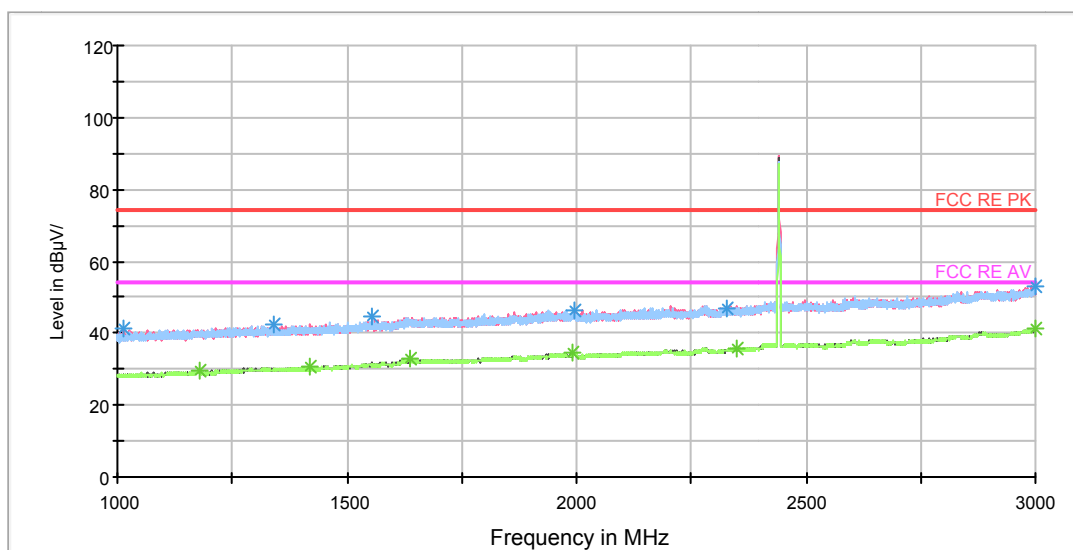
RE 30M-1GHz QP



Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
37.786547	20.7	101.0	V	58.0	42.6	-21.9	19.3	40.0
41.865653	22.1	101.0	V	137.0	42.5	-20.4	17.9	40.0
48.509872	25.9	101.0	V	189.0	46.2	-20.3	14.1	40.0
184.249425	31.7	101.0	V	7.0	59.3	-27.6	11.8	43.5
479.233250	27.9	101.0	H	121.0	47.3	-19.4	18.1	46.0
711.245250	31.4	101.0	V	50.0	46.5	-15.1	14.6	46.0

RE 1G-3GHz PK+AV



Radiates Emission from 1GHz to 3GHz

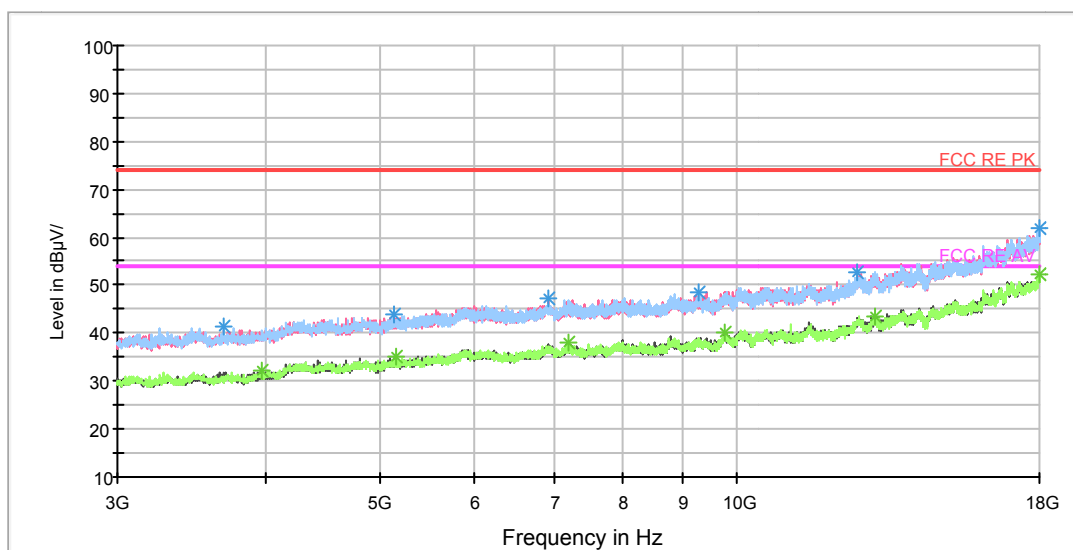
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1012.000000	41.2	201.0	V	101.0	50.5	-9.3	32.8	74
1339.500000	42.4	201.0	V	174.0	49.8	-7.4	31.6	74
1556.750000	44.5	100.0	H	39.0	51.0	-6.5	29.5	74
1997.750000	46.4	101.0	V	195.0	49.7	-3.3	27.6	74
2328.000000	47.1	201.0	H	108.0	48.6	-1.5	26.9	74
3000.000000	53.0	100.0	H	0.0	55.3	-2.3	21.0	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1180.500000	29.4	100.0	H	0.0	37.4	-8.0	24.6	54
1419.750000	30.6	201.0	H	267.0	37.5	-6.9	23.4	54
1637.500000	32.7	100.0	H	39.0	37.4	-4.7	21.3	54
1992.750000	34.5	101.0	V	351.0	37.8	-3.3	19.5	54
2349.250000	35.7	101.0	V	260.0	37.0	-1.3	18.3	54
2999.750000	41.1	101.0	V	52.0	43.4	-2.3	12.9	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 3-18GHz PK+AV



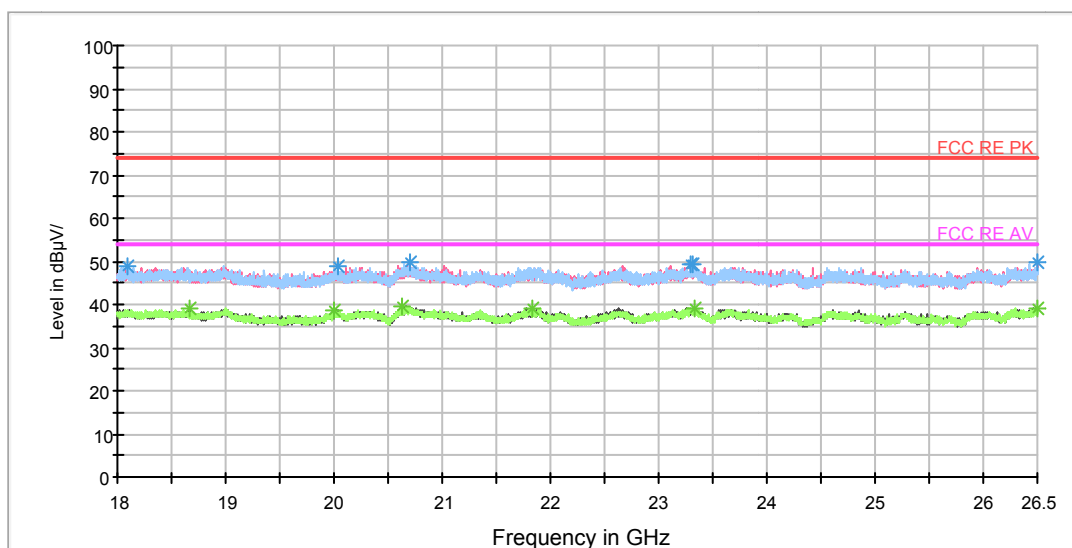
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3686.250000	41.3	101.0	H	66.0	41.6	-0.3	32.7	74
5135.625000	44.1	102.0	V	107.0	47.7	-3.6	29.9	74
6931.875000	47.2	202.0	V	0.0	54.0	-6.8	26.8	74
9296.250000	48.6	101.0	H	188.0	59.0	-10.4	25.4	74
12643.125000	52.6	102.0	V	319.0	67.4	-14.8	21.4	74
17998.125000	62.0	202.0	H	194.0	87.4	-25.4	12.0	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3967.500000	32.2	101.0	H	245.0	32.5	-0.3	21.8	54
5156.250000	35.0	101.0	H	0.0	38.6	-3.6	19.0	54
7194.375000	38.1	202.0	H	355.0	46.8	-8.7	15.9	54
9778.125000	40.1	102.0	V	126.0	52.1	-12.0	13.9	54
13070.625000	43.6	202.0	V	159.0	59.8	-16.2	10.4	54
17998.125000	52.4	202.0	H	194.0	77.8	-25.4	1.6	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 18-26.5GHz PK+AV



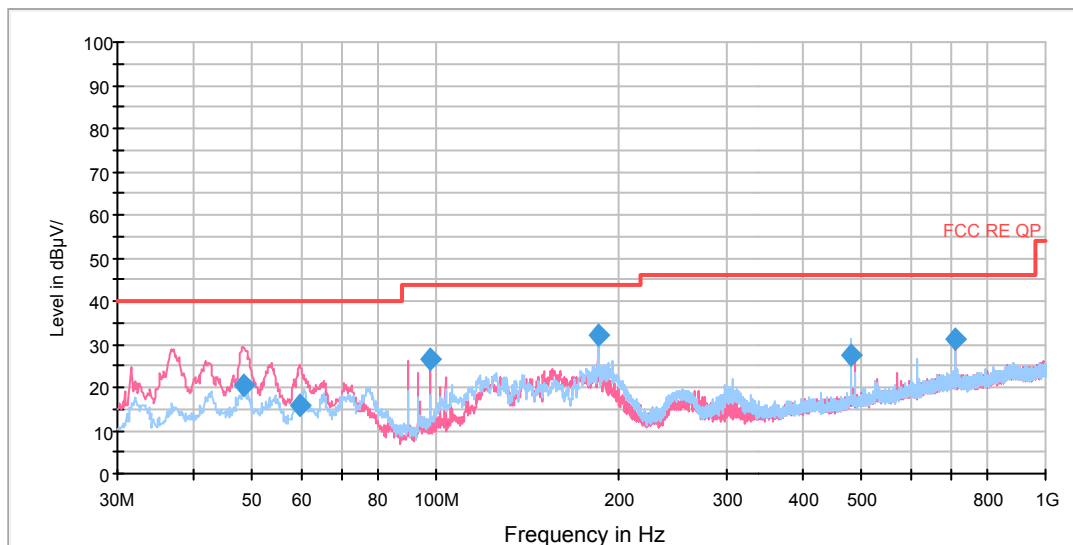
Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18092.437500	48.7	H	260.0	50.9	-2.2	25.3	74
20035.750000	48.9	V	299.0	54.6	-5.7	25.1	74
20694.500000	49.9	H	254.0	56.6	-6.7	24.1	74
23292.312500	49.2	V	340.0	55.2	-6.0	24.8	74
23308.250000	49.2	H	241.0	55.2	-6.0	24.8	74
26500.000000	49.6	H	66.0	55.1	-5.5	24.4	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18663.000000	38.9	V	286.0	43.2	-4.3	15.1	54
19991.125000	38.8	V	347.0	44.5	-5.7	15.2	54
20631.812500	39.6	H	66.0	46.1	-6.5	14.4	54
21842.000000	39.2	V	200.0	47.2	-8.0	14.8	54
23324.187500	39.1	V	146.0	45.1	-6.0	14.9	54
26496.812500	39.2	H	140.0	44.6	-5.4	14.8	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

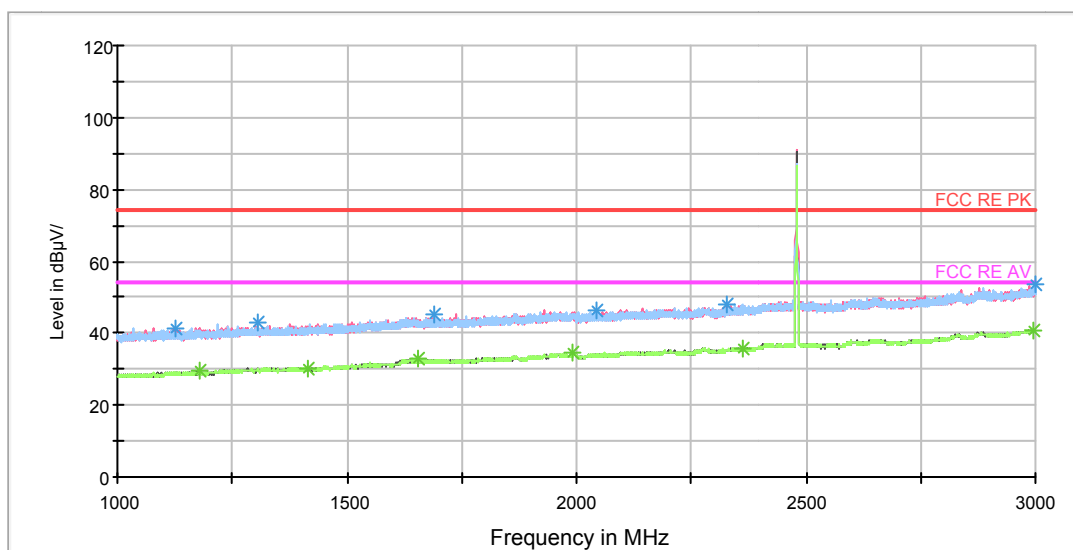
RE 30M-1GHz QP



Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
48.307031	20.4	101.0	V	224.0	40.7	-20.3	19.6	40.0
59.716038	15.9	101.0	V	81.0	39.0	-23.1	24.1	40.0
97.693356	26.4	122.0	V	22.0	51.8	-25.4	17.1	43.5
184.249425	32.1	101.0	V	196.0	59.7	-27.6	11.4	43.5
479.233250	27.5	101.0	H	16.0	46.9	-19.4	18.5	46.0
711.245250	31.1	101.0	V	224.0	46.2	-15.1	14.9	46.0

RE 1G-3GHz PK+AV



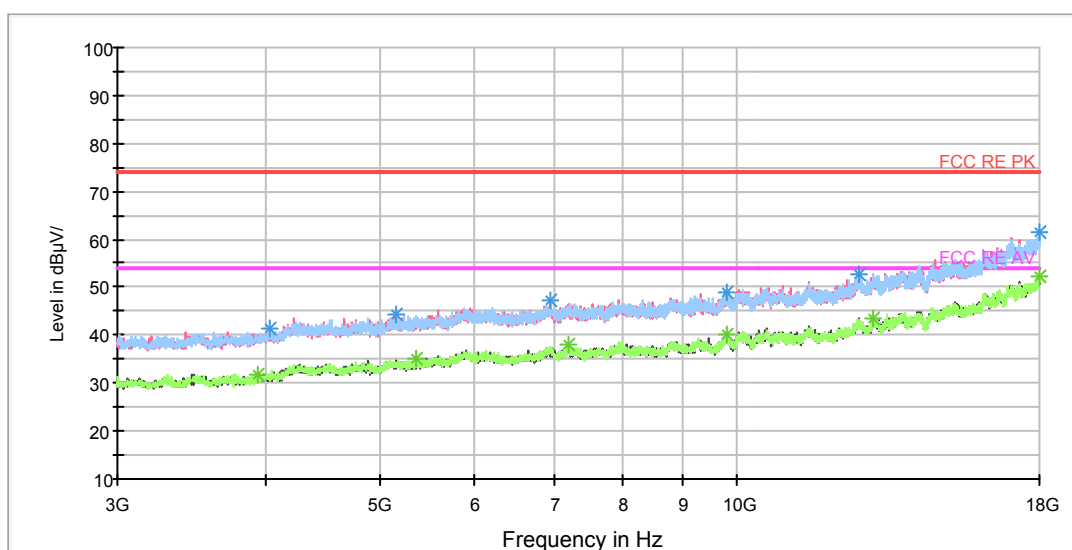
Radiates Emission from 1GHz to 3GHz
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1126.000000	41.5	100.0	V	267.0	49.9	-8.4	32.5	74
1306.500000	42.8	201.0	H	252.0	50.5	-7.7	31.2	74
1691.500000	45.4	201.0	H	298.0	50.4	-5.0	28.6	74
2042.500000	46.2	201.0	H	334.0	49.4	-3.2	27.8	74
2327.500000	47.9	201.0	V	30.0	49.5	-1.6	26.1	74
2998.500000	53.4	201.0	H	206.0	55.7	-2.3	20.6	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1180.750000	29.5	201.0	H	289.0	37.5	-8.0	24.5	54
1416.250000	30.4	100.0	H	13.0	37.4	-7.0	23.6	54
1656.500000	32.7	201.0	V	76.0	37.9	-5.2	21.3	54
1992.000000	34.5	100.0	V	194.0	37.8	-3.3	19.5	54
2361.500000	35.6	201.0	V	30.0	37.0	-1.4	18.4	54
2995.750000	41.0	201.0	V	168.0	43.3	-2.3	13.0	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 3-18GHz PK+AV



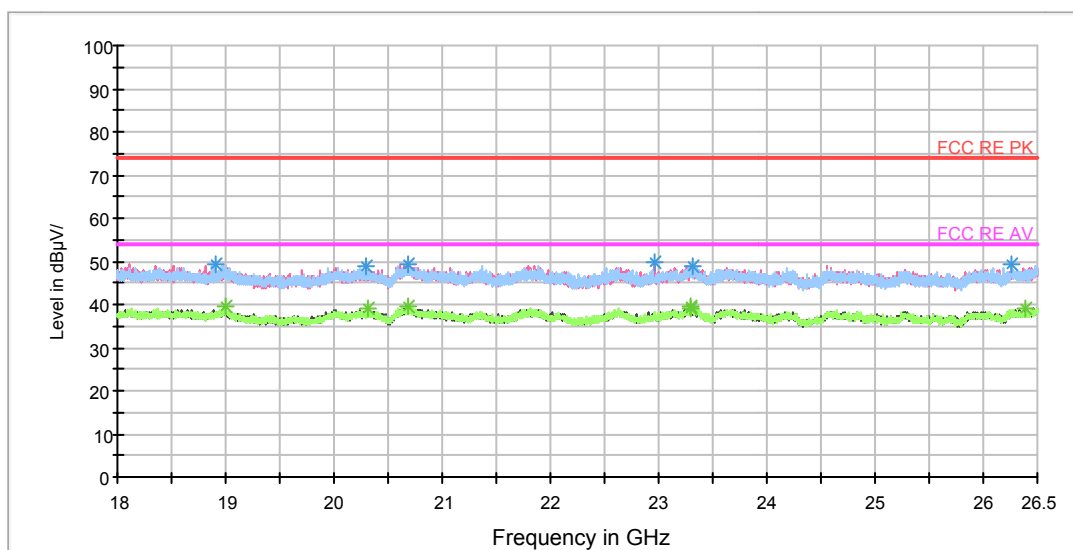
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4036.875000	41.5	102.0	H	120.0	42.1	-0.6	32.5	74
5160.000000	44.3	101.0	V	324.0	47.9	-3.6	29.7	74
6945.000000	47.2	101.0	V	0.0	53.9	-6.7	26.8	74
9808.125000	48.9	202.0	H	65.0	61.1	-12.2	25.1	74
12667.500000	52.8	202.0	V	217.0	67.8	-15.0	21.2	74
17986.875000	61.6	202.0	H	162.0	86.8	-25.2	12.4	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3943.125000	32.0	101.0	V	202.0	32.1	-0.1	22.0	54
5364.375000	35.1	202.0	V	131.0	38.8	-3.7	18.9	54
7203.750000	38.2	202.0	V	0.0	46.9	-8.7	15.8	54
9808.125000	40.0	202.0	H	65.0	52.2	-12.2	14.0	54
13035.000000	43.6	202.0	H	34.0	59.8	-16.2	10.4	54
17979.375000	52.2	202.0	H	287.0	77.4	-25.2	1.8	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 18-26.5GHz PK+AV



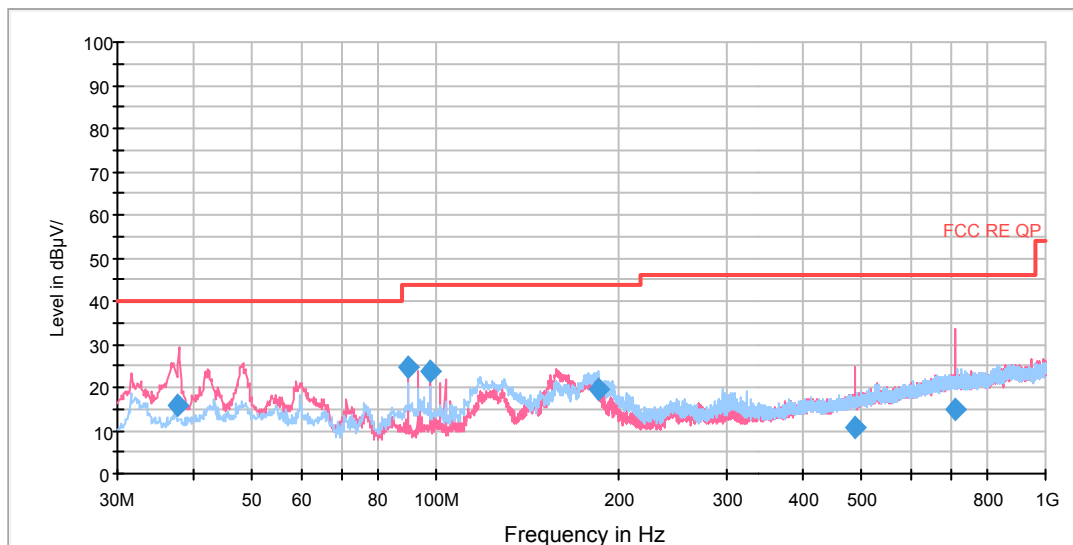
Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18910.562500	49.4	H	53.0	54.2	-4.8	24.6	74
20297.125000	48.9	V	326.0	54.9	-6.0	25.1	74
20677.500000	49.5	H	73.0	56.1	-6.6	24.5	74
22956.562500	49.8	V	192.0	56.0	-6.2	24.2	74
23313.562500	49.0	H	206.0	55.0	-6.0	25.0	74
26254.562500	49.1	H	180.0	54.5	-5.4	24.9	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
19001.937500	39.4	H	113.0	44.5	-5.1	14.6	54
20313.062500	39.1	V	70.0	45.1	-6.0	14.9	54
20677.500000	39.3	H	73.0	45.9	-6.6	14.7	54
23290.187500	39.6	V	104.0	45.6	-6.0	14.4	54
23295.500000	39.3	H	316.0	45.3	-6.0	14.7	54
26379.937500	39.1	V	359.0	44.5	-5.4	14.9	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

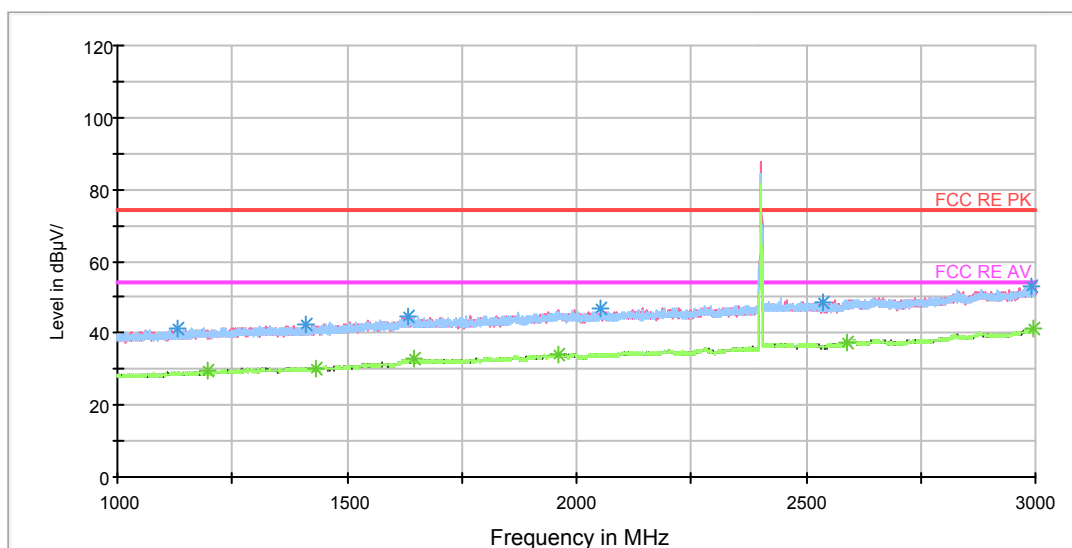
RE 30M-1GHz QP



Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
37.786547	15.7	102.0	V	79.0	37.6	-21.9	24.3	40.0
89.952756	24.8	102.0	V	0.0	51.7	-26.9	18.7	43.5
97.693356	23.5	121.0	V	22.0	48.9	-25.4	20.0	43.5
184.131319	19.7	197.0	H	300.0	47.3	-27.6	23.8	43.5
486.004250	10.8	101.0	V	7.0	30.3	-19.5	35.2	46.0
709.525250	14.7	101.0	V	51.0	29.8	-15.1	31.3	46.0

RE 1G-3GHz PK+AV



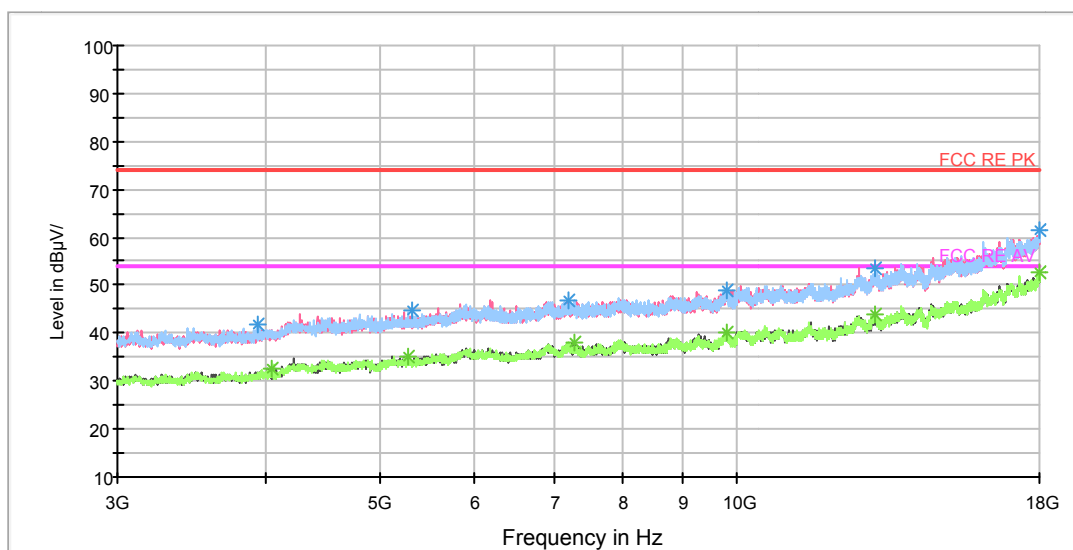
Radiates Emission from 1GHz to 3GHz
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1129.000000	41.3	202.0	H	315.0	49.7	-8.4	32.7	74
1412.250000	42.7	101.0	V	222.0	49.8	-7.1	31.3	74
1633.250000	44.7	101.0	V	0.0	49.4	-4.7	29.3	74
2054.000000	46.7	102.0	H	0.0	49.9	-3.2	27.3	74
2535.000000	48.6	101.0	V	20.0	49.0	-0.4	25.4	74
2991.750000	52.7	202.0	V	252.0	54.9	-2.2	21.3	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1196.000000	29.4	102.0	H	122.0	37.6	-8.2	24.6	54
1433.750000	30.4	101.0	V	194.0	37.3	-6.9	23.6	54
1646.000000	32.7	202.0	H	278.0	37.6	-4.9	21.3	54
1959.750000	34.3	202.0	H	250.0	37.5	-3.2	19.7	54
2590.750000	37.4	202.0	V	0.0	37.4	-0.0	16.6	54
2997.500000	41.1	102.0	H	0.0	43.4	-2.3	12.9	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 3-18GHz PK+AV



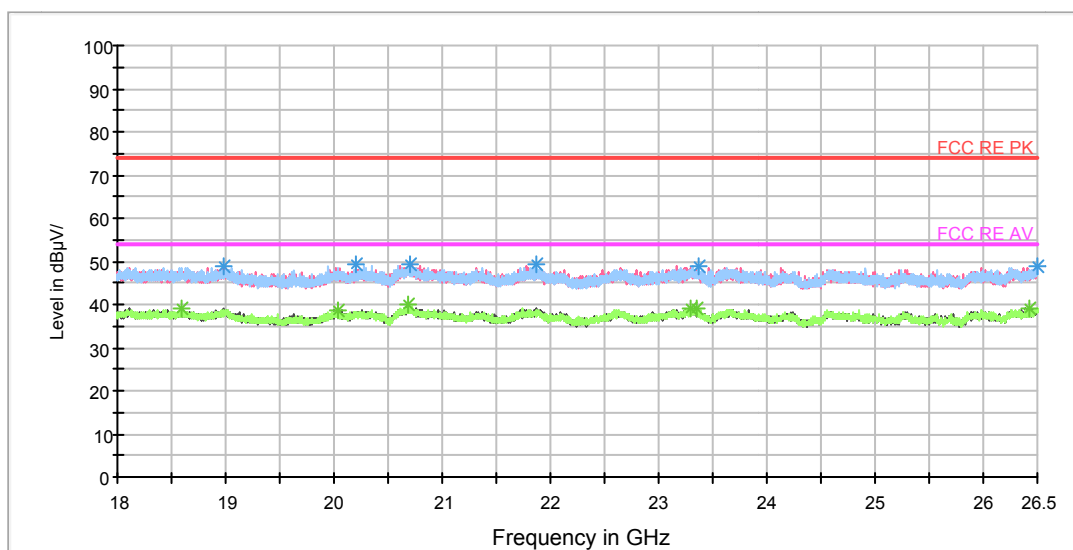
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3933.750000	41.7	202.0	H	199.0	41.7	-0.0	32.3	74
5315.625000	44.6	101.0	H	195.0	48.4	-3.8	29.4	74
7205.625000	46.7	202.0	V	145.0	55.4	-8.7	27.3	74
9795.000000	49.1	101.0	H	244.0	61.3	-12.2	24.9	74
13068.750000	53.7	202.0	H	150.0	69.9	-16.2	20.3	74
17996.250000	61.3	102.0	V	288.0	86.7	-25.4	12.7	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4042.500000	32.4	102.0	V	202.0	33.0	-0.6	21.6	54
5270.625000	35.1	102.0	V	66.0	38.8	-3.7	18.9	54
7299.375000	38.0	202.0	V	60.0	46.7	-8.7	16.0	54
9804.375000	40.3	102.0	V	335.0	52.5	-12.2	13.7	54
13089.375000	43.7	202.0	H	266.0	59.9	-16.2	10.3	54
17994.375000	52.6	102.0	V	260.0	77.9	-25.3	1.4	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 18-26.5GHz PK+AV



Radiates Emission from 18GHz to 26.5GHz

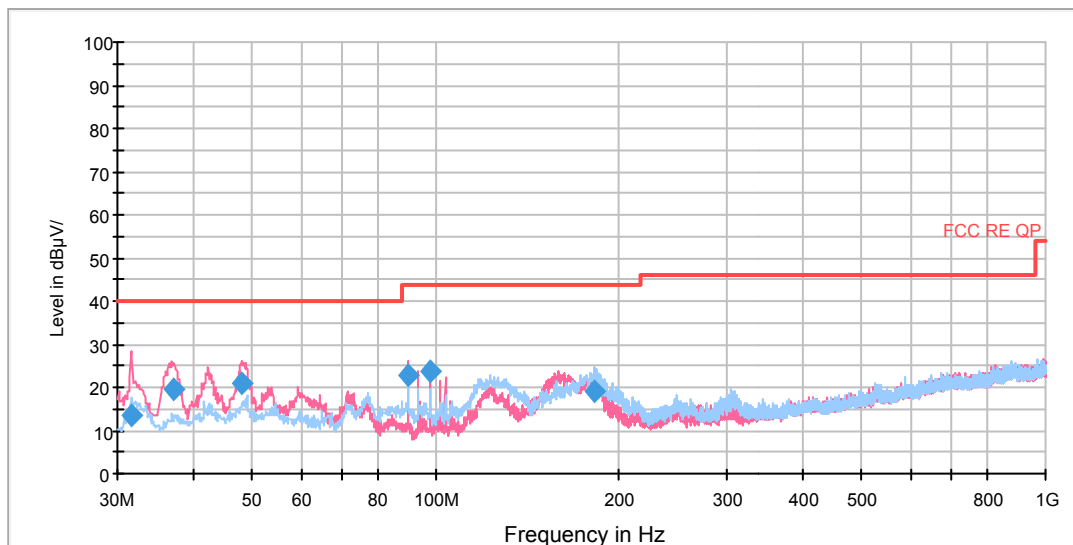
Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18984.937500	48.7	V	252.0	53.7	-5.0	25.3	74
20204.687500	49.2	H	258.0	55.1	-5.9	24.8	74
20709.375000	49.5	H	116.0	56.2	-6.7	24.5	74
21861.125000	49.2	H	245.0	57.2	-8.0	24.8	74
23363.500000	48.7	V	149.0	54.6	-5.9	25.3	74
26497.875000	49.1	H	36.0	54.5	-5.4	24.9	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18601.375000	39.0	H	265.0	43.1	-4.1	15.0	54
20028.312500	38.6	H	170.0	44.3	-5.7	15.4	54
20693.437500	39.8	H	36.0	46.5	-6.7	14.2	54
23290.187500	39.1	V	168.0	45.1	-6.0	14.9	54
23346.500000	39.1	H	15.0	45.0	-5.9	14.9	54
26430.937500	39.1	H	83.0	44.5	-5.4	14.9	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)



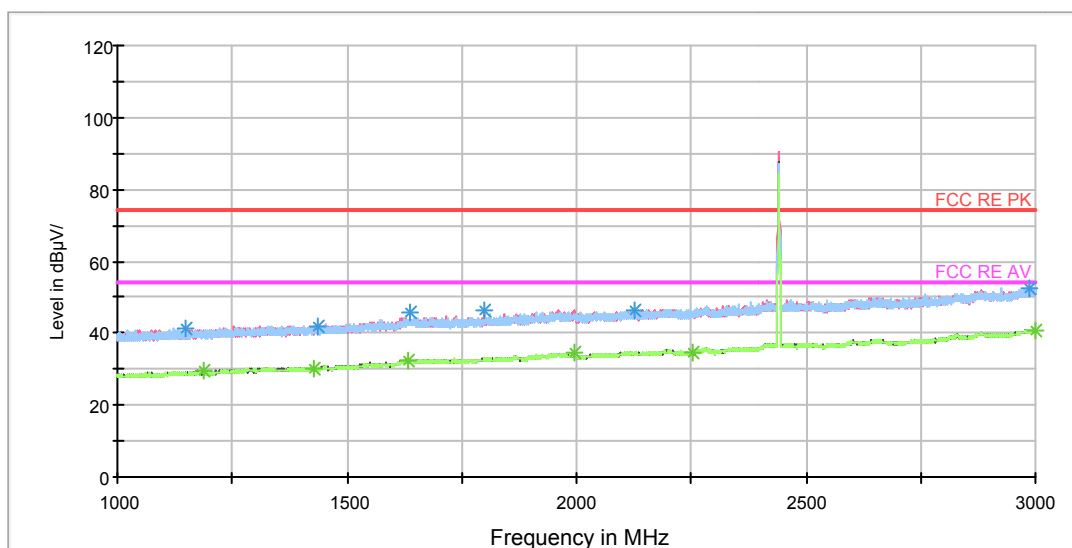
RE 30M-1GHz QP



Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
31.655191	13.5	101.0	V	347.0	36.0	-22.5	26.5	40.0
37.140866	19.7	101.0	V	100.0	41.8	-22.1	20.3	40.0
48.064863	20.8	101.0	V	200.0	41.0	-20.2	19.2	40.0
89.952756	22.9	126.0	V	22.0	49.8	-26.9	20.6	43.5
97.693356	23.6	121.0	V	172.0	49.0	-25.4	19.9	43.5
181.587647	19.1	176.0	H	298.0	47.0	-27.9	24.4	43.5

RE 1G-3GHz PK+AV



Radiates Emission from 1GHz to 3GHz

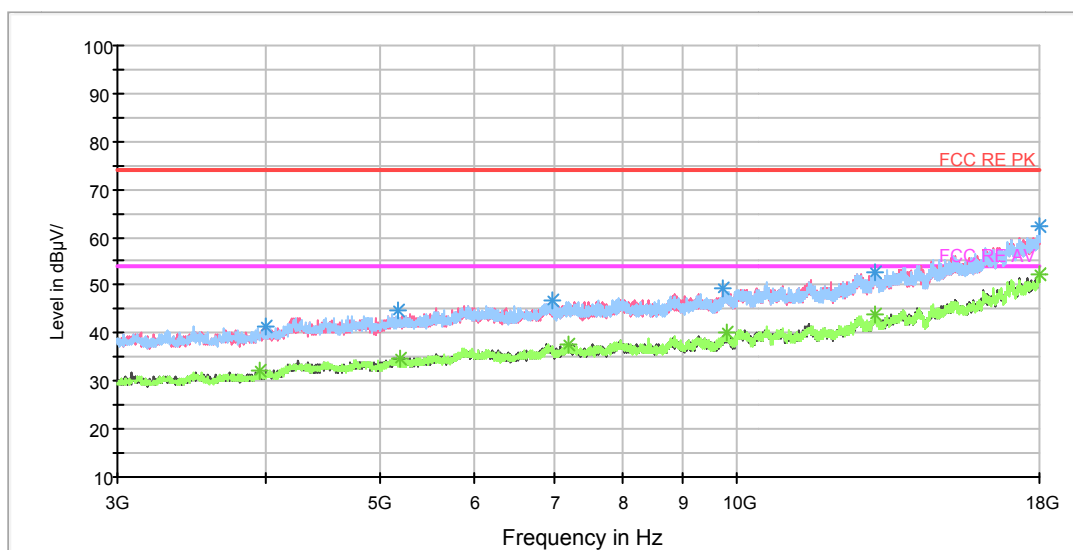
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1148.500000	41.3	201.0	H	228.0	49.8	-8.5	32.7	74
1437.000000	42.1	101.0	H	308.0	49.0	-6.9	31.9	74
1639.000000	45.6	100.0	V	349.0	50.3	-4.7	28.4	74
1800.250000	46.6	100.0	V	312.0	50.5	-3.9	27.4	74
2125.750000	46.1	201.0	H	294.0	48.4	-2.3	27.9	74
2986.500000	52.6	201.0	H	294.0	54.8	-2.2	21.4	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1188.000000	29.3	101.0	H	65.0	37.5	-8.2	24.7	54
1426.500000	30.4	101.0	H	139.0	37.3	-6.9	23.6	54
1634.750000	32.6	100.0	V	0.0	37.3	-4.7	21.4	54
1995.500000	34.3	201.0	V	57.0	37.5	-3.2	19.7	54
2253.500000	34.8	201.0	H	350.0	37.0	-2.2	19.2	54
2998.750000	40.9	201.0	V	0.0	43.2	-2.3	13.1	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 3-18GHz PK+AV



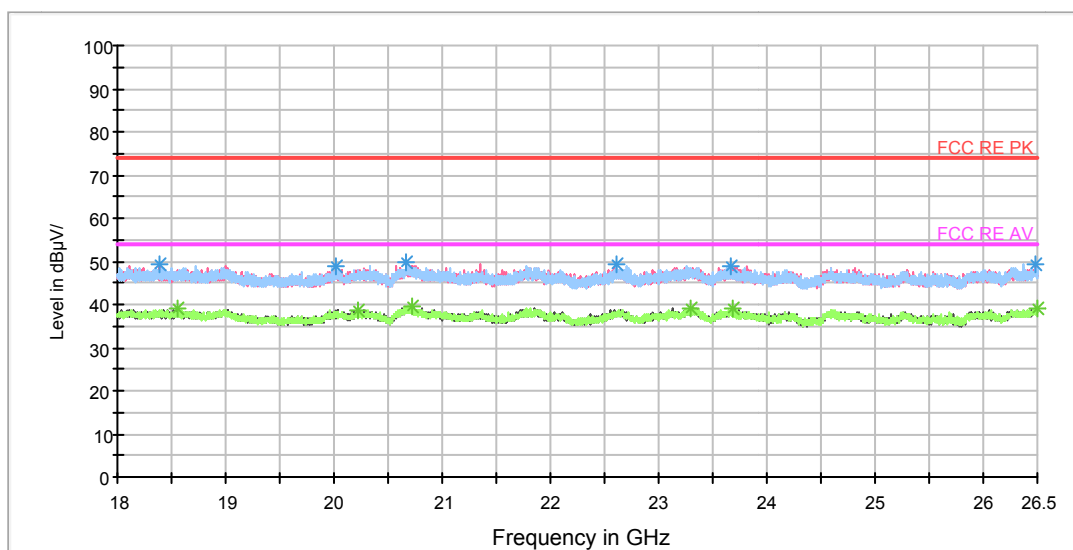
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4005.000000	41.5	202.0	V	160.0	42.0	-0.5	32.5	74
5182.500000	44.6	102.0	H	196.0	48.2	-3.6	29.4	74
6991.875000	46.7	102.0	H	295.0	53.1	-6.4	27.3	74
9736.875000	49.5	202.0	V	0.0	61.0	-11.5	24.5	74
13095.000000	52.6	102.0	H	196.0	68.8	-16.2	21.4	74
17996.250000	62.2	202.0	H	175.0	87.6	-25.4	11.8	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3950.625000	32.2	202.0	H	273.0	32.3	-0.1	21.8	54
5186.250000	34.8	102.0	H	236.0	38.4	-3.6	19.2	54
7220.625000	37.8	102.0	H	64.0	46.5	-8.7	16.2	54
9802.500000	40.1	202.0	H	35.0	52.4	-12.3	13.9	54
13076.250000	43.9	202.0	H	184.0	60.1	-16.2	10.1	54
17977.500000	52.2	102.0	H	196.0	77.3	-25.1	1.8	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 18-26.5GHz PK+AV



Radiates Emission from 18GHz to 26.5GHz

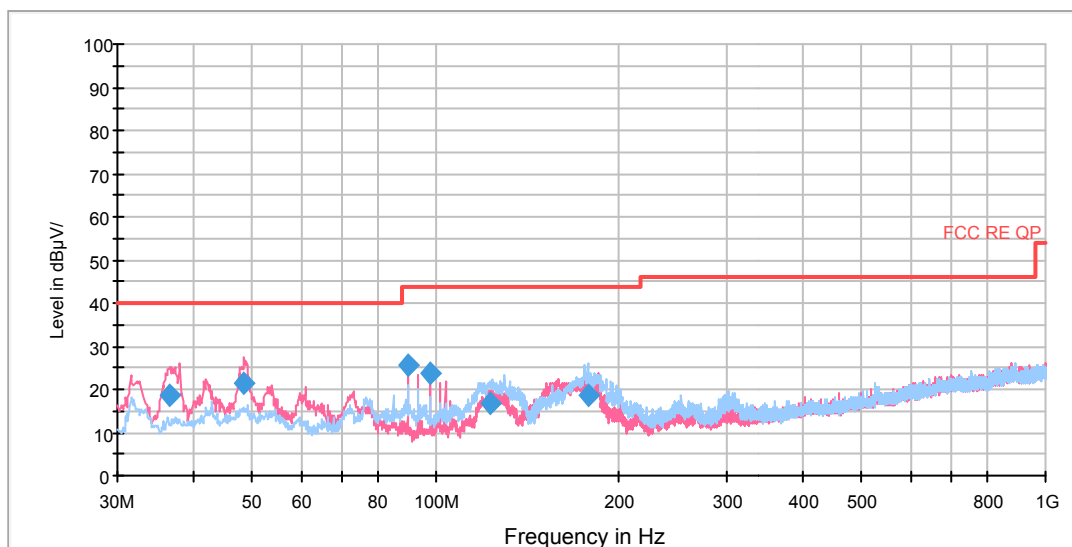
Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18389.937500	49.4	V	339.0	52.8	-3.4	24.6	74
20015.562500	49.0	H	280.0	54.7	-5.7	25.0	74
20669.000000	49.8	H	92.0	56.4	-6.6	24.2	74
22608.062500	49.1	H	145.0	55.8	-6.7	24.9	74
23670.562500	48.8	H	112.0	54.7	-5.9	25.2	74
26483.000000	49.2	V	66.0	54.6	-5.4	24.8	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18564.187500	39.1	H	179.0	43.1	-4.0	14.9	54
20228.062500	38.8	H	125.0	44.7	-5.9	15.2	54
20723.187500	39.4	V	0.0	46.1	-6.7	14.6	54
23292.312500	39.0	H	105.0	45.0	-6.0	15.0	54
23693.937500	39.1	H	13.0	45.0	-5.9	14.9	54
26493.625000	38.9	H	6.0	44.3	-5.4	15.1	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)



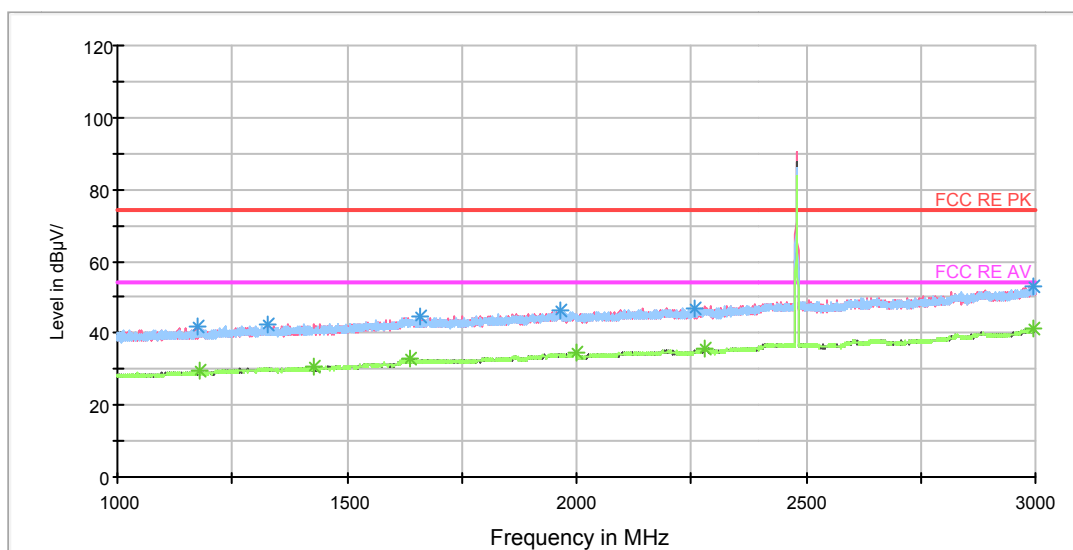
RE 30M-1GHz QP



Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
36.638869	18.4	101.0	V	122.0	40.6	-22.2	21.6	40.0
48.308925	21.3	101.0	V	161.0	41.6	-20.3	18.7	40.0
89.952756	25.4	126.0	V	0.0	52.3	-26.9	18.1	43.5
97.733356	23.9	121.0	V	188.0	49.3	-25.4	19.6	43.5
122.576928	17.0	179.0	H	332.0	45.4	-28.4	26.5	43.5
177.314506	18.6	179.0	H	309.0	47.1	-28.5	24.9	43.5

RE 1G-3GHz PK+AV



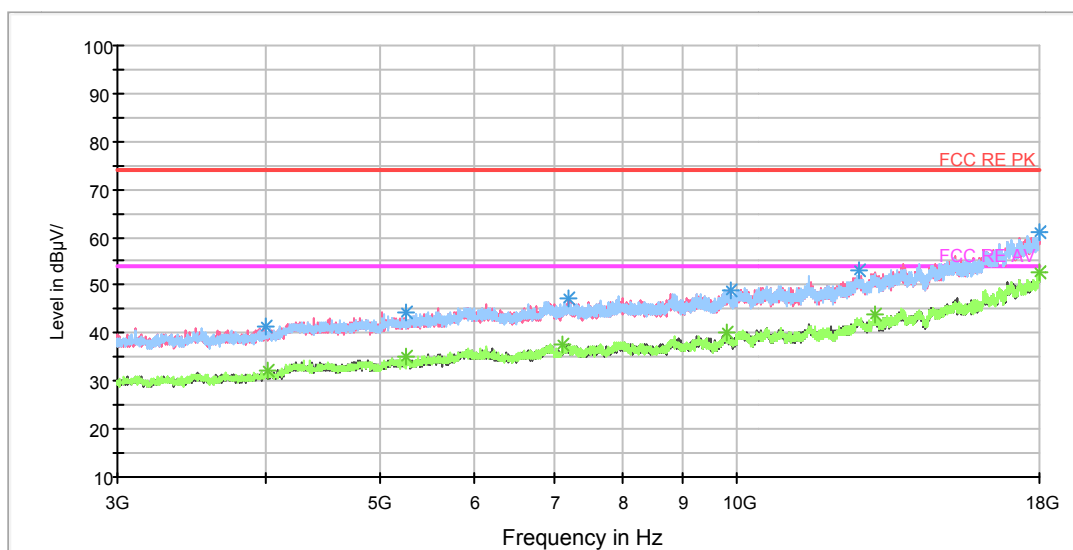
Radiates Emission from 1GHz to 3GHz
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1174.750000	41.8	201.0	V	0.0	49.8	-8.0	32.2	74
1325.750000	42.7	201.0	V	289.0	50.1	-7.4	31.3	74
1660.250000	44.4	201.0	H	145.0	49.6	-5.2	29.6	74
1963.500000	46.5	201.0	H	311.0	49.8	-3.3	27.5	74
2255.500000	47.0	100.0	V	0.0	49.2	-2.2	27.0	74
2994.250000	53.2	201.0	V	0.0	55.5	-2.3	20.8	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1181.000000	29.3	201.0	H	0.0	37.3	-8.0	24.7	54
1429.500000	30.4	100.0	V	339.0	37.3	-6.9	23.6	54
1635.750000	32.7	201.0	H	181.0	37.4	-4.7	21.3	54
1998.500000	34.5	100.0	V	274.0	37.9	-3.4	19.5	54
2280.250000	35.7	201.0	V	159.0	37.0	-1.3	18.3	54
2995.750000	41.1	100.0	H	298.0	43.4	-2.3	12.9	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 3-18GHz PK+AV



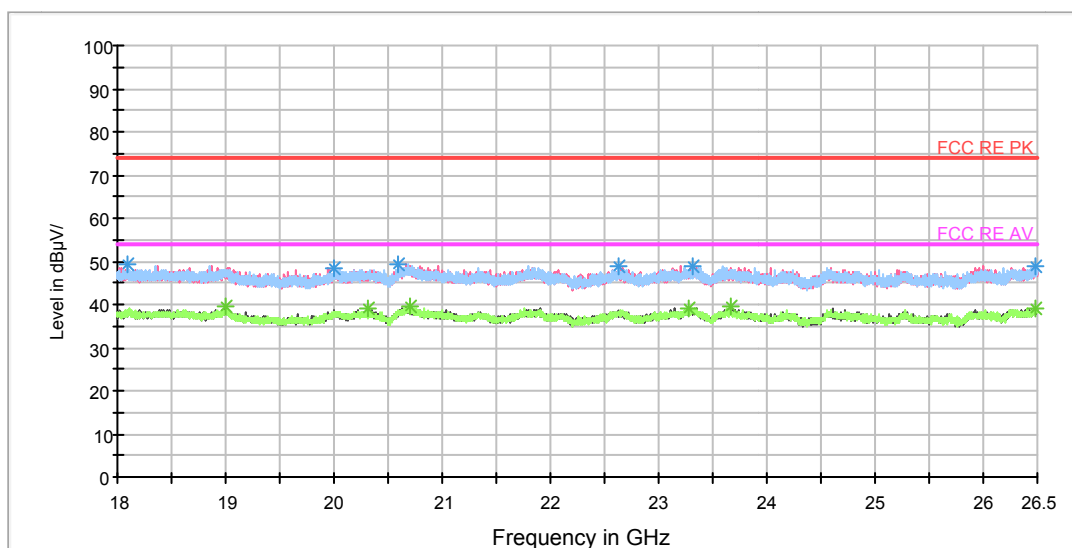
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3999.375000	41.5	202.0	H	237.0	42.0	-0.5	32.5	74
5257.500000	44.2	101.0	H	171.0	47.9	-3.7	29.8	74
7205.625000	47.2	202.0	V	266.0	55.9	-8.7	26.8	74
9871.875000	49.1	101.0	V	282.0	60.6	-11.5	24.9	74
12680.625000	52.9	101.0	H	25.0	67.9	-15.0	21.1	74
17996.250000	61.2	202.0	H	218.0	86.6	-25.4	12.8	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4023.750000	32.0	202.0	V	69.0	32.6	0.6	22.0	54
5257.500000	35.1	101.0	H	171.0	38.8	3.7	18.9	54
7115.625000	37.7	101.0	H	25.0	45.9	8.2	16.3	54
9793.125000	40.1	202.0	V	285.0	52.3	12.2	13.9	54
13055.625000	43.7	202.0	H	237.0	59.9	16.2	10.3	54
17998.125000	52.8	202.0	H	170.0	78.2	25.4	1.2	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 18-26.5GHz PK+AV



Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18097.750000	49.2	H	17.0	51.4	-2.2	24.8	74
19998.562500	48.5	V	126.0	54.2	-5.7	25.5	74
20586.125000	49.3	H	0.0	55.7	-6.4	24.7	74
22622.937500	49.0	H	51.0	55.7	-6.7	25.0	74
23316.750000	48.7	H	163.0	54.7	-6.0	25.3	74
26476.625000	48.8	H	244.0	54.2	-5.4	25.2	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18999.812500	39.5	V	323.0	44.5	-5.0	14.5	54
20308.812500	38.9	V	297.0	44.9	-6.0	15.1	54
20708.312500	39.4	V	212.0	46.1	-6.7	14.6	54
23285.937500	39.0	V	284.0	45.0	-6.0	15.0	54
23662.062500	39.3	V	238.0	45.2	-5.9	14.7	54
26483.000000	39.3	H	136.0	44.7	-5.4	14.7	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

4.11 Conducted Emission

Ambient condition

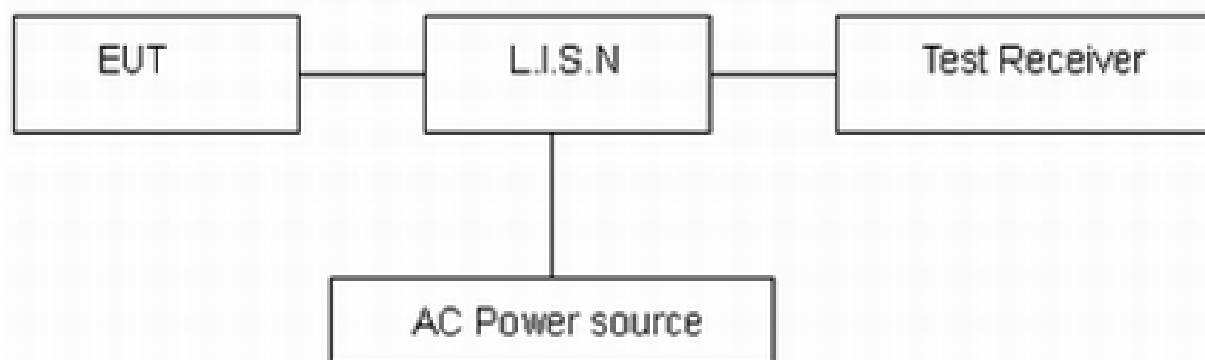
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.10-2013. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line.

The test is in transmitting mode.

Test Setup



Note: AC Power source is used to change the voltage from 220V/50Hz to 110V/60Hz.

Limits

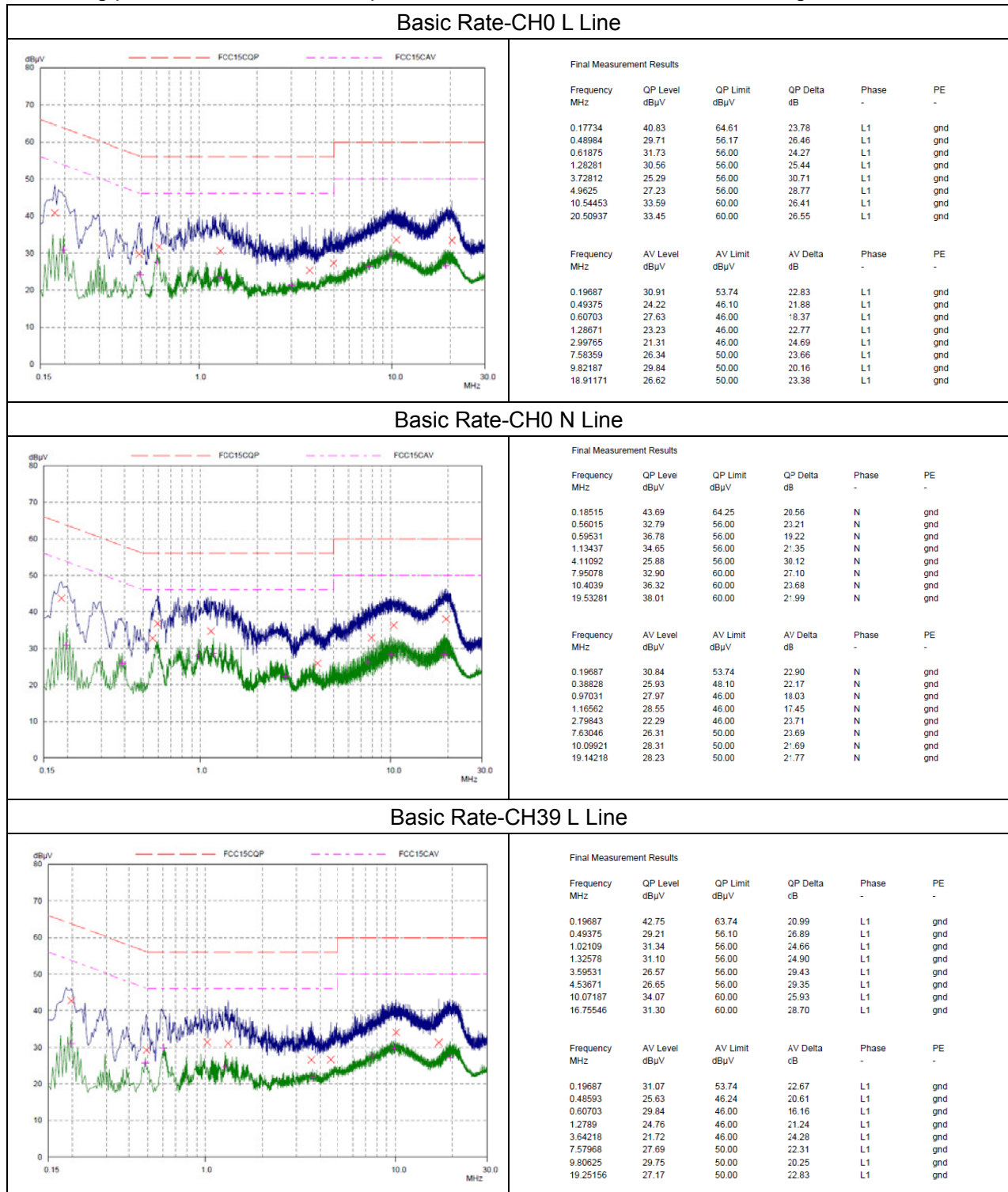
Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U=2.69$ dB.

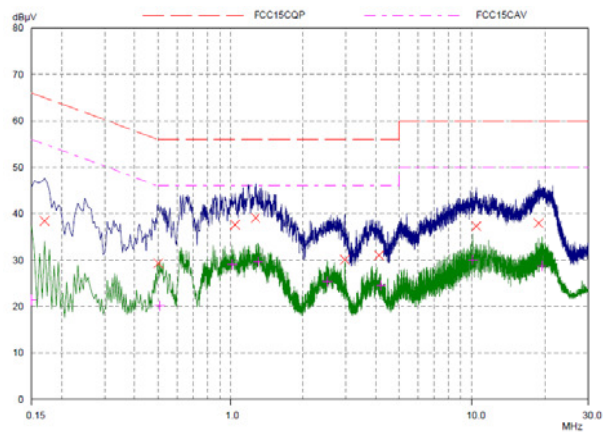
Test Results:

Following plots, Blue trace uses the peak detection, Green trace uses the average detection.





Basic Rate-CH39 N Line

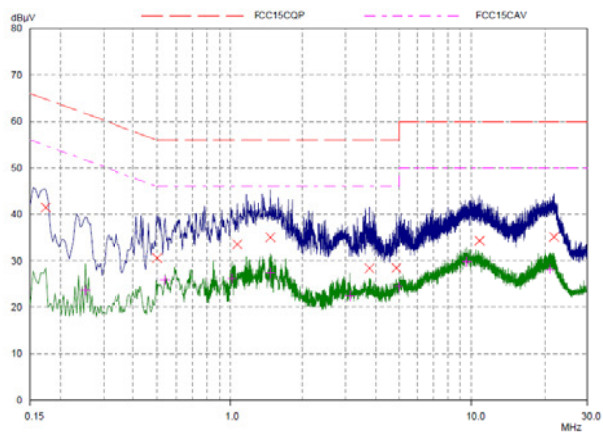


Final Measurement Results

Frequency MHz	QP Level dBμV	QP Limit dBμV	QP Delta dB	Phase -	PE -
0.16953	38.44	64.98	26.54	N	gnd
0.50156	29.33	56.00	26.67	N	gnd
1.04062	37.65	56.00	18.35	N	gnd
1.26718	39.11	56.00	16.89	N	gnd
2.97812	30.08	56.00	25.92	N	gnd
4.11875	31.05	56.00	24.95	N	gnd
10.42343	37.31	60.00	22.69	N	gnd
18.76328	37.96	60.00	22.04	N	gnd

Frequency MHz	AV Level dBμV	AV Limit dBμV	AV Delta dB	Phase -	PE -
0.15	21.46	56.00	34.54	N	gnd
0.50937	20.16	46.00	25.84	N	gnd
1.00937	29.16	46.00	16.84	N	gnd
1.29843	29.69	46.00	16.31	N	gnd
2.52109	25.41	46.00	20.59	N	gnd
4.19296	24.51	46.00	21.49	N	gnd
10.07187	30.03	50.00	19.97	N	gnd
19.40781	28.79	50.00	21.21	N	gnd

Basic Rate-CH78 L Line

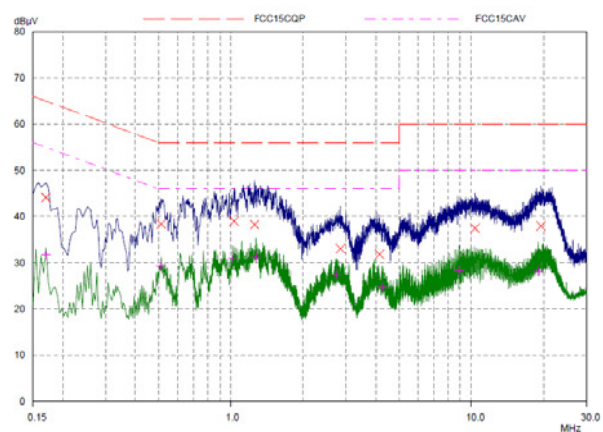


Final Measurement Results

Frequency MHz	QP Level dBμV	QP Limit dBμV	QP Delta dB	Phase -	PE -
0.17343	41.47	64.79	23.32	L1	gnd
0.50156	30.60	56.00	25.40	L1	gnd
1.06406	33.55	56.00	22.45	L1	gnd
1.47812	35.04	56.00	20.96	L1	gnd
3.76328	28.39	56.00	27.61	L1	gnd
4.85312	28.49	56.00	27.51	L1	gnd
10.78671	34.33	60.00	25.67	L1	gnd
22.08359	35.15	60.00	24.85	L1	gnd

Frequency MHz	AV Level dBμV	AV Limit dBμV	AV Delta dB	Phase -	PE -
0.25156	23.63	51.71	28.08	L1	gnd
0.54062	25.82	46.00	20.18	L1	gnd
1.01328	26.16	46.00	19.84	L1	gnd
1.47812	27.41	46.00	18.59	L1	gnd
3.13046	22.44	46.00	23.56	L1	gnd
4.97421	24.47	46.00	21.53	L1	gnd
9.55234	29.82	50.00	20.18	L1	gnd
21.26328	28.20	50.00	21.80	L1	gnd

Basic Rate-CH78 N Line



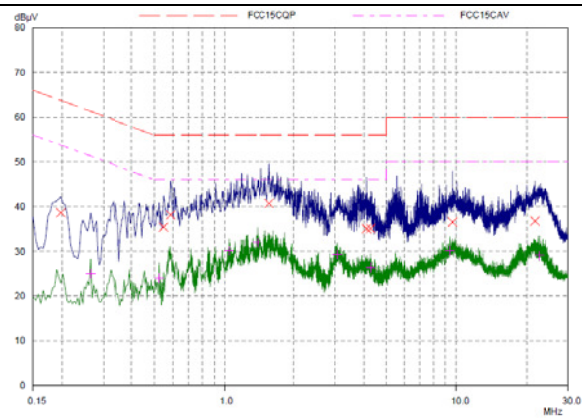
Final Measurement Results

Frequency MHz	QP Level dBμV	QP Limit dBμV	QP Delta dB	Phase -	PE -
0.16953	44.10	64.98	20.88	N	gnd
0.51327	38.37	56.00	17.63	N	gnd
1.02889	39.01	56.00	16.99	N	gnd
1.25156	38.23	56.00	17.77	N	gnd
2.85312	33.06	56.00	22.94	N	gnd
4.13046	31.86	56.00	24.14	N	gnd
10.36875	37.47	60.00	22.53	N	gnd
19.45468	37.95	60.00	22.05	N	gnd

Frequency MHz	AV Level dBμV	AV Limit dBμV	AV Delta dB	Phase -	PE -
0.16953	31.64	54.98	23.34	N	gnd
0.51327	29.35	46.00	16.65	N	gnd
1.01328	31.06	46.00	14.94	N	gnd
1.26718	31.19	46.00	14.81	N	gnd
2.74765	27.36	46.00	18.64	N	gnd
4.25156	24.67	46.00	21.33	N	gnd
8.91562	28.30	50.00	21.70	N	gnd
18.94687	28.19	50.00	21.81	N	gnd



EDR-CH0 L Line

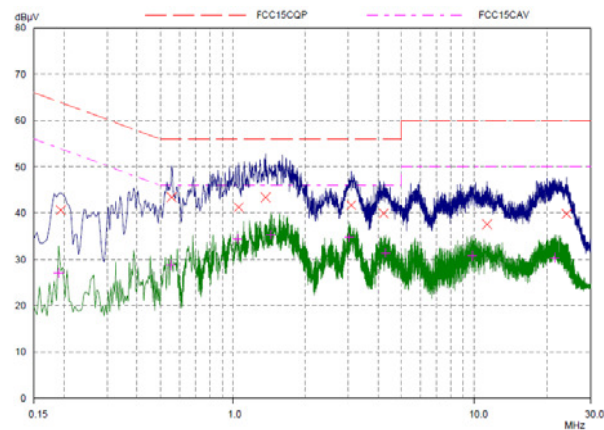


Final Measurement Results

Frequency MHz	QP Level dBuV	QP Limit dBuV	QP Delta dB	Phase -	PE -
0.19687	38.63	63.74	25.11	L1	gnd
0.54843	35.41	56.00	20.59	L1	gnd
0.5875	38.13	56.00	17.87	L1	gnd
1.56796	40.73	56.00	15.27	L1	gnd
4.10311	35.05	56.00	20.95	L1	gnd
4.27109	35.08	56.00	20.92	L1	gnd
9.65	36.51	60.00	23.49	L1	gnd
21.64218	36.76	60.00	23.24	L1	gnd

Frequency MHz	AV Level dBuV	AV Limit dBuV	AV Delta dB	Phase -	PE -
0.26328	25.05	51.33	26.28	L1	gnd
0.525	23.96	46.00	22.04	L1	gnd
1.04062	30.10	46.00	15.90	L1	gnd
1.37656	32.00	46.00	14.00	L1	gnd
3.06796	29.31	46.00	16.69	L1	gnd
4.26718	26.39	46.00	19.61	L1	gnd
9.39218	30.13	50.00	19.87	L1	gnd
22.6539	29.05	50.00	20.95	L1	gnd

EDR-CH0 N Line

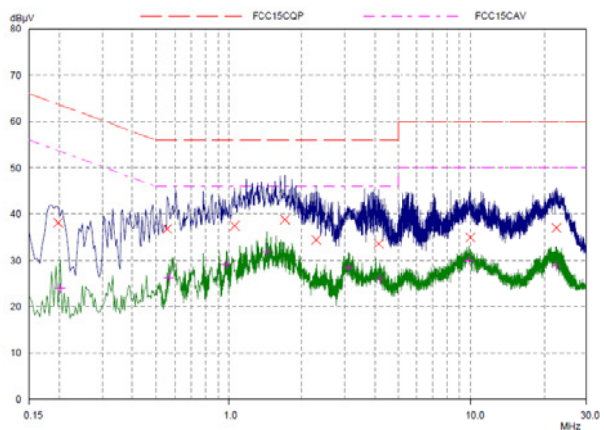


Final Measurement Results

Frequency MHz	QP Level dBuV	QP Limit dBuV	QP Delta dB	Phase -	PE -
0.19296	40.62	63.91	23.29	N	gnd
0.55625	43.43	56.00	12.57	N	gnd
1.05234	41.27	56.00	14.73	N	gnd
1.37265	43.39	56.00	12.61	N	gnd
3.09531	41.74	56.00	14.26	N	gnd
4.2125	39.93	56.00	16.07	N	gnd
11.275	37.60	60.00	22.40	N	gnd
24.04062	39.84	60.00	20.16	N	gnd

Frequency MHz	AV Level dBuV	AV Limit dBuV	AV Delta dB	Phase -	PE -
0.18906	27.08	54.08	27.00	N	gnd
0.55234	28.78	46.00	17.22	N	gnd
1.04062	34.43	46.00	11.57	N	gnd
1.43906	35.33	46.00	10.67	N	gnd
3.03671	34.72	46.00	11.28	N	gnd
4.20843	31.42	46.00	14.58	N	gnd
9.80625	30.82	50.00	19.18	N	gnd
21.54453	30.31	50.00	19.69	N	gnd

EDR-CH39 L Line



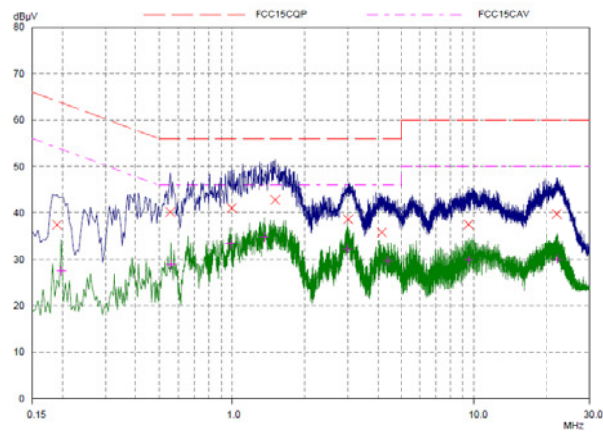
Final Measurement Results

Frequency MHz	QP Level dBuV	QP Limit dBuV	QP Delta dB	Phase -	PE -
0.19687	38.13	63.74	25.61	L1	gnd
0.55625	36.82	56.00	19.18	L1	gnd
1.05234	37.48	56.00	18.52	L1	gnd
1.70859	38.82	56.00	17.18	L1	gnd
2.29453	34.45	56.00	21.55	L1	gnd
4.13828	33.60	56.00	22.40	L1	gnd
9.9664	34.98	60.00	25.02	L1	gnd
22.75546	37.05	60.00	22.95	L1	gnd

Frequency MHz	AV Level dBuV	AV Limit dBuV	AV Delta dB	Phase -	PE -
0.20078	23.96	53.58	29.62	L1	gnd
0.56406	26.29	46.00	19.71	L1	gnd
0.97421	29.13	46.00	16.87	L1	gnd
1.44296	31.95	46.00	14.05	L1	gnd
3.11093	28.44	46.00	17.56	L1	gnd
4.17342	26.07	46.00	19.93	L1	gnd
9.8375	30.06	50.00	19.94	L1	gnd
22.74765	28.81	50.00	21.19	L1	gnd



EDR-CH39 N Line

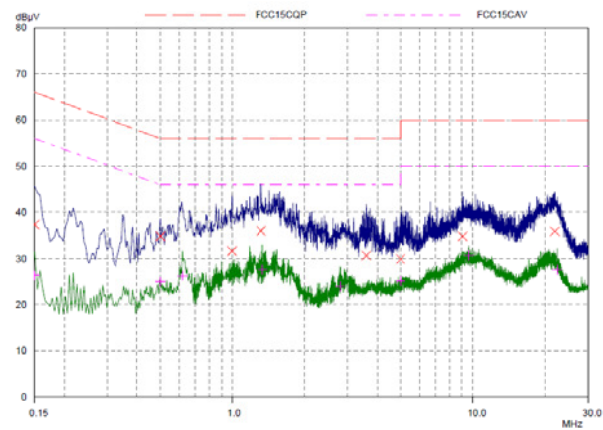


Final Measurement Results

Frequency MHz	QP Level dBuV	QP Limit dBuV	QP Delta dB	Phase -	PE -
0.18906	37.44	64.08	26.64	N	gnd
0.55625	40.19	56.00	15.81	N	gnd
0.99375	41.04	56.00	14.96	N	gnd
1.51328	42.79	56.00	13.21	N	gnd
3.01328	38.60	56.00	17.40	N	gnd
4.13436	35.80	56.00	20.20	N	gnd
9.49765	37.52	60.00	22.48	N	gnd
22.13046	39.78	60.00	20.22	N	gnd

Frequency MHz	AV Level dBuV	AV Limit dBuV	AV Delta dB	Phase -	PE -
0.19687	27.54	53.74	26.20	N	gnd
0.56015	28.88	46.00	17.12	N	gnd
0.97812	33.34	46.00	12.66	N	gnd
1.36484	34.78	46.00	11.22	N	gnd
2.98593	32.29	46.00	13.71	N	gnd
4.37656	29.71	46.00	16.29	N	gnd
9.51718	29.91	50.00	20.09	N	gnd
22.20468	30.02	50.00	19.98	N	gnd

EDR-CH78 L Line

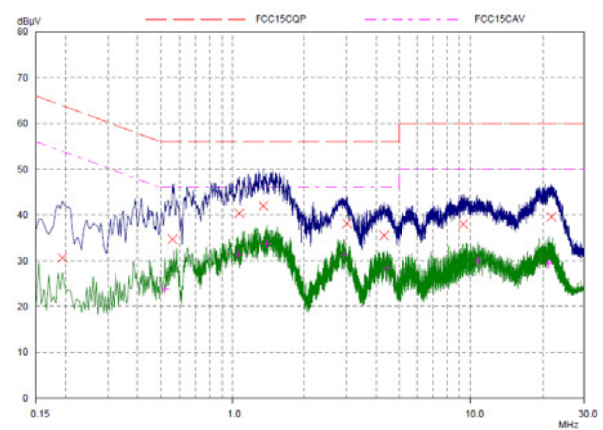


Final Measurement Results

Frequency MHz	QP Level dBuV	QP Limit dBuV	QP Delta dB	Phase -	PE -
0.15	37.36	66.00	28.64	L1	gnd
0.50156	34.80	56.00	21.20	L1	gnd
0.99375	31.59	56.00	24.41	L1	gnd
1.31796	35.99	56.00	20.01	L1	gnd
3.5914	30.65	56.00	25.35	L1	gnd
4.98984	29.88	56.00	26.12	L1	gnd
9.06796	34.78	60.00	25.22	L1	gnd
22.04453	35.89	60.00	24.11	L1	gnd

Frequency MHz	AV Level dBuV	AV Limit dBuV	AV Delta dB	Phase -	PE -
0.15	26.34	56.00	29.66	L1	gnd
0.50156	24.94	46.00	21.06	L1	gnd
0.61875	26.28	46.00	19.72	L1	gnd
1.3375	27.63	46.00	18.37	L1	gnd
2.79843	23.98	46.00	22.02	L1	gnd
4.98984	25.14	46.00	20.86	L1	gnd
9.62265	30.66	50.00	19.34	L1	gnd
22.52109	27.57	50.00	22.43	L1	gnd

EDR-CH78 N Line



Final Measurement Results

Frequency MHz	QP Level dBuV	QP Limit dBuV	QP Delta dB	Phase -	PE -
0.19296	30.61	63.91	33.30	N	gnd
0.56015	34.70	56.00	21.30	N	gnd
1.06406	40.37	56.00	15.63	N	gnd
1.35312	41.97	56.00	14.03	N	gnd
3.02109	38.14	56.00	17.86	N	gnd
4.30625	35.53	56.00	20.47	N	gnd
9.3414	38.01	60.00	21.99	N	gnd
22.04062	39.58	60.00	20.42	N	gnd

Frequency MHz	AV Level dBuV	AV Limit dBuV	AV Delta dB	Phase -	PE -
0.52109	23.88	46.00	22.12	N	gnd
1.05234	31.43	46.00	14.57	N	gnd
1.4039	33.74	46.00	12.26	N	gnd
2.92343	31.40	46.00	14.60	N	gnd
4.43515	28.44	46.00	17.56	N	gnd
10.73984	30.07	50.00	19.93	N	gnd
21.47812	29.44	50.00	20.56	N	gnd

5 Main Test Instruments

Name	Type	Manufacturer	Serial Number	Calibration Date	Expiration Time
BT Base Station Simulator	CBT	R&S	100271	2016-05-21	2017-05-20
Loop Antenna	FMZB1519	SCHWARZBECK	1519-047	2014-02-29	2017-02-28
EMI Test Receiver	ESCS30	R&S	100138	2015-12-16	2016-12-15
LISN	ENV216	R&S	101171	2015-12-16	2016-12-15
EMI Test Receiver	ESCI	R&S	100948	2016-05-21	2017-05-20
TRILOG Broadband Antenna	VULB 9163	Schwarzbeck	9163-201	2013-11-25	2016-11-24
Double Ridged Waveguide Horn Antenna	HF907	R&S	100126	2015-07-01	2018-06-30
Power Splitter	SHX-GF2-2-13	Hua Xiang	10120101	NA	NA
Spectrum Analyzer	FSV30	R&S	100815	2015-12-16	2016-12-15
Spectrum Analyzer	N9010A	Agilent	MY47191109	2016-05-21	2017-05-20
Standard Gain Horn	3160-09	ETS-Lindgren	00102644	2015-05-19	2018-05-18
RF Cable	SMA 15cm	Agilent	0001	2015-5-08	2016-08-07

*****END OF REPORT *****