RF TEST REPORT

Applicant	TP-LINK TECHNOLOGIES CO., LTD.
FCC ID	TE7C5V1
Brand	TP-LINK
Product	C5 FDD-LTE Smartphone
Model	TP701C
Report No.	RXA1601-0001RF04R1
Issue Date	June 1, 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

Kai Xu

Approved by: Kai Xu

TA Technology (Shanghai) Co., Ltd.

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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: January 4, 2016 ~ January 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
Country:	P. R. China
Contact:	Xu Kai
Telephone:	+86-021-50791141/2/3
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	TP-LINK TECHNOLOGIES CO., LTD.
Applicant address	Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China
Manufacturer	TP-LINK TECHNOLOGIES CO., LTD.
Manufacturer address	Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China

General information

Model:	TP701C		
IMEI:	SIM 1: 868983020009872 SIM 2: 868983020011233		
HW Version:	AL815_MB_PCB_V2.0		
SW Version:	H10S100D03B20151124R1001		
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	π/4 DQPSK	8DQPSK
Packet Type: (Maximum Payload)	DH5	2DH5	3DH5
Max. Conducted Power	8.4dBm		
Tested Frequency Range(s):	2400 ~ 2483.5 MHz		
EUT Accessory			
Battery	Manufacturer: DongGuan Amperex Technology Co., Ltd Model: NBL-42A2200 Power Rating: DC 3.8V, Li-ion		
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 C63.4 (2014)
DA00-705 Filing and Frequency Measurement Guidelines For Frequency Hopping Spread Spectrum System.(2000)

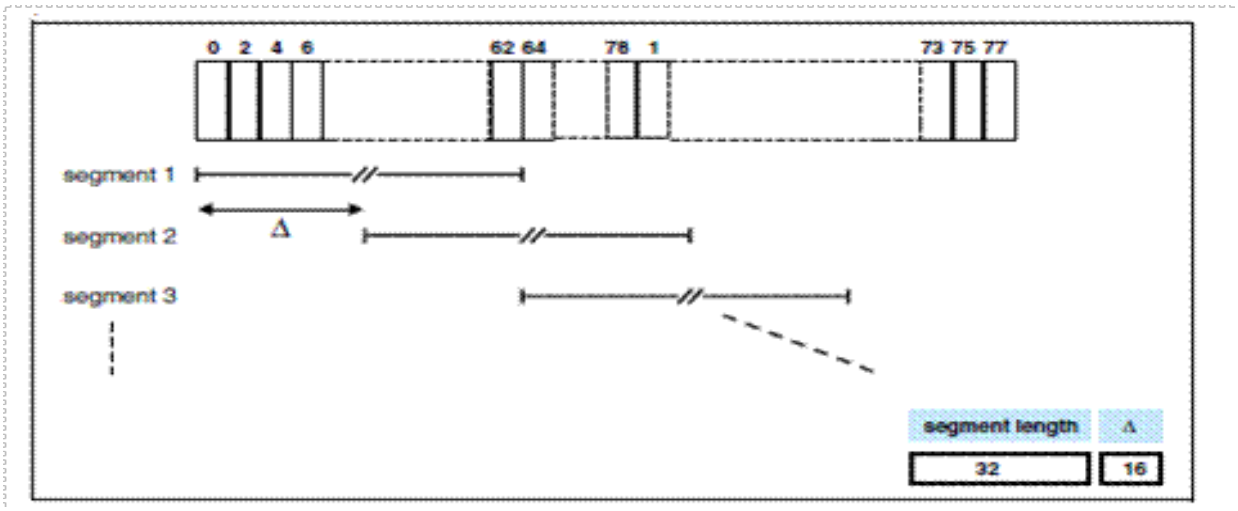
3 Information about the FHSS characteristics

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.

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	Basic-DH5 GFSK (Channel 0/39/78) EDR-2DH5 π/4 DQPSK (Channel 0/39/78)	DH5 GFSK(Channel 0/39/78) 2DH5 π/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

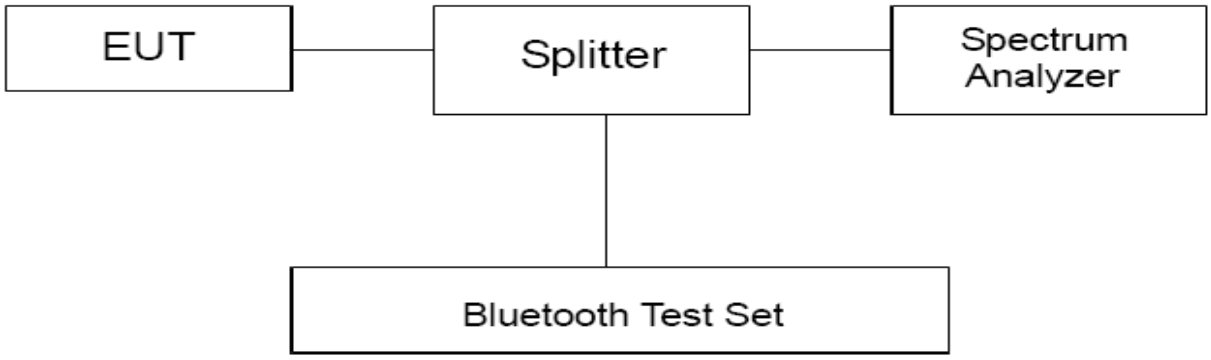
Ambient condition

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)

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

Band	Packet Type	Peak Output Power (dBm)			Conclusion
		Channel/Frequency(MHz)			
		0/2402 MHz	39/2441 MHz	78/2480 MHz	
BT	DH1	8.4	8.1	7.6	PASS
	DH3	8.4	8.1	7.6	PASS
	DH5	8.4	8.2	7.7	PASS
	2DH1	7.0	6.7	6.7	PASS
	2DH3	7.0	6.7	6.6	PASS
	2DH5	7.1	6.8	6.7	PASS
	3DH1	6.9	6.7	6.3	PASS
	3DH3	6.9	6.6	6.2	PASS
	3DH5	6.9	6.7	6.4	PASS

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

4.3 Occupied Bandwidth (20dB)

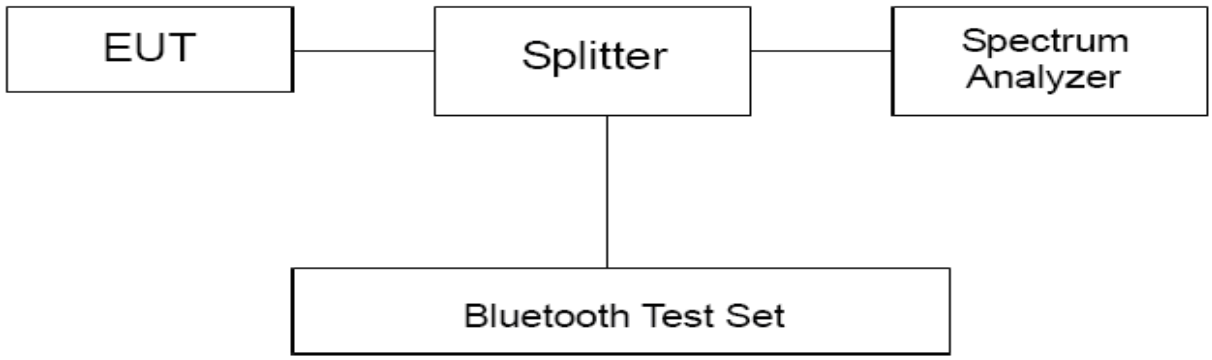
Ambient condition

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 20kHz and VBW is set to 62kHz on spectrum analyzer. -20dB occupied bandwidths are recorded.

Test Setup



Limits

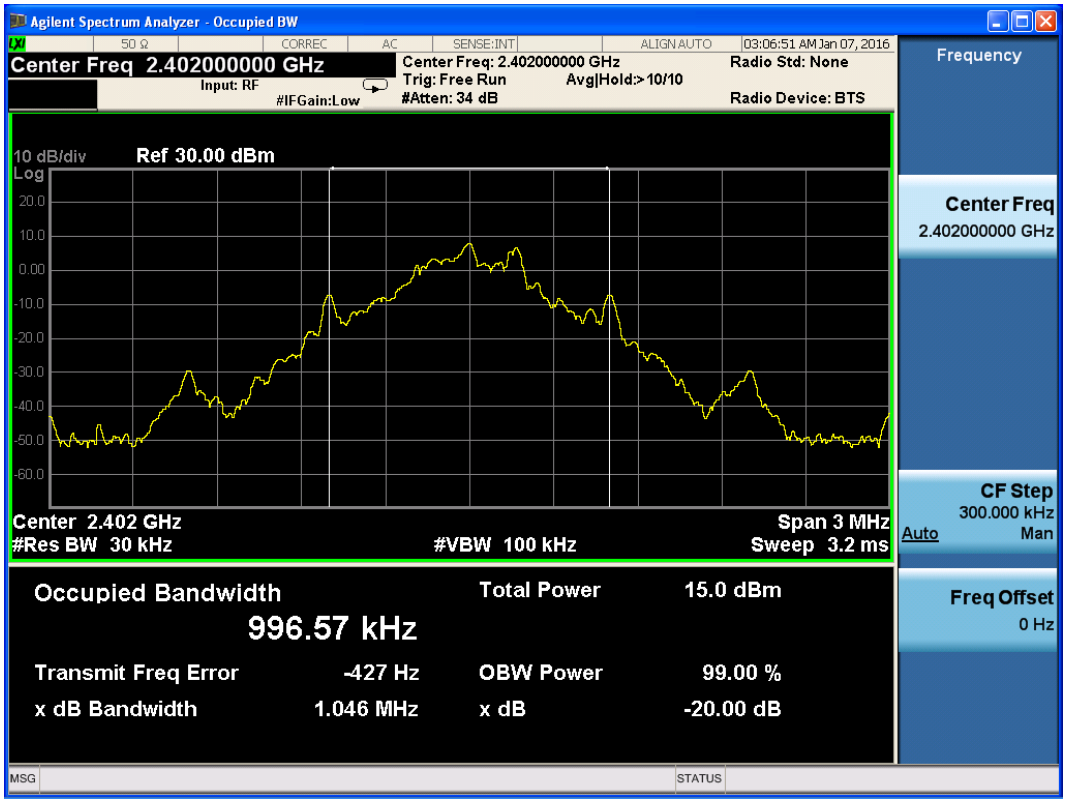
No specific occupied bandwidth requirements in part 15.247(a) (1).

Measurement Uncertainty

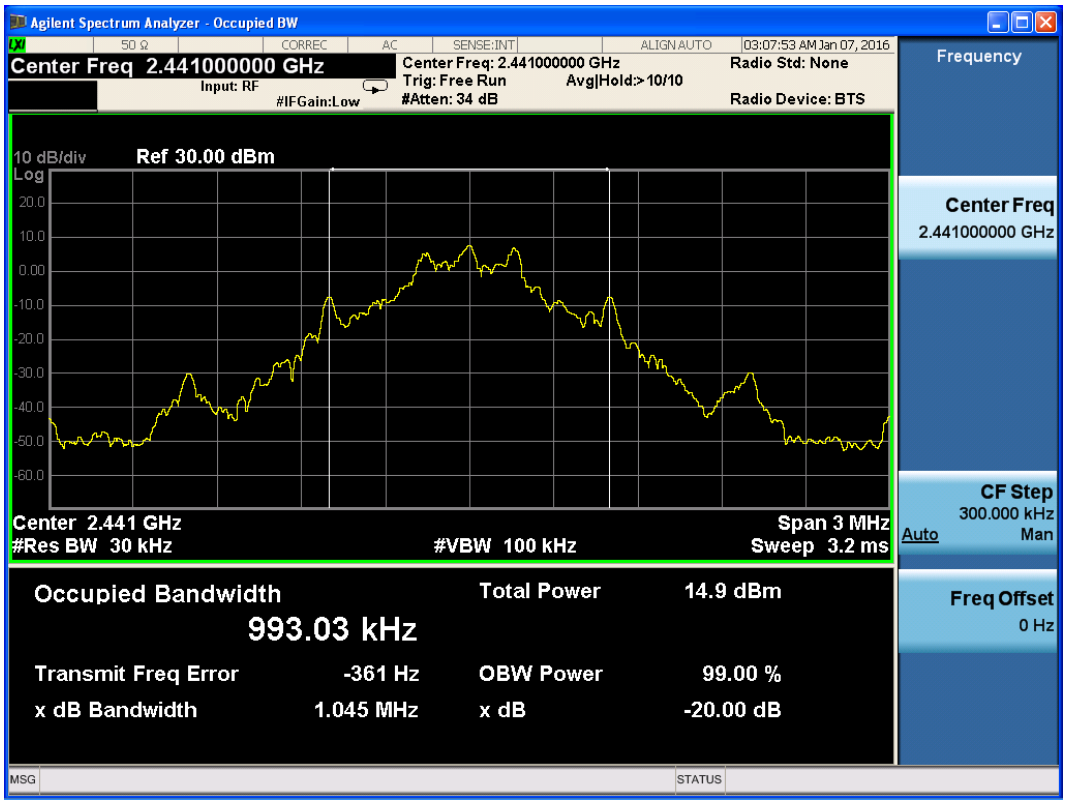
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, U=936 Hz.

Test Results

Mode	Channel	Frequency (MHz)	20dB Bandwidth(kHz)
DH5	0	2402	1046
DH5	39	2441	1045
DH5	78	2480	1045
2DH5	0	2402	1133
2DH5	39	2441	1128
2DH5	78	2480	1129
3DH5	0	2402	1182
3DH5	39	2441	1174
3DH5	78	2480	1182

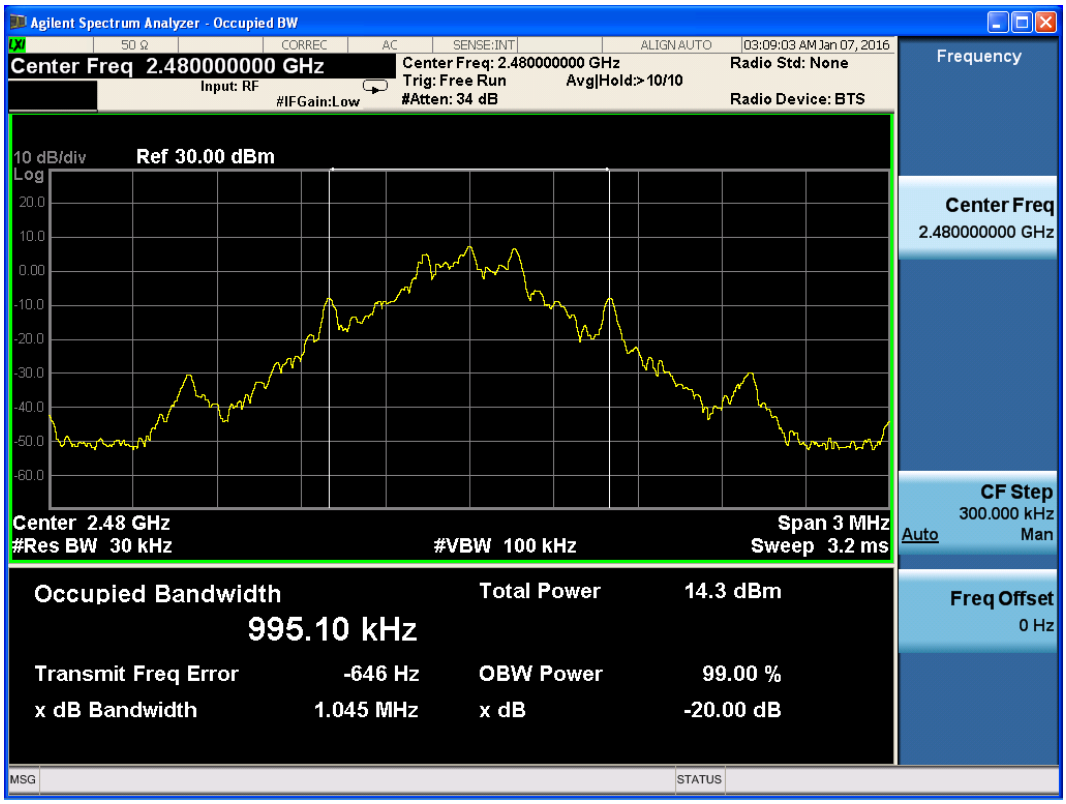


Carrier frequency (MHz): 2402, DH5
Channel No.:0



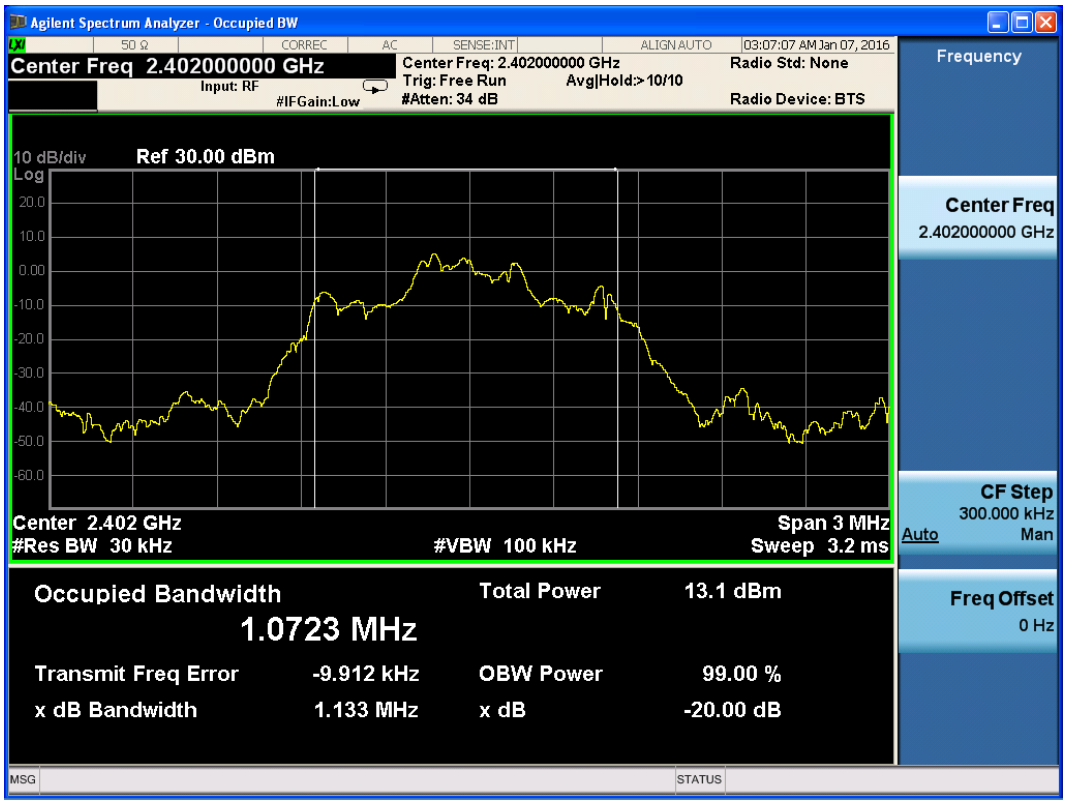
Carrier frequency (MHz): 2441, DH5

Channel No.:39



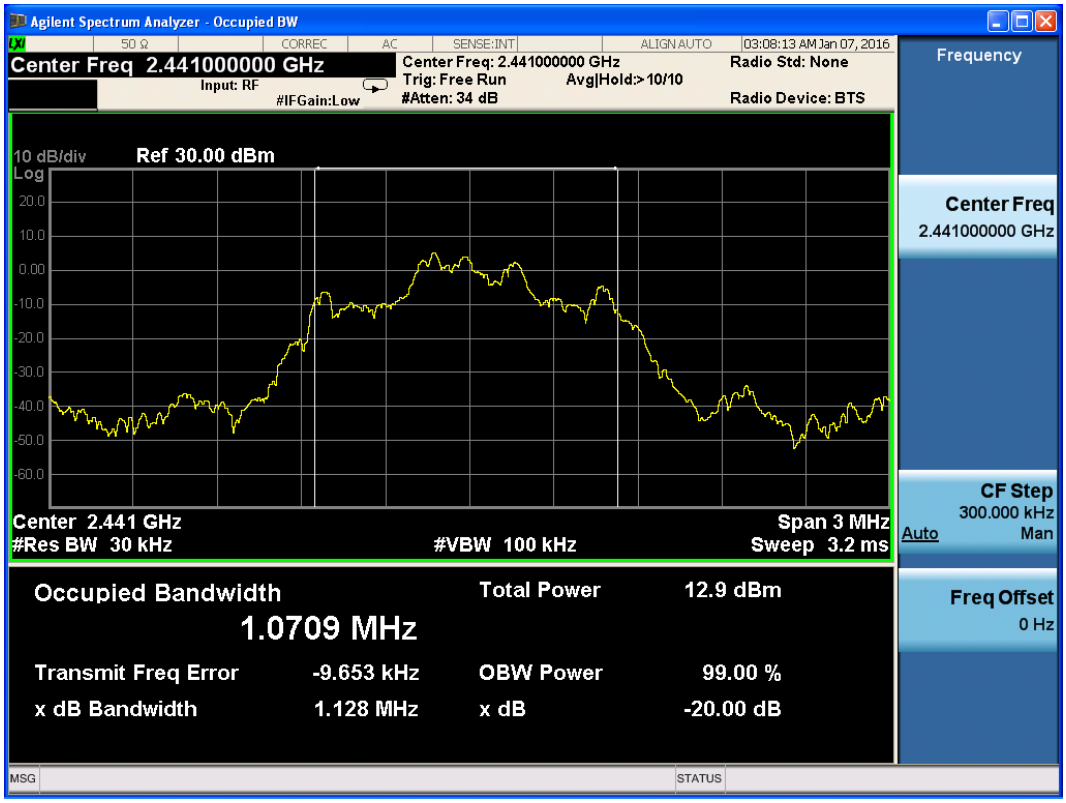
Carrier frequency (MHz): 2480, DH5

Channel No.:78



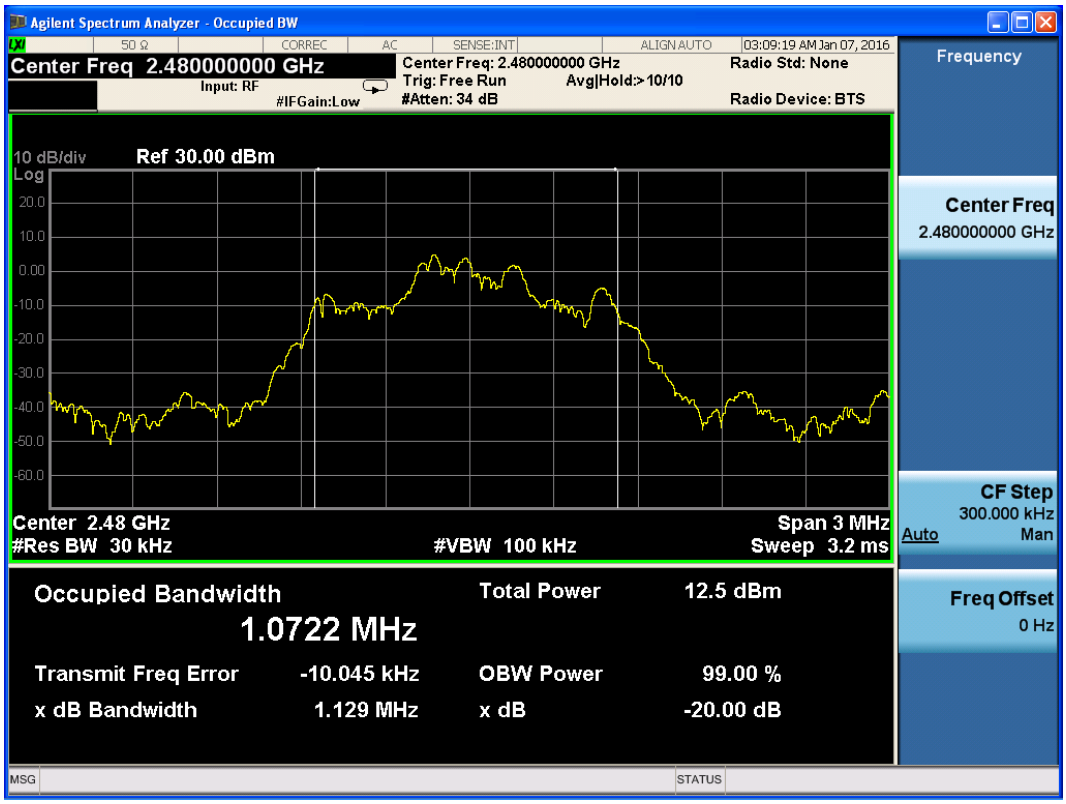
Carrier frequency (MHz): 2402, 2DH5

Channel No.:0



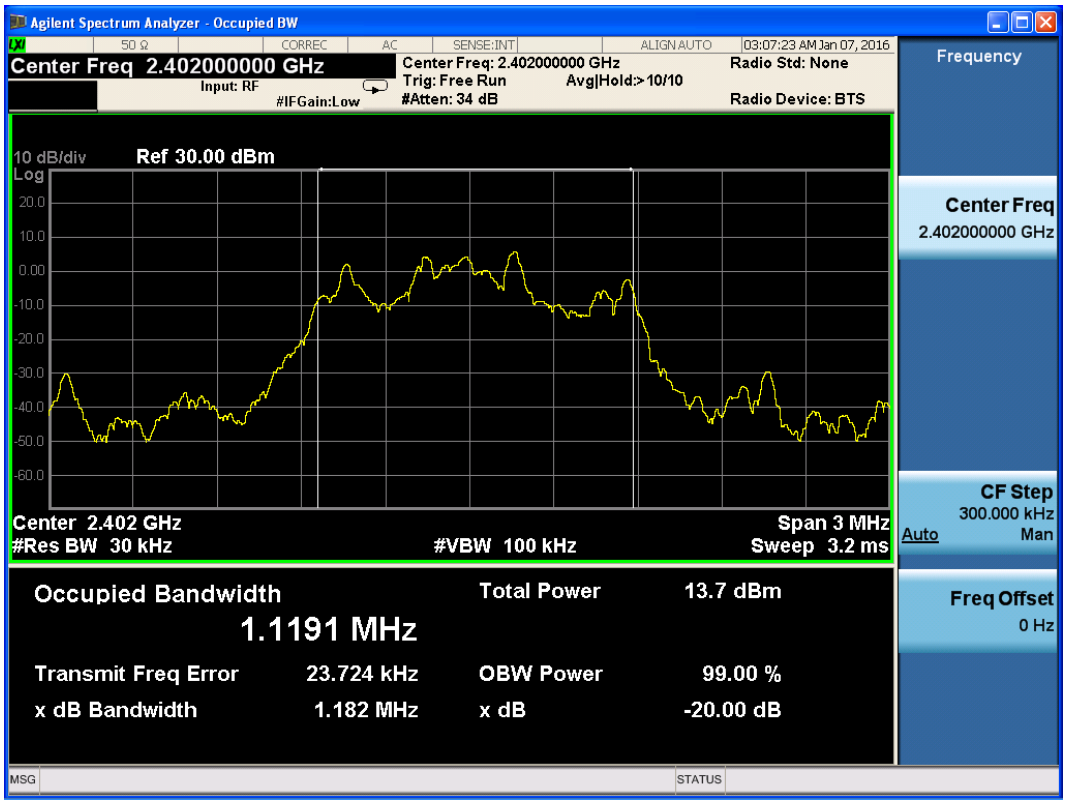
Carrier frequency (MHz): 2441, 2DH5

Channel No.:39



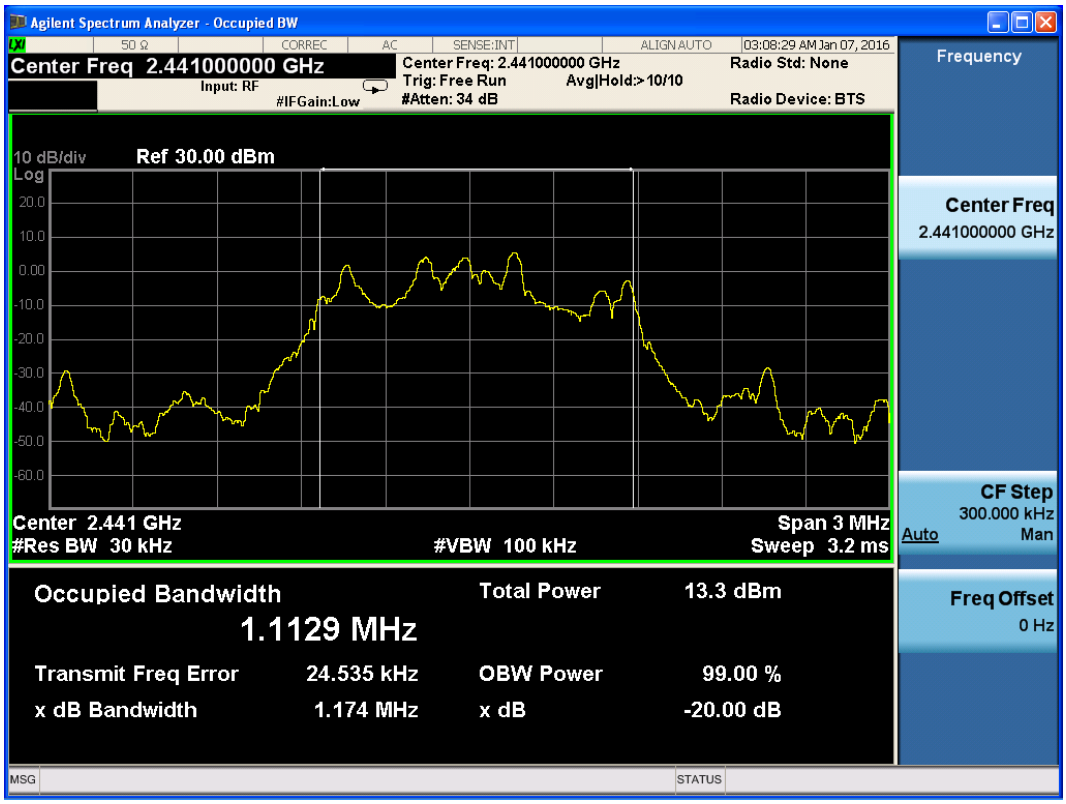
Carrier frequency (MHz): 2480, 2DH5

Channel No.:78



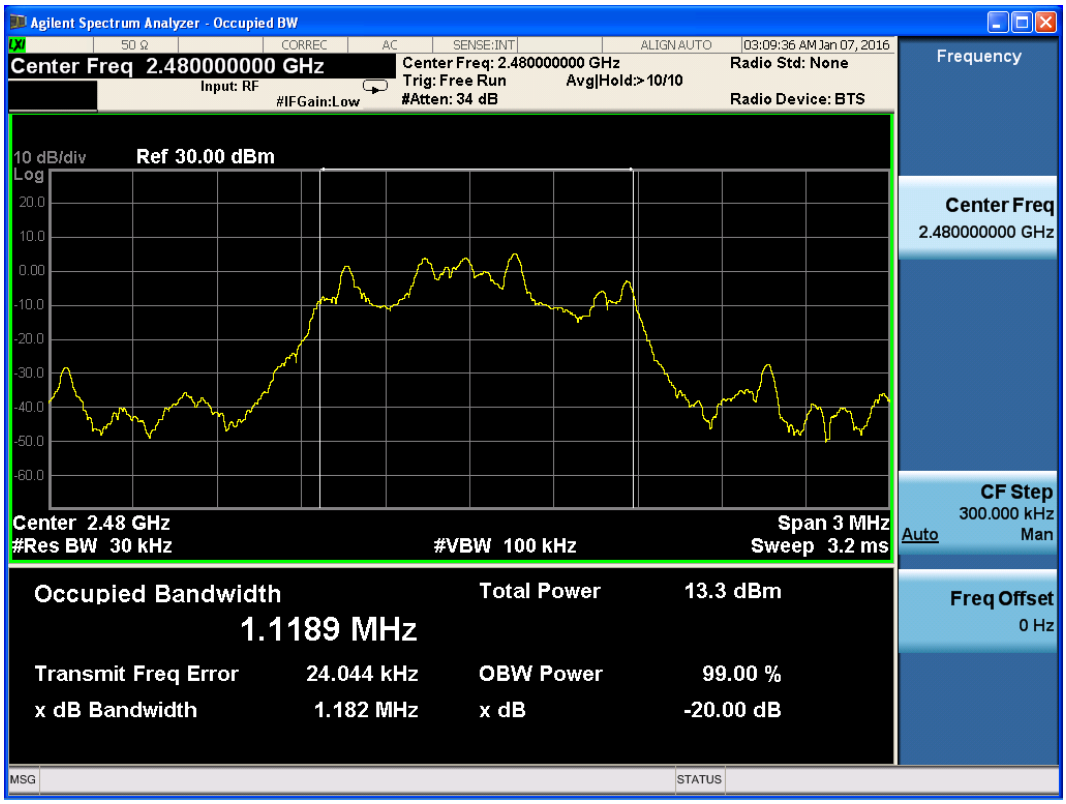
Carrier frequency (MHz): 2402, 3DH5

Channel No.:0



Carrier frequency (MHz): 2441, 3DH5

Channel No.:39



Carrier frequency (MHz): 2480, 3DH5

Channel No.:78

4.4 Frequency Separation

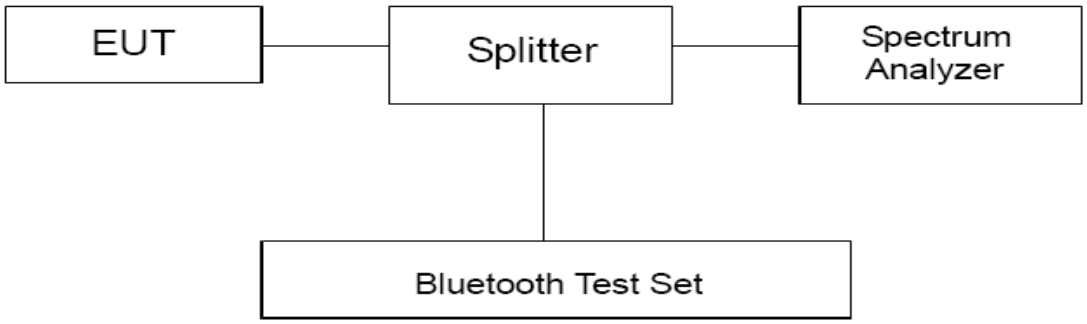
Ambient condition

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 3MHz 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. ”

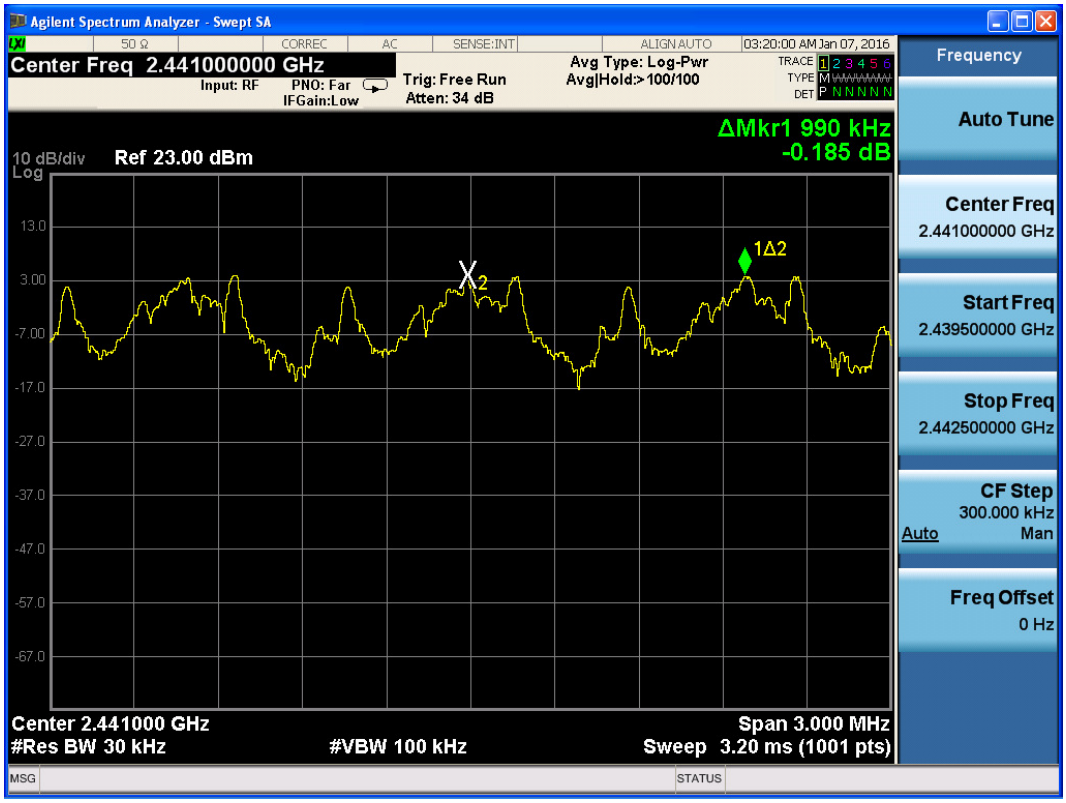
Note: The value of two-thirds of 20 dB bandwidth is always greater than 25 kHz.

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	990	1045	696.67	PASS
2DH5	2441	999	1128	752	PASS
3DH5	2441	1002	1174	782.67	PASS
Note: The limit is two-thirds of 20 dB bandwidth.					



DH5 Carrier frequency (MHz): 2441

2DH5 Carrier frequency (MHz): 2441

3DH5 Carrier frequency (MHz): 2441

4.5 Time of Occupancy (Dwell Time)

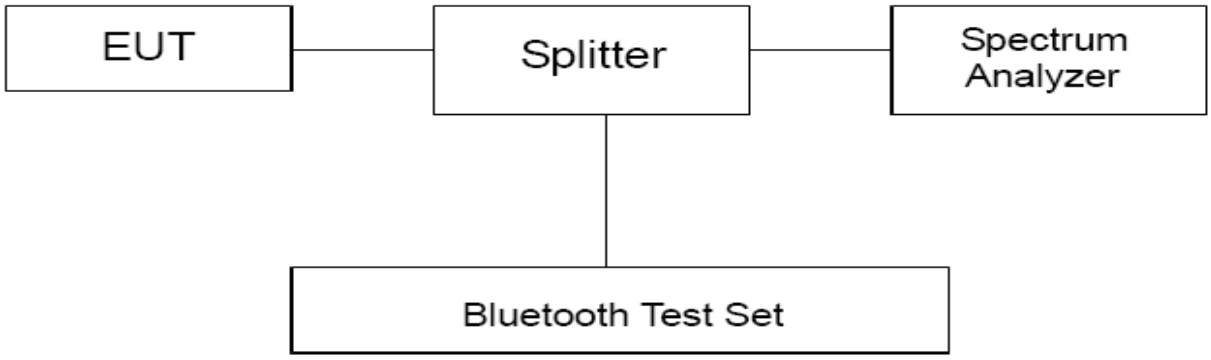
Ambient condition

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 3MHz 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

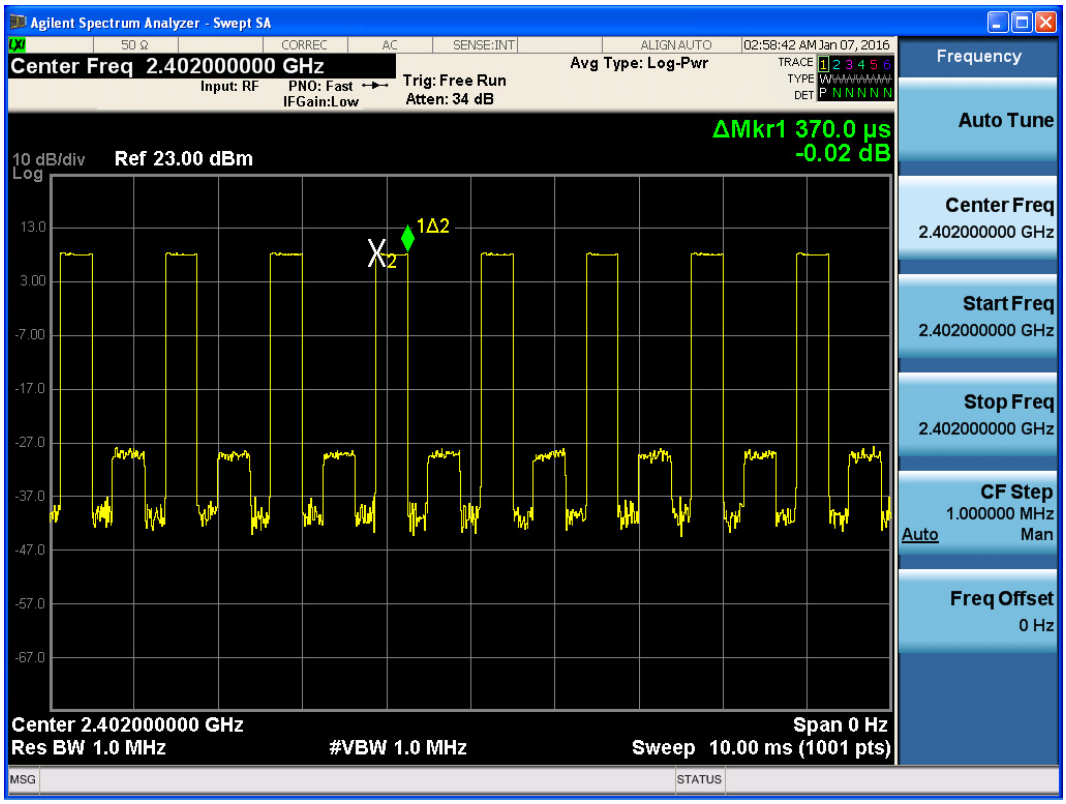
Measurement Uncertainty

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

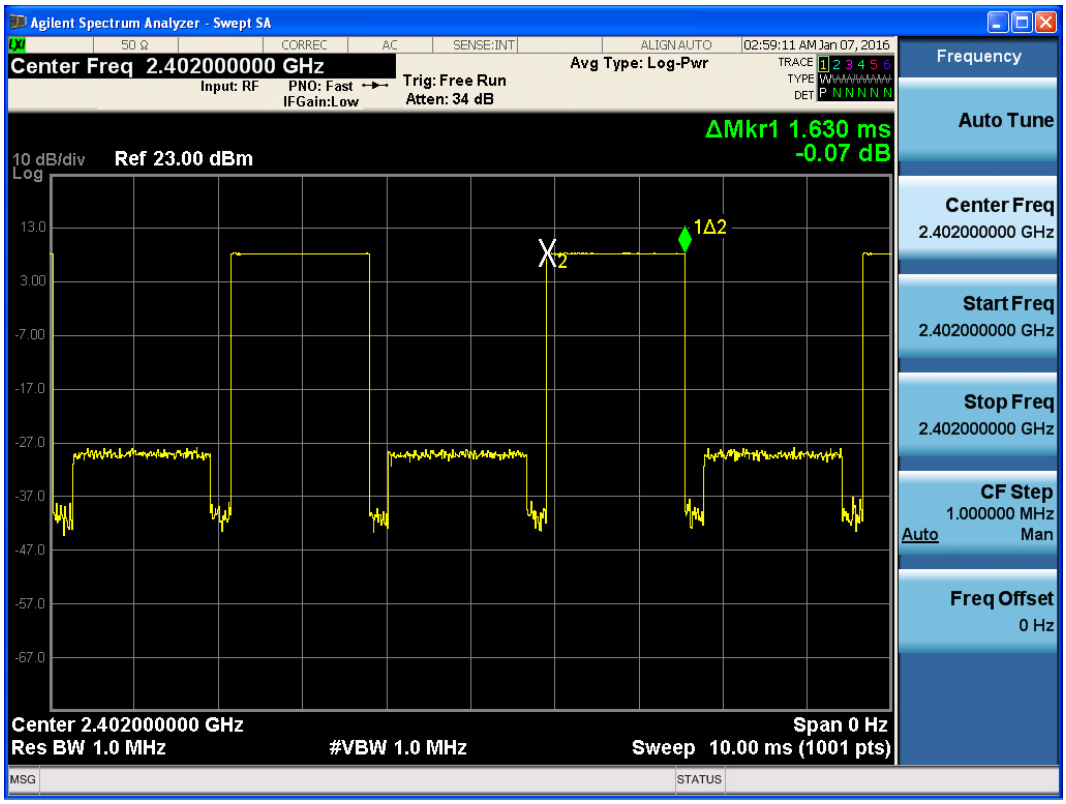
Requirements	Uncertainty	
Dwell Time	DH1	*U*=0.64ms
	DH3	*U*=0.80ms
	DH5	*U*=0.70ms
	2DH1	*U*=0.64ms
	2DH3	*U*=0.80ms
	2DH5	*U*=0.70ms
	3DH1	*U*=0.64ms
	3DH3	*U*=0.80ms
	3DH5	*U*=0.70ms

Test Results:

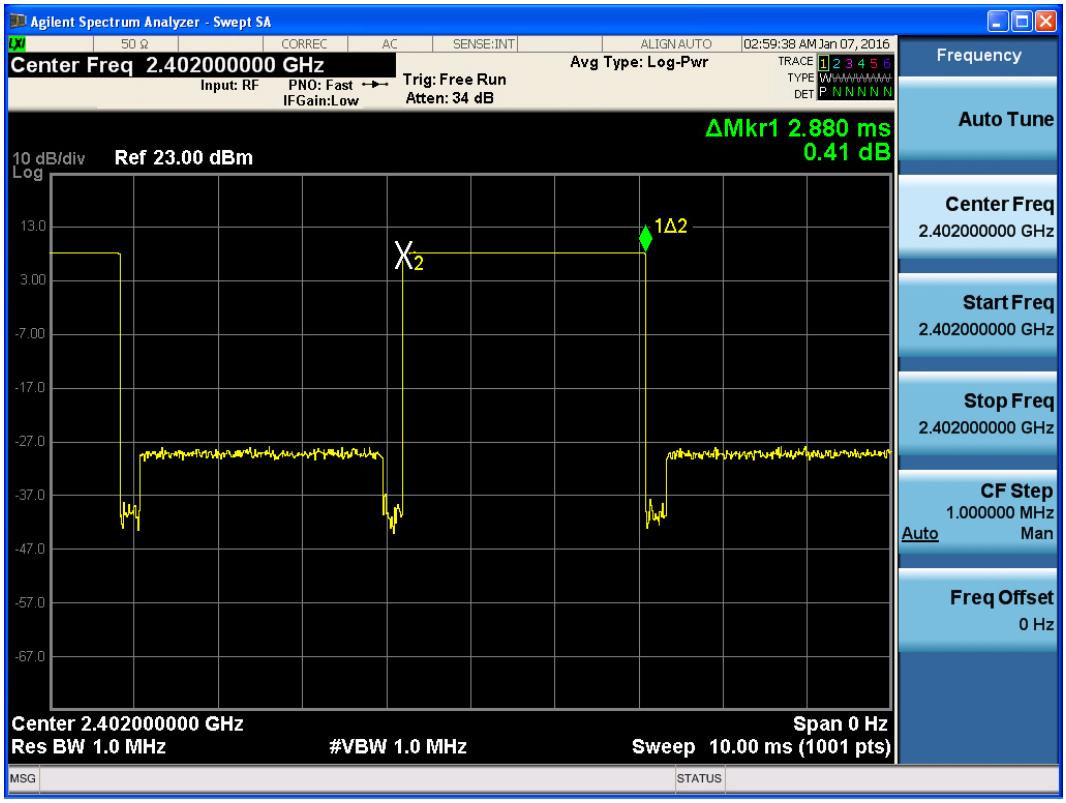
Channel 39					
Packet type	**hop rate (1/s)**	**Time slot length(ms)**	**Dwell time (ms)**	**Limit (ms)**	**Conclusion**
DH1	1600	0.37	236.80	400	PASS
DH3	533.33	1.63	347.73	400	PASS
DH5	320	2.88	368.64	400	PASS
2DH1	1600	0.38	243.20	400	PASS
2DH3	533.33	1.62	345.60	400	PASS
2DH5	320	2.88	368.64	400	PASS
3DH1	1600	0.36	230.40	400	PASS
3DH3	533.33	1.62	345.60	400	PASS
3DH5	320	2.88	368.64	400	PASS
Note: Dwell time = time slot length * hop rate * 0.4s					



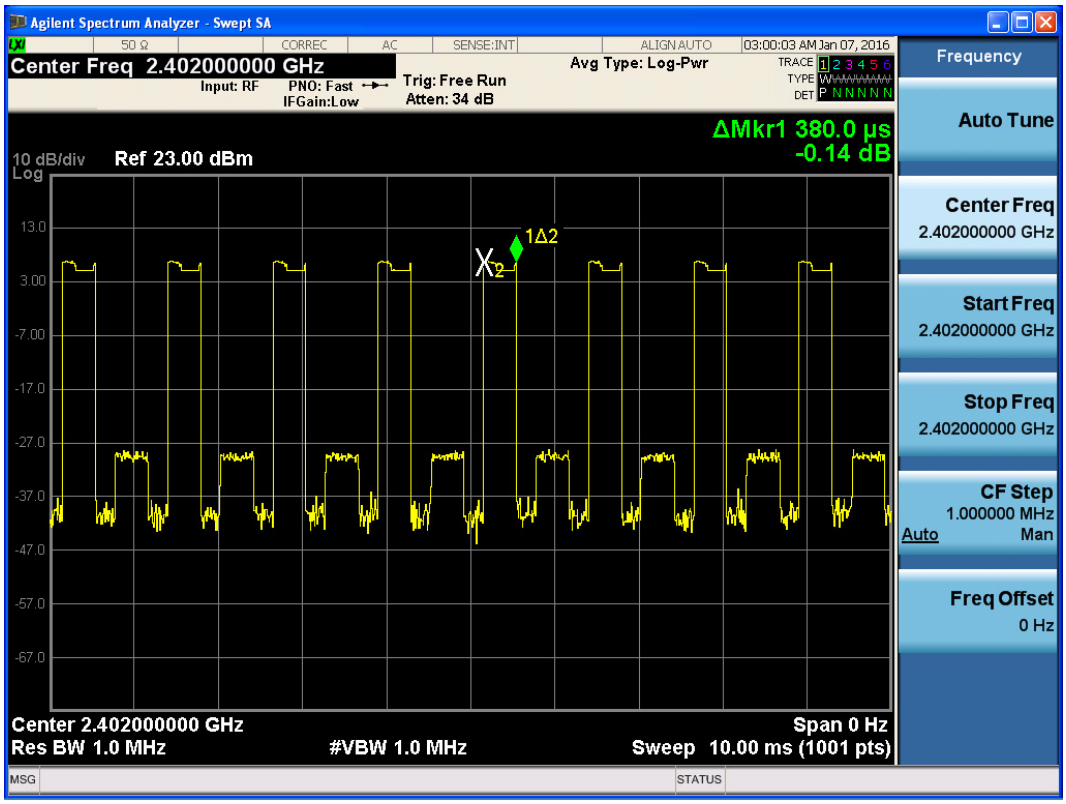
Carrier frequency (MHz): 2441, DH1



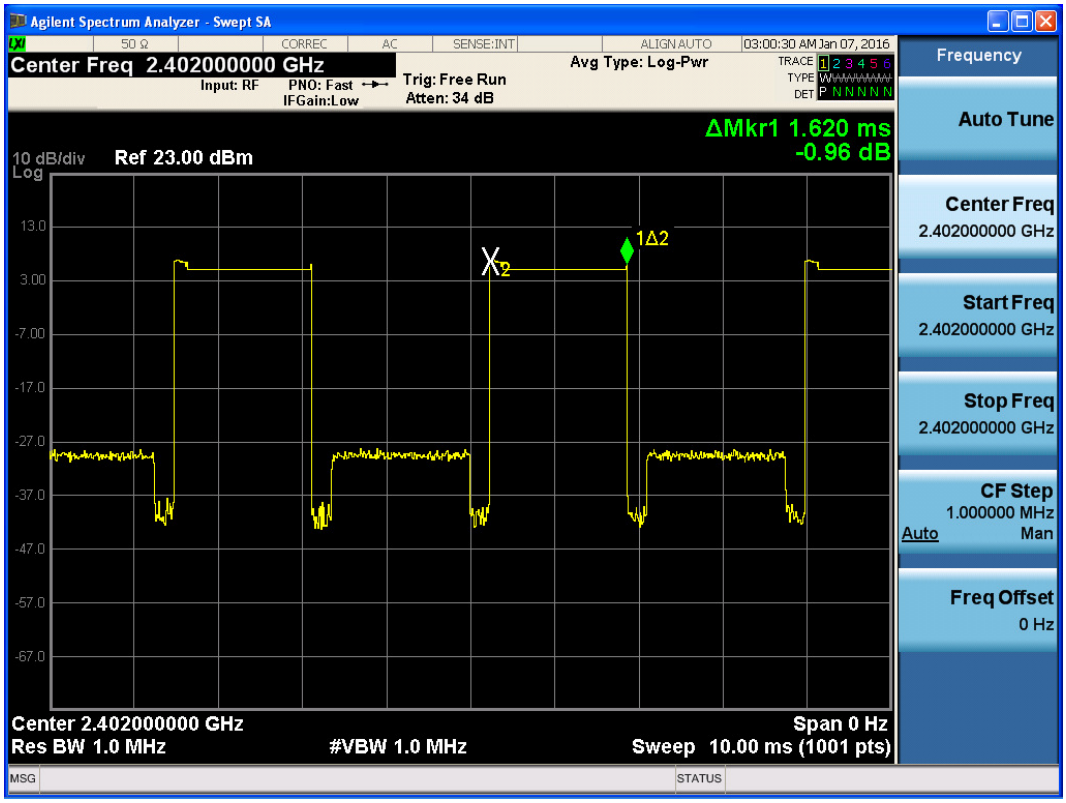
Carrier frequency (MHz): 2441, DH3



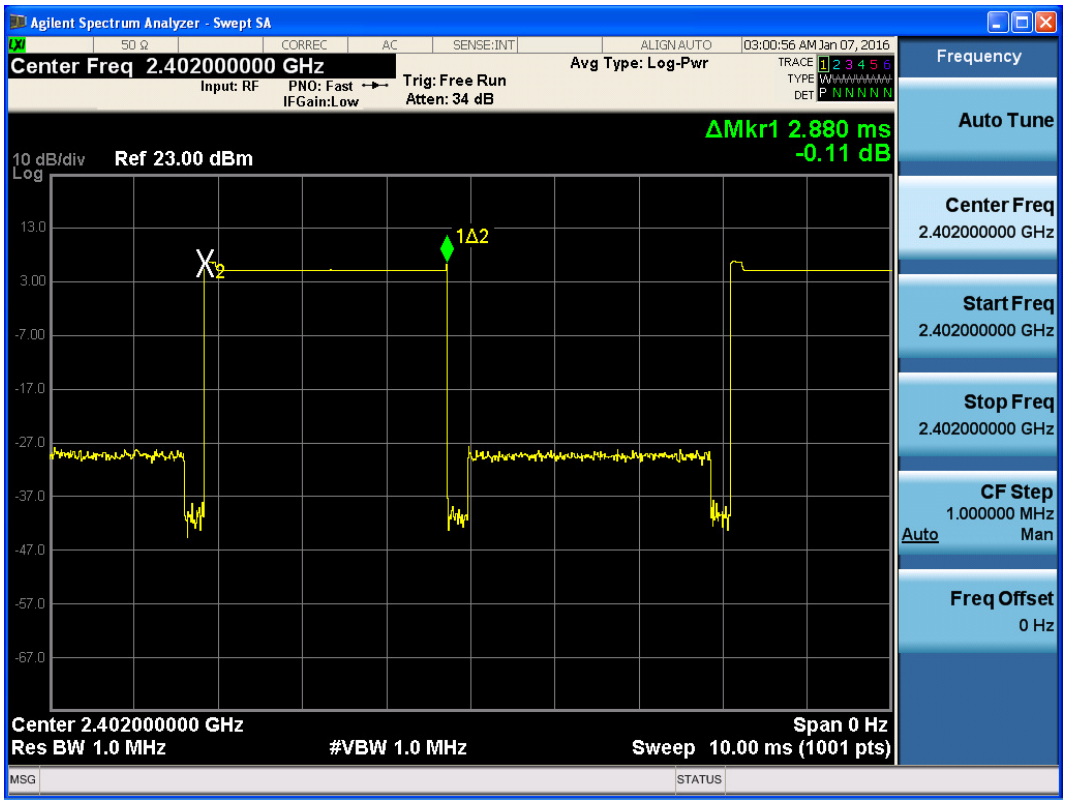
Carrier frequency (MHz): 2441, DH5



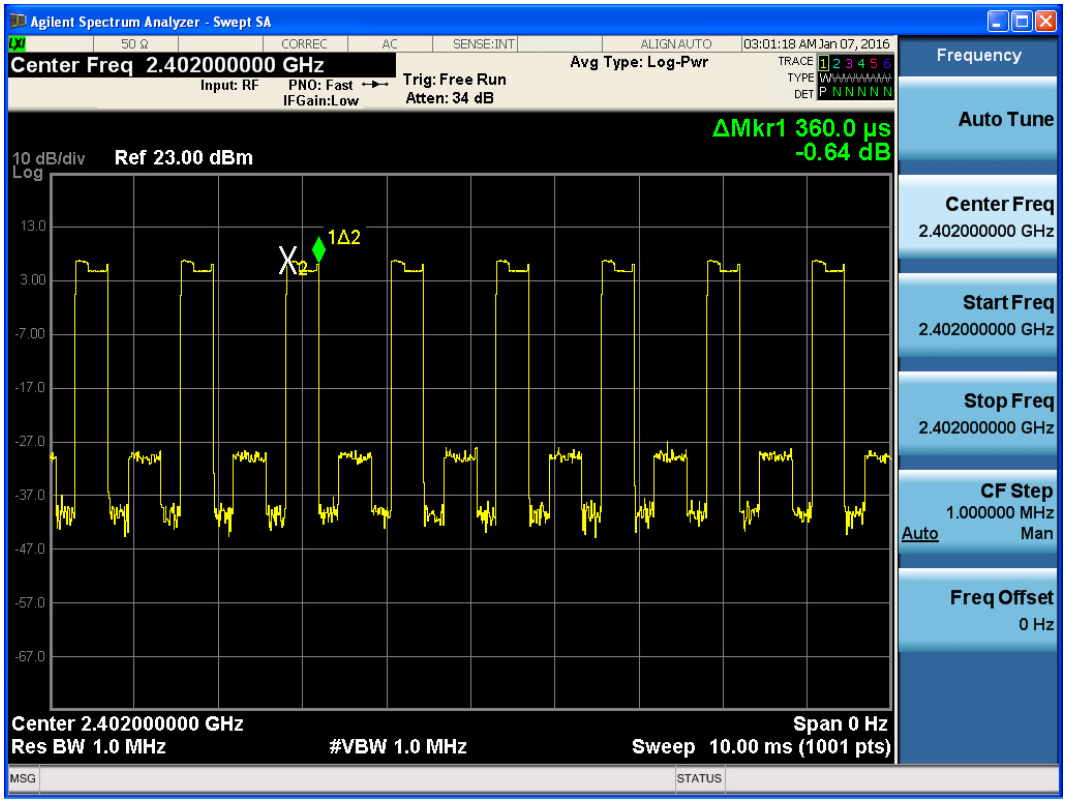
Carrier frequency (MHz): 2441, 2DH1



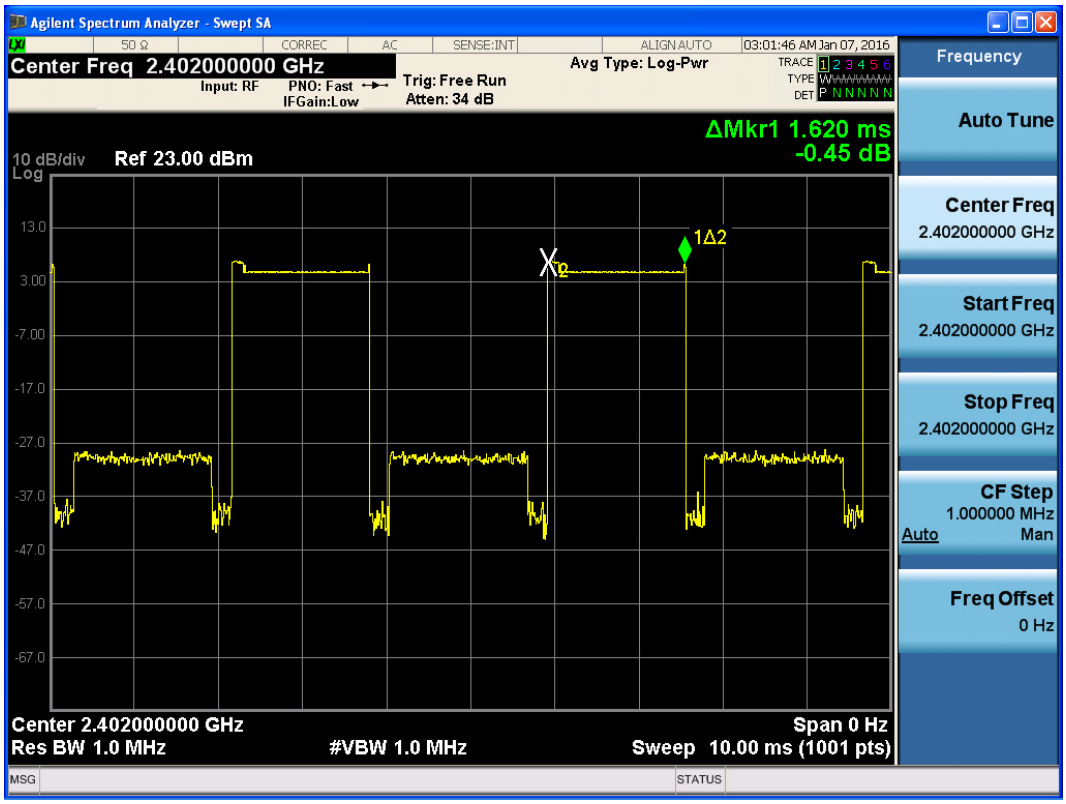
Carrier frequency (MHz): 2441, 2DH3



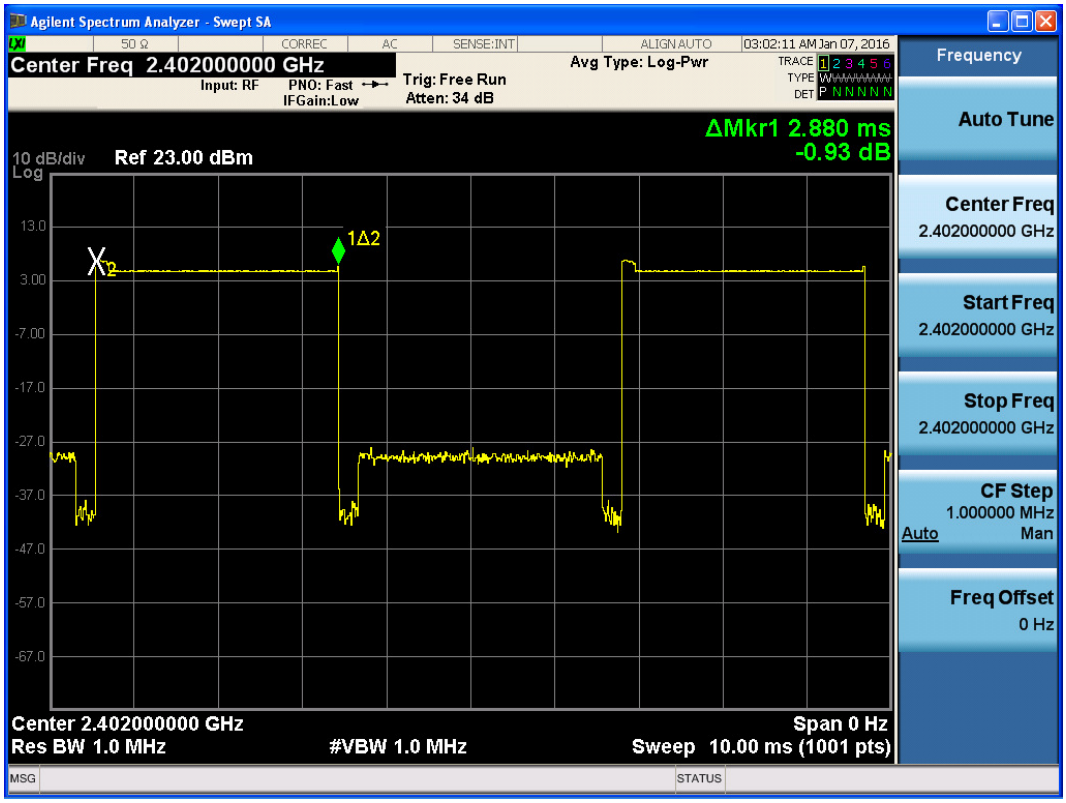
Carrier frequency (MHz): 2441, 2DH5



Carrier frequency (MHz): 2441, 3DH1



Carrier frequency (MHz): 2441, 3DH3



Carrier frequency (MHz): 2441, 3DH5

4.6 Band Edge Compliance

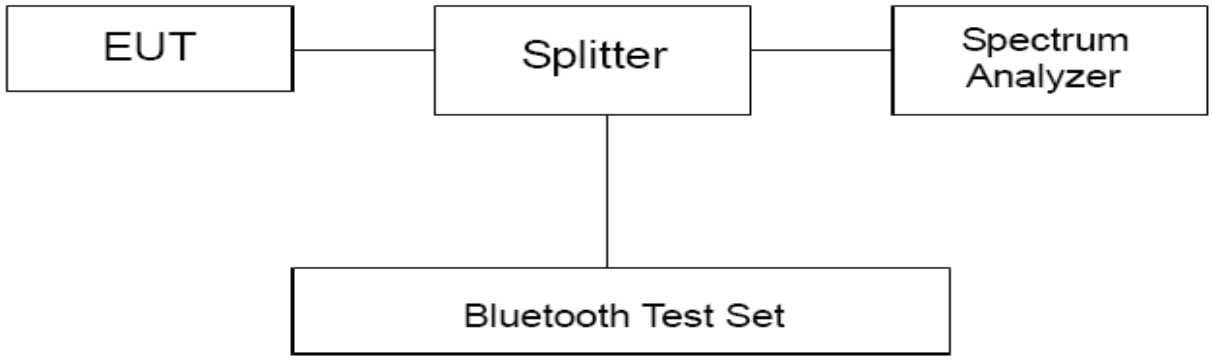
Ambient condition

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.”

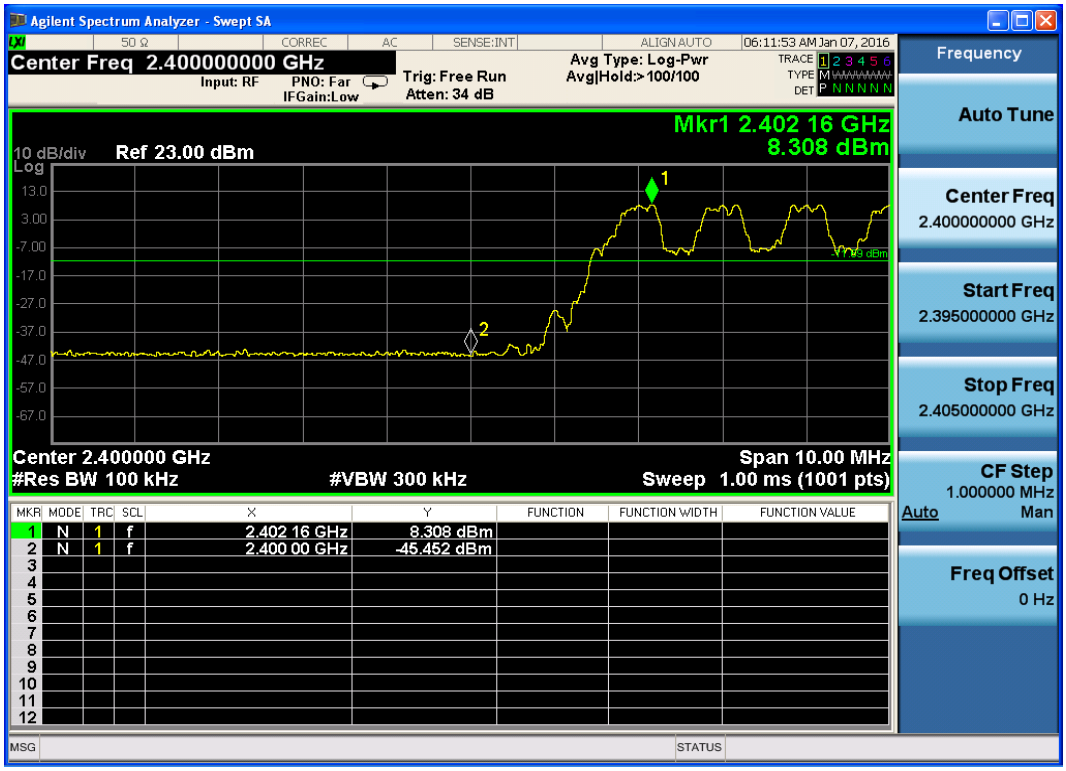
Measurement Uncertainty

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

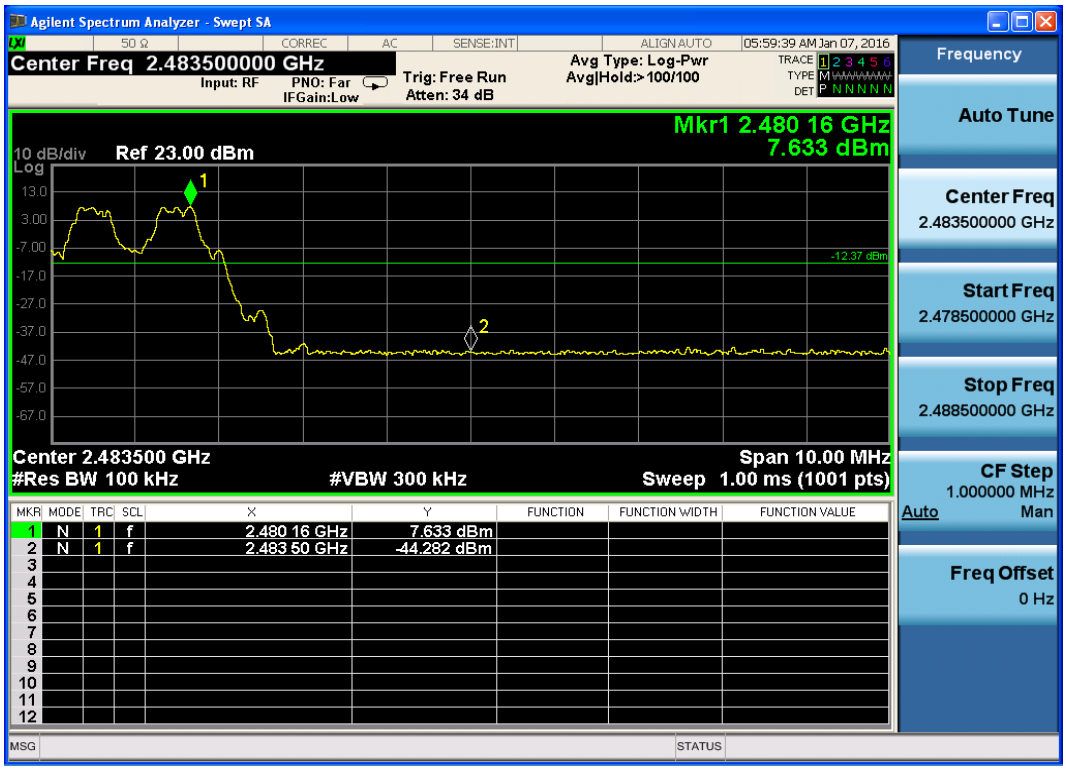
Test Results

Hopping On-DH5



Carrier frequency (MHz): 2402

Channel No.:0



Carrier frequency (MHz): 2480

Channel No.:78

Hopping On-2DH5

Carrier frequency (MHz): 2402

Channel No.:0

Carrier frequency (MHz): 2480

Channel No.:78

Hopping On-3DH5

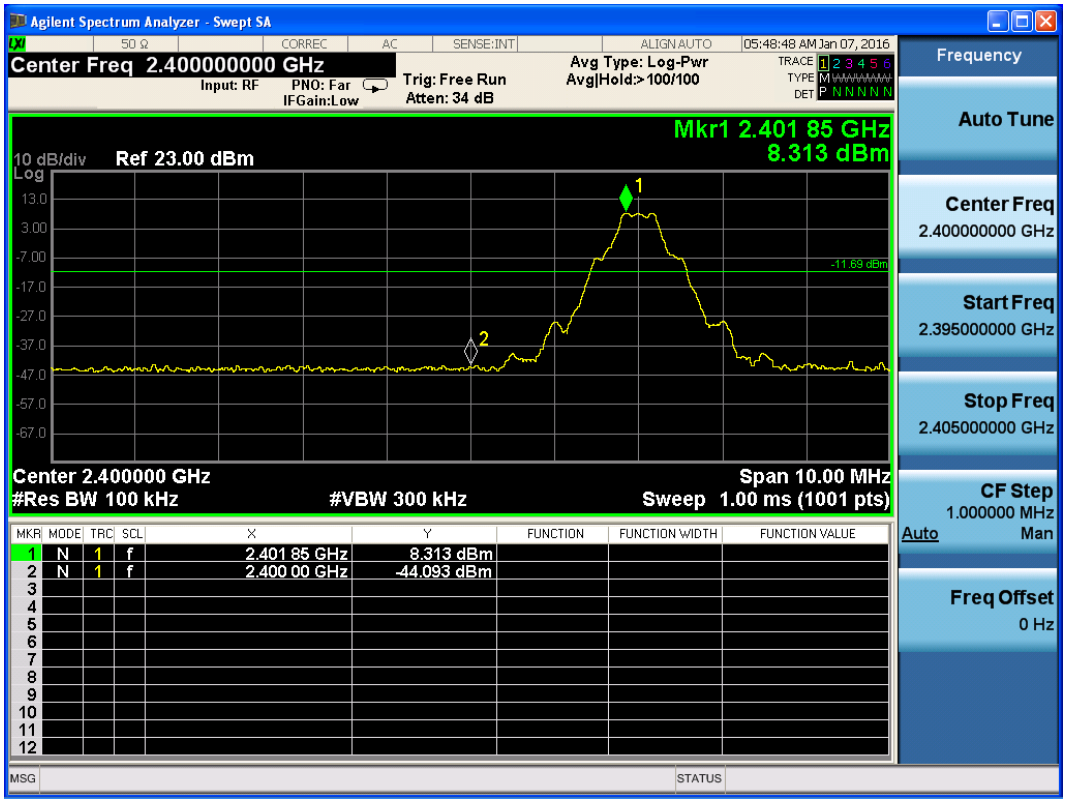
Carrier frequency (MHz): 2402

Channel No.:0

Carrier frequency (MHz): 2480

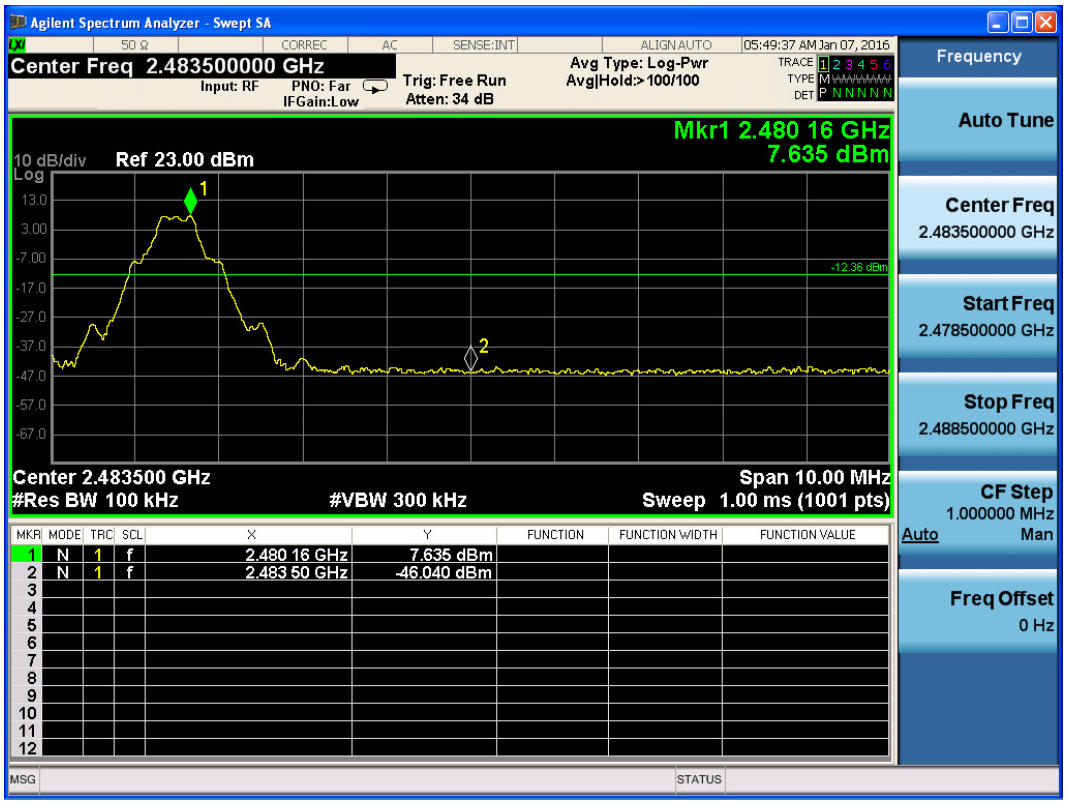
Channel No.:78

Hopping Off-DH5



Carrier frequency (MHz): 2402

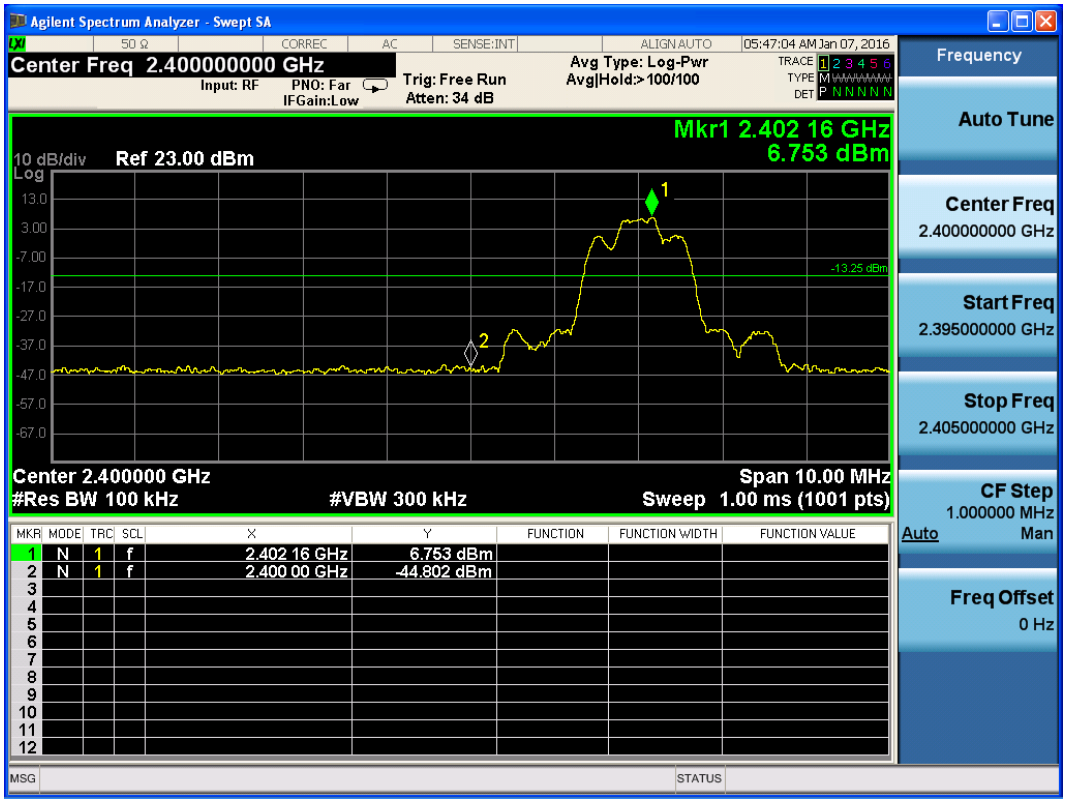
Channel No.:0



Carrier frequency (MHz): 2480

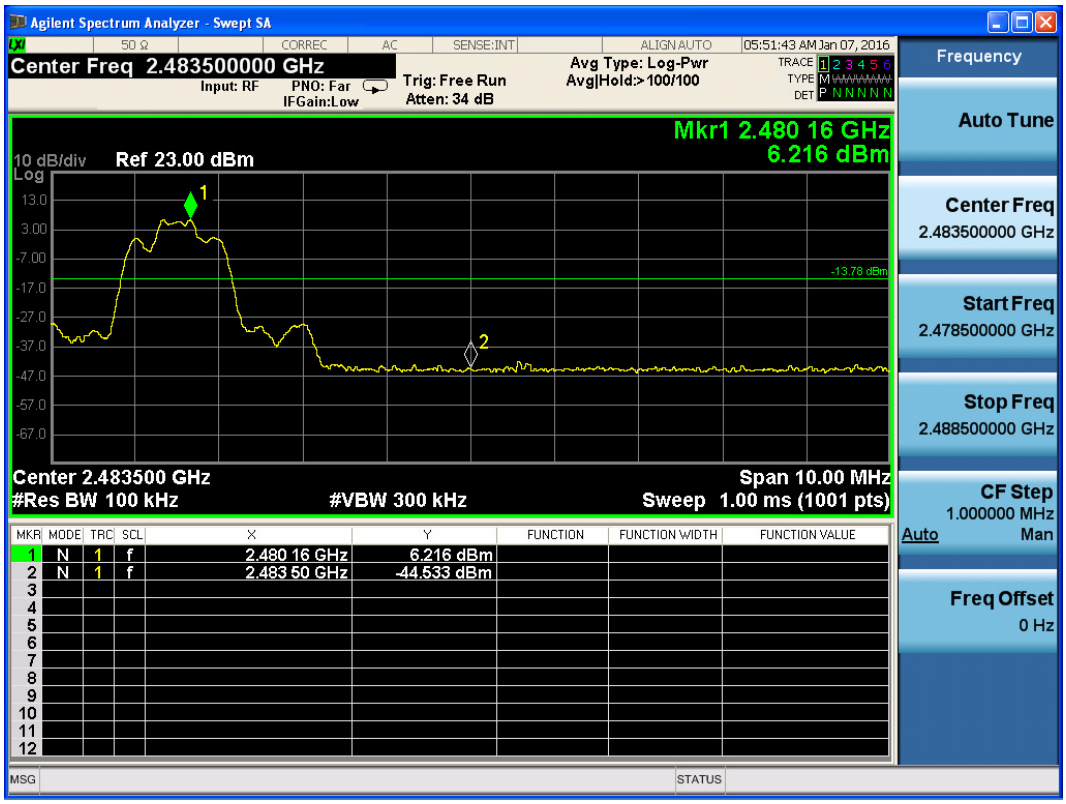
Channel No.:78

Hopping Off-2DH5



Carrier frequency (MHz): 2402

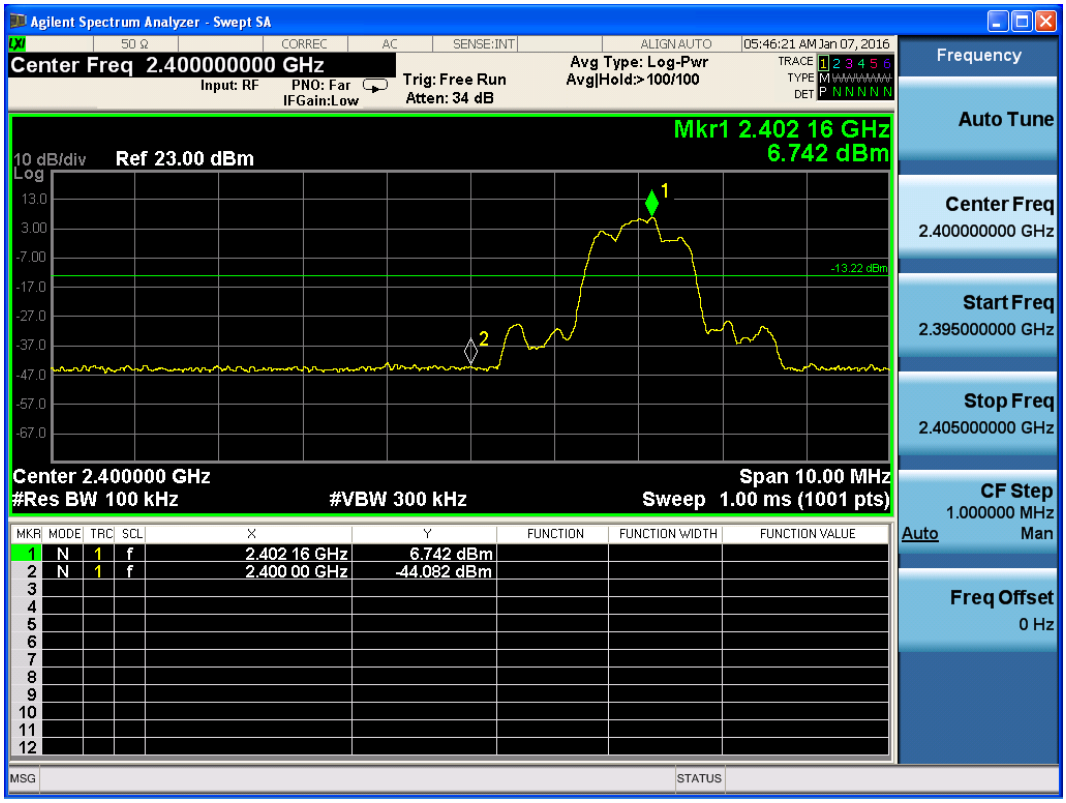
Channel No.:0



Carrier frequency (MHz): 2480

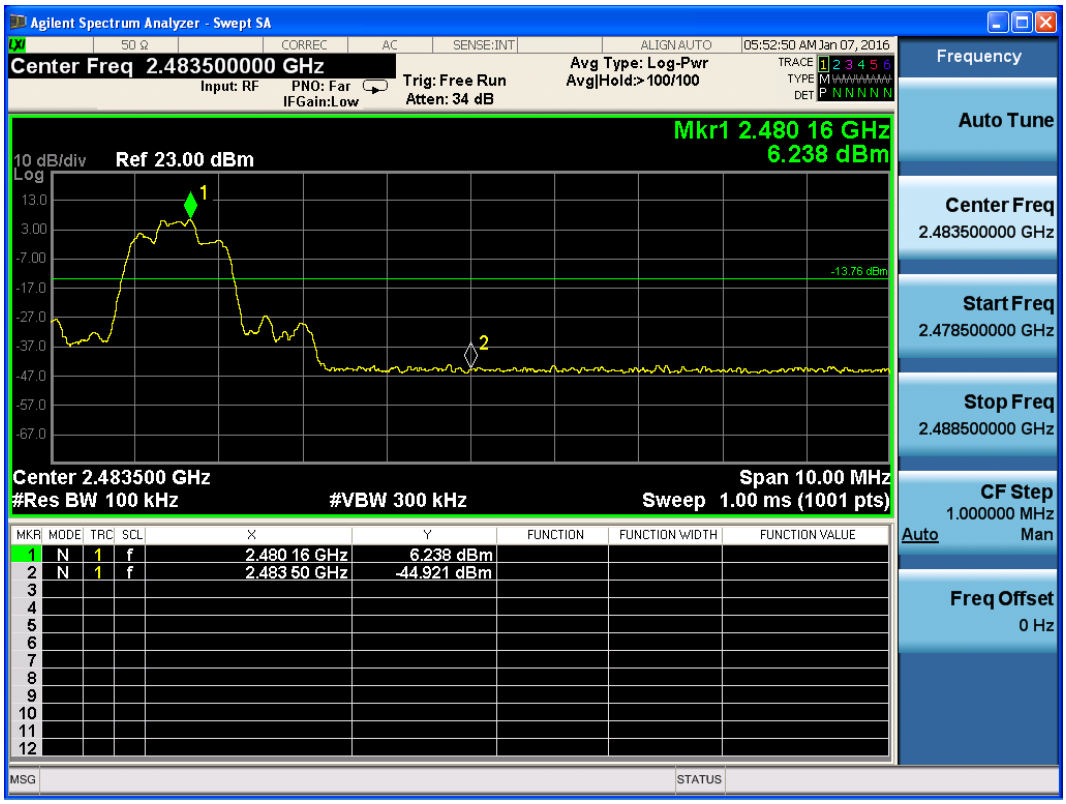
Channel No.:78

Hopping Off-3DH5



Carrier frequency (MHz): 2402

Channel No.:0



Carrier frequency (MHz): 2480

Channel No.:78

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:

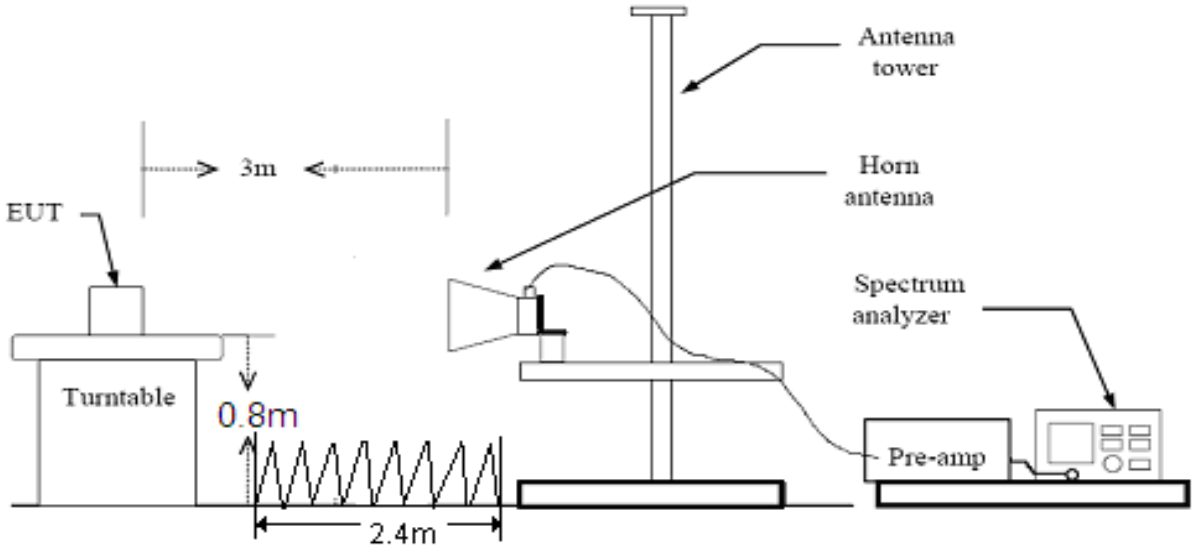
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

(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 20log(dwell time/100 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 form 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

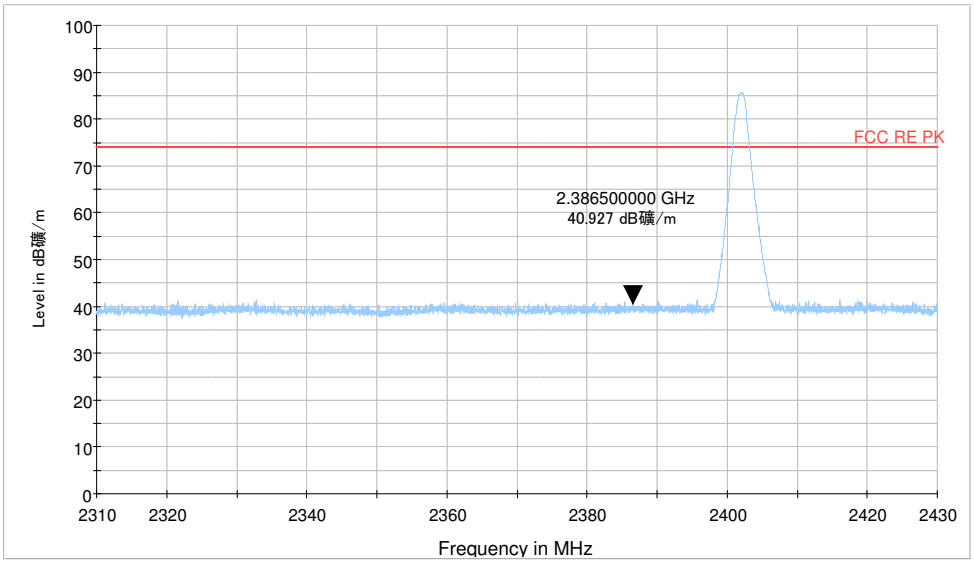
Measurement Uncertainty

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.

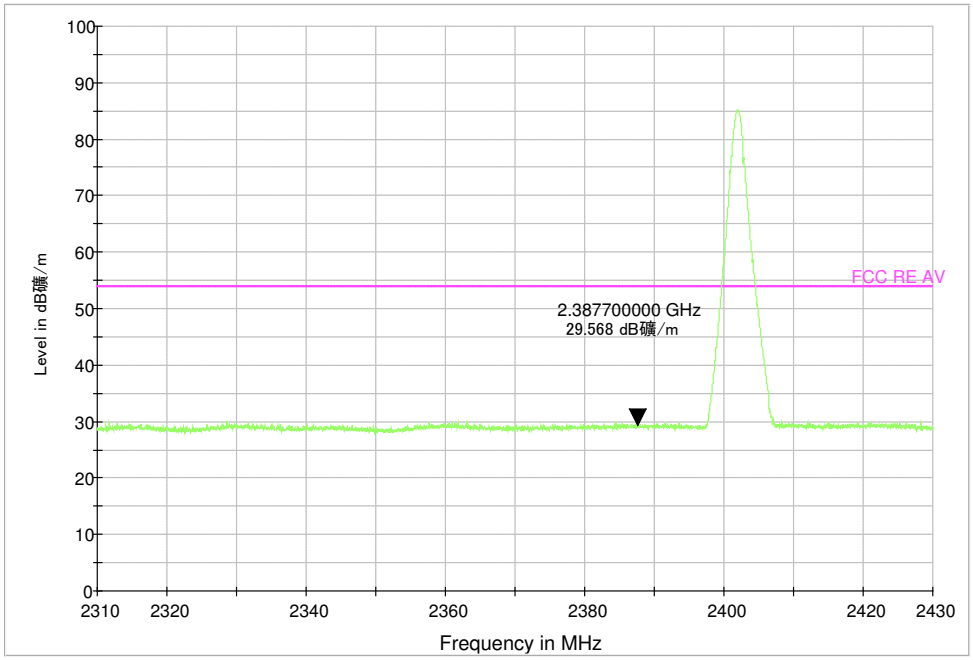
Test Results:

Themessy code(dB礦/m) including in the following plots mean dBuv/m.

DH5- Channel 0

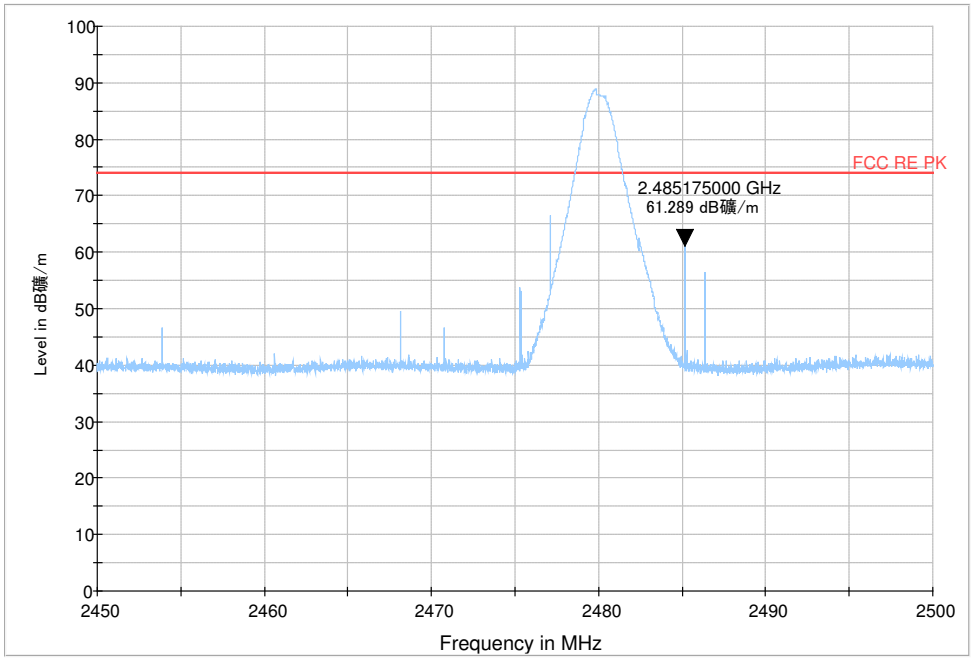


Lower band edge Peak-CH 0

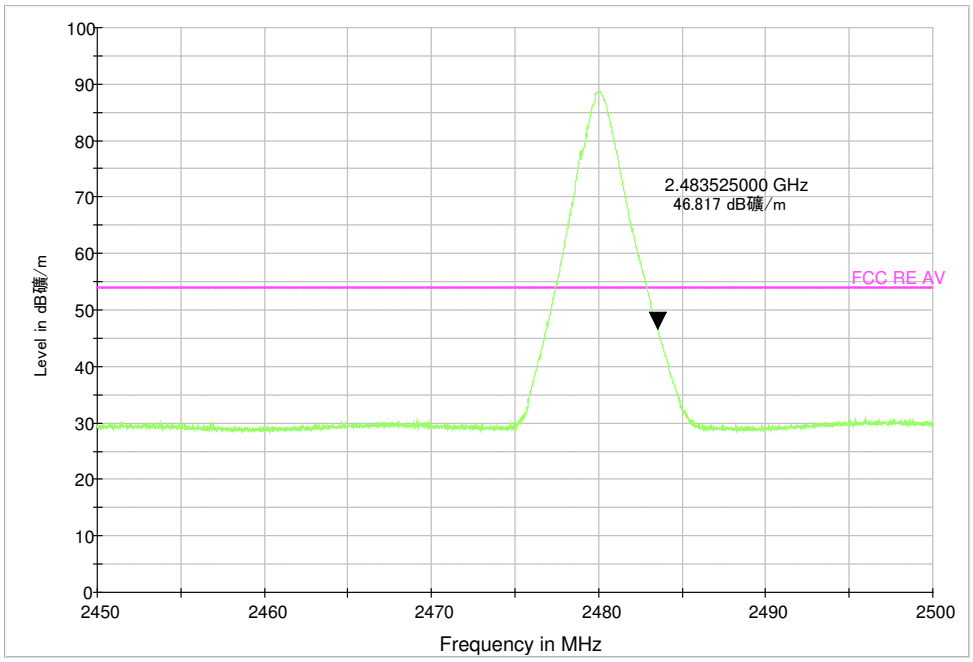


Lower band edge average-CH 0

DH5- Channel 78

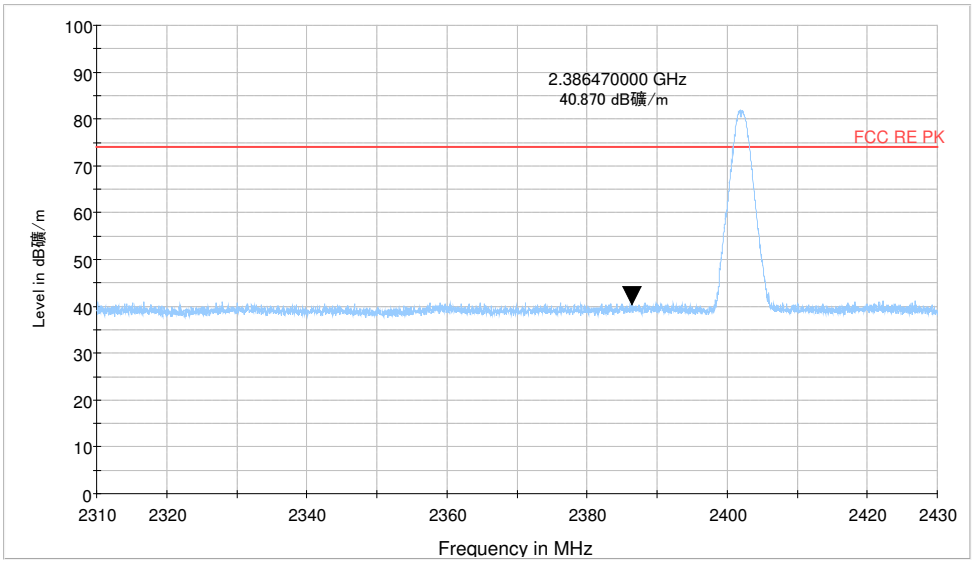


Higher band edge Peak-CH 78

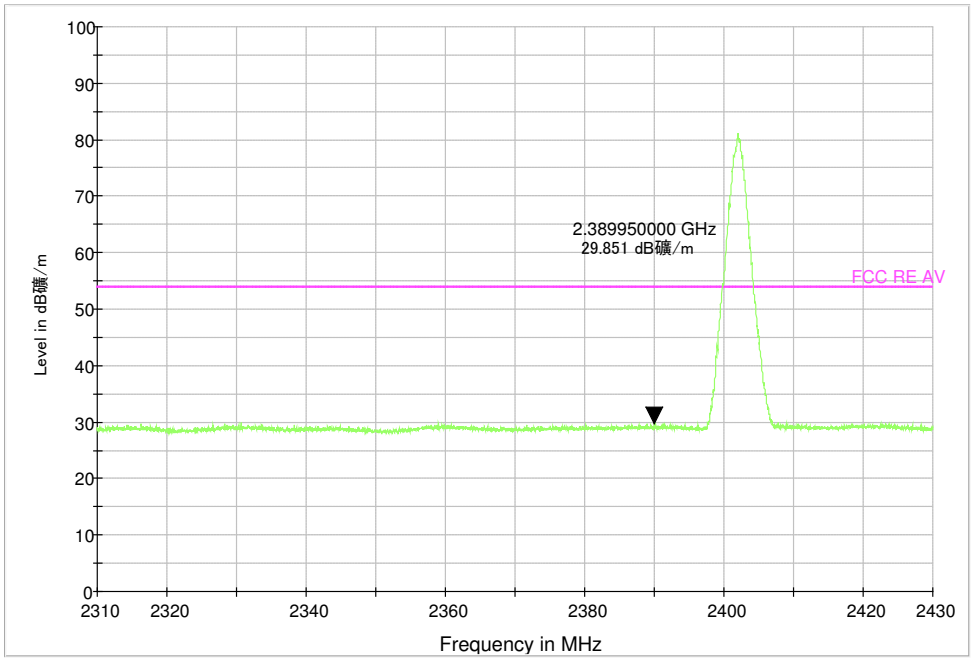


Higher band edge average-CH 78

3DH5- Channel 0

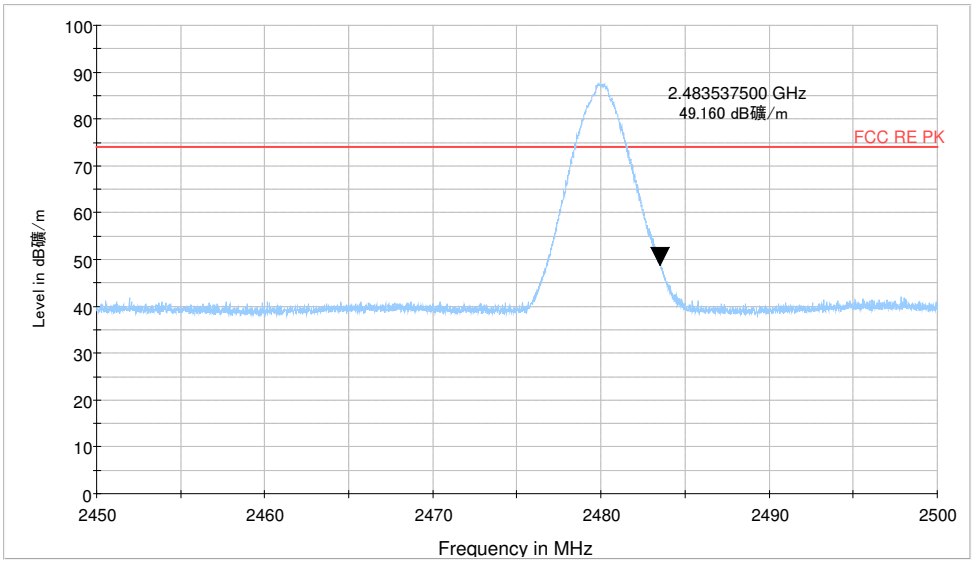


Lower band edge Peak-CH 0

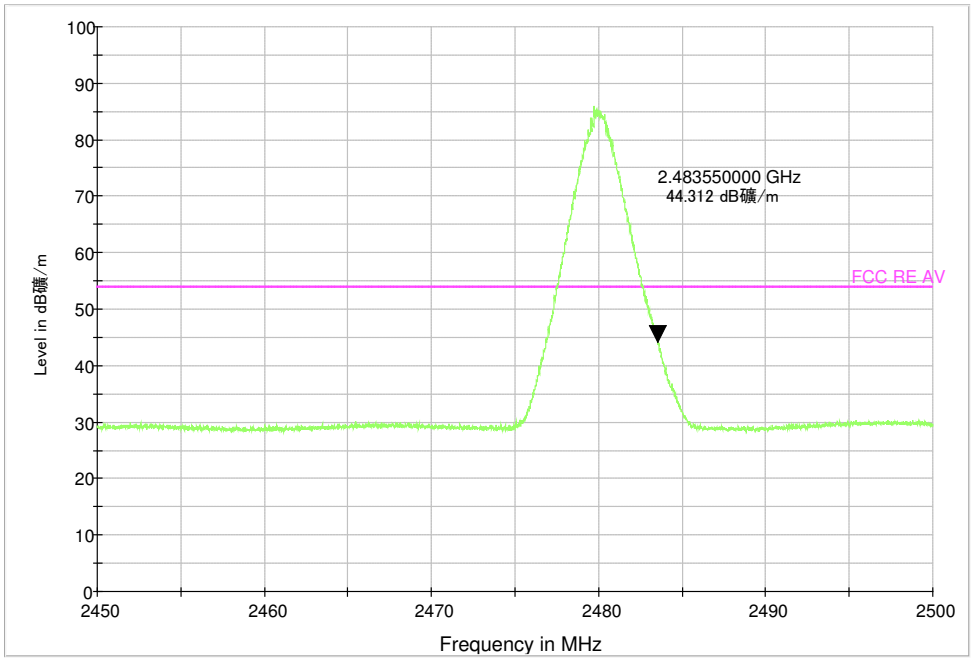


Lower band edge average-CH 0

3DH5- Channel 78



Higher band edge Peak-CH 78



Higher band edge average-CH 78

4.8 Number of hopping Frequency

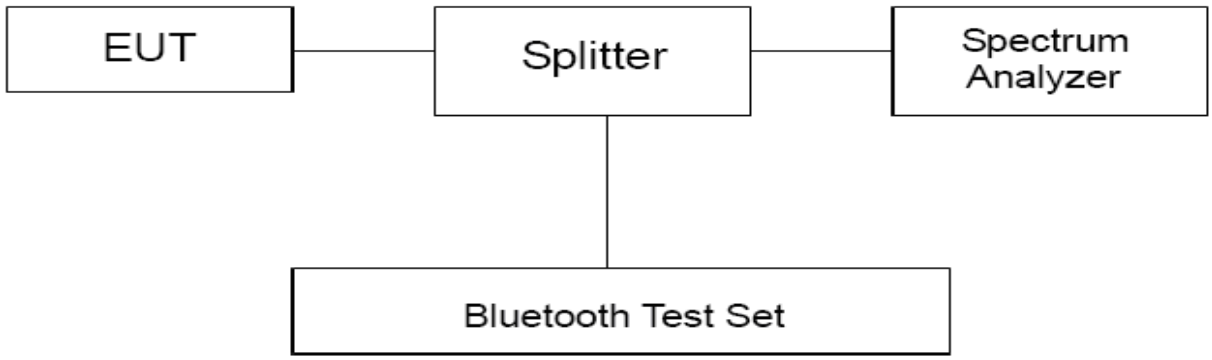
Ambient condition

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 3 MHz on spectrum analyzer. Set EUT on Hopping on mode.

Test setup



Limits

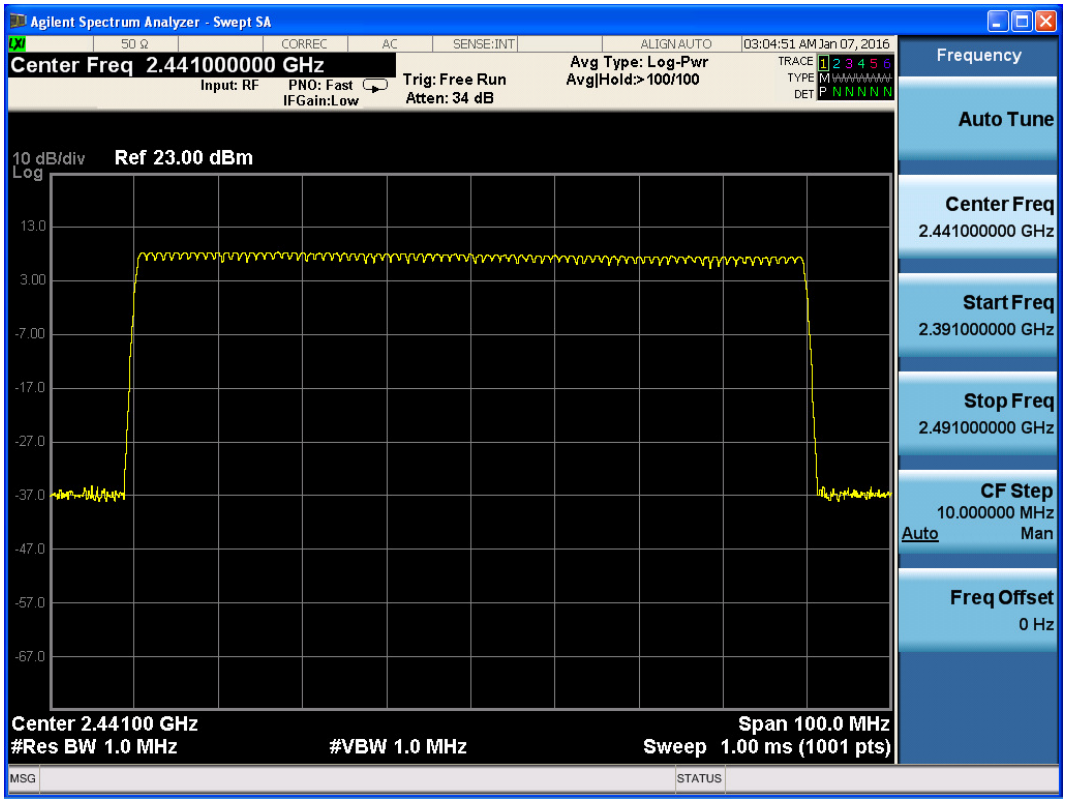
Rule Part 15.247(a) (1) (iii) specifies that" Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels."

Limits	≥ 15 channels

Test Results:

DH5

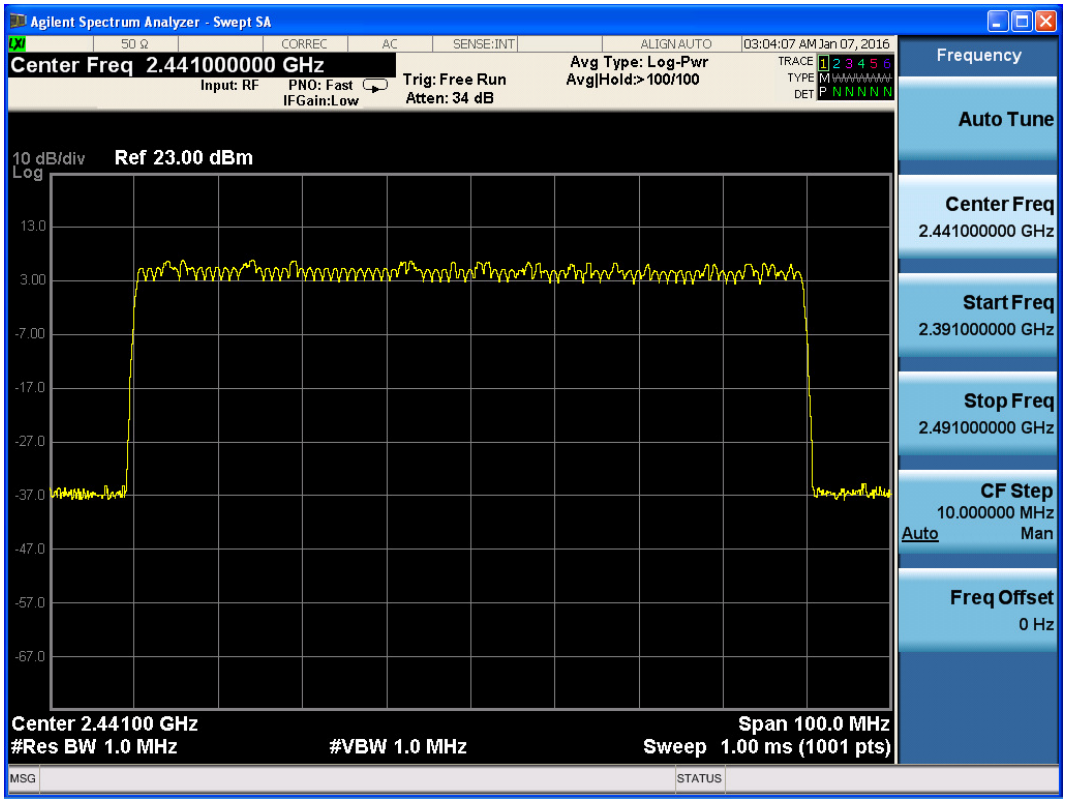
Number of hopping channels	conclusion
79	PASS



2400 MHz – 2483.5 MHz

2DH5

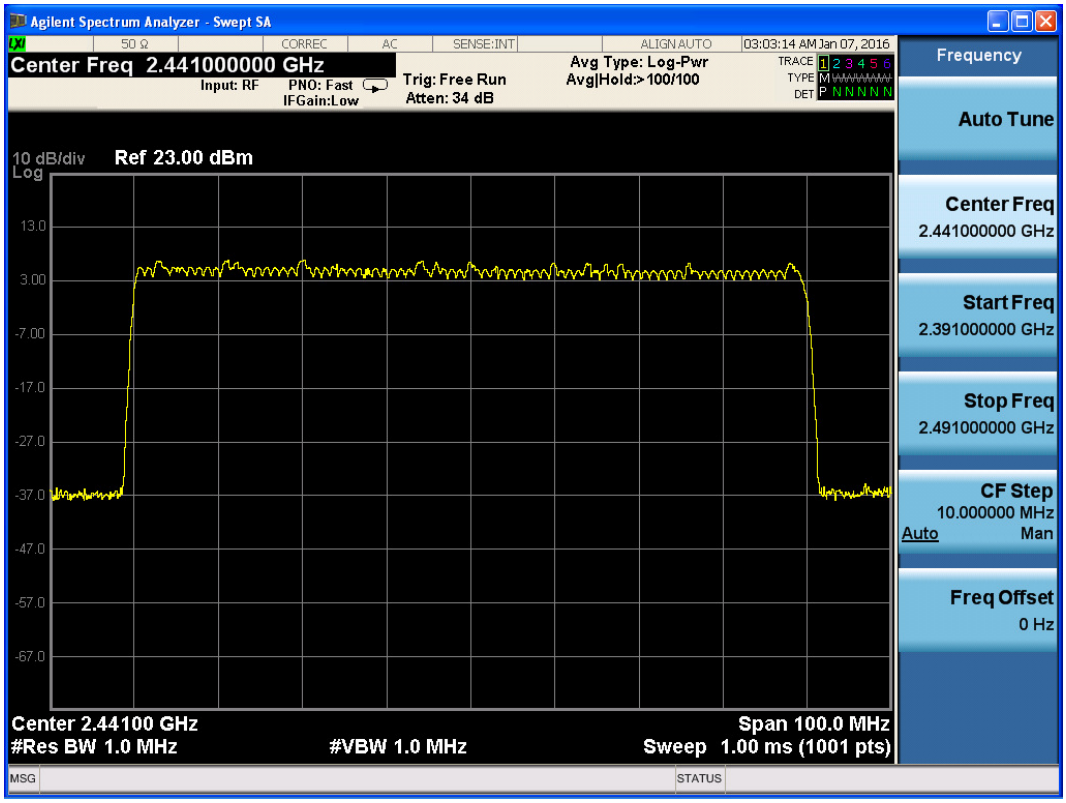
Number of hopping channels	conclusion
79	PASS



2400 MHz – 2483.5 MHz

3DH5

Number of hopping channels	conclusion
79	PASS



2400 MHz – 2483.5 MHz

4.9 Spurious RF Conducted Emissions

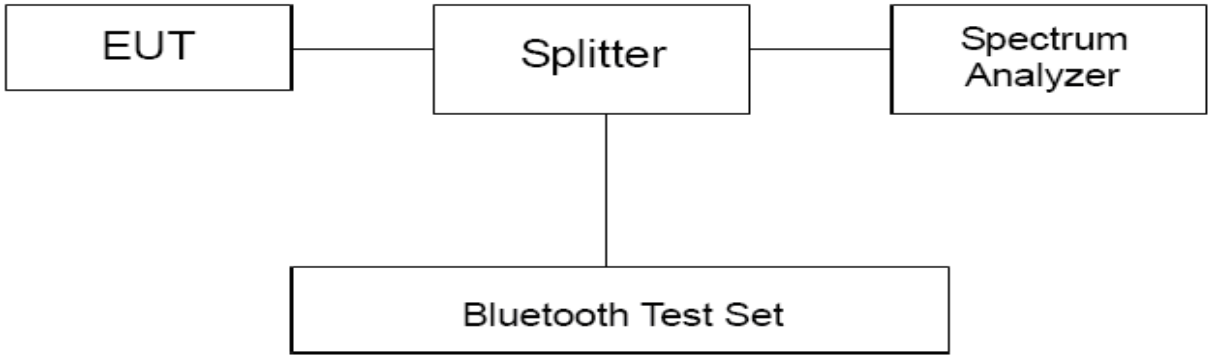
Ambient condition

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	10.533	-9.467
	2441	4.112	-15.888
	2480	0.928	-19.072
EDR (3DH5)	2402	14.385	-5.615
	2441	0.05	-19.95
	2480	1.375	-18.625

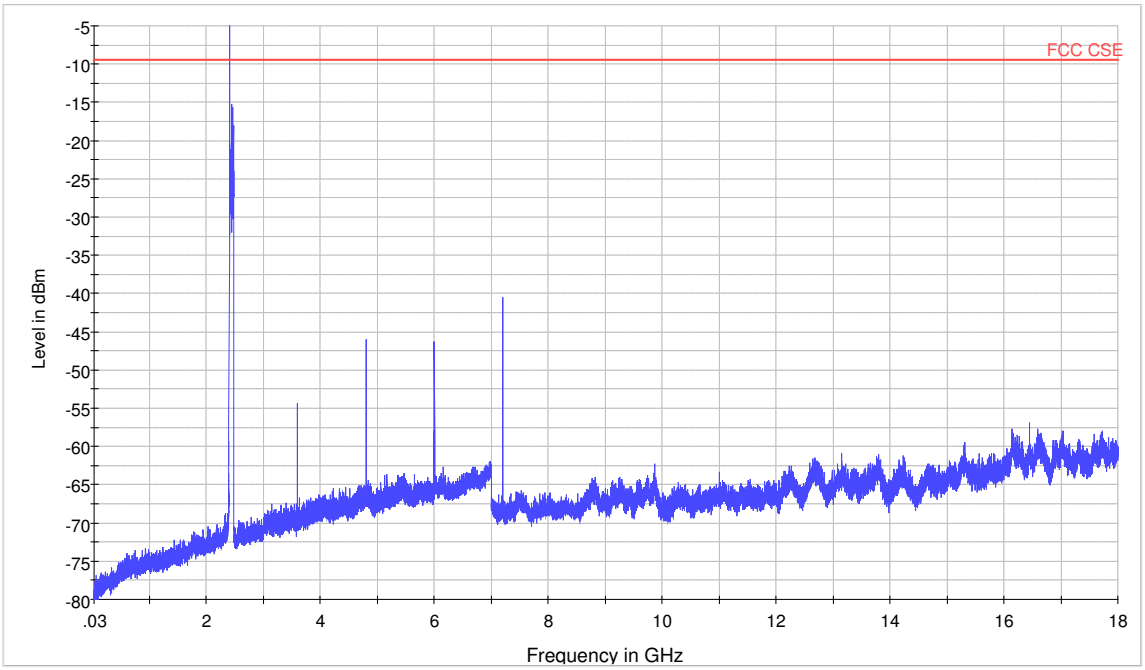
Measurement Uncertainty

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

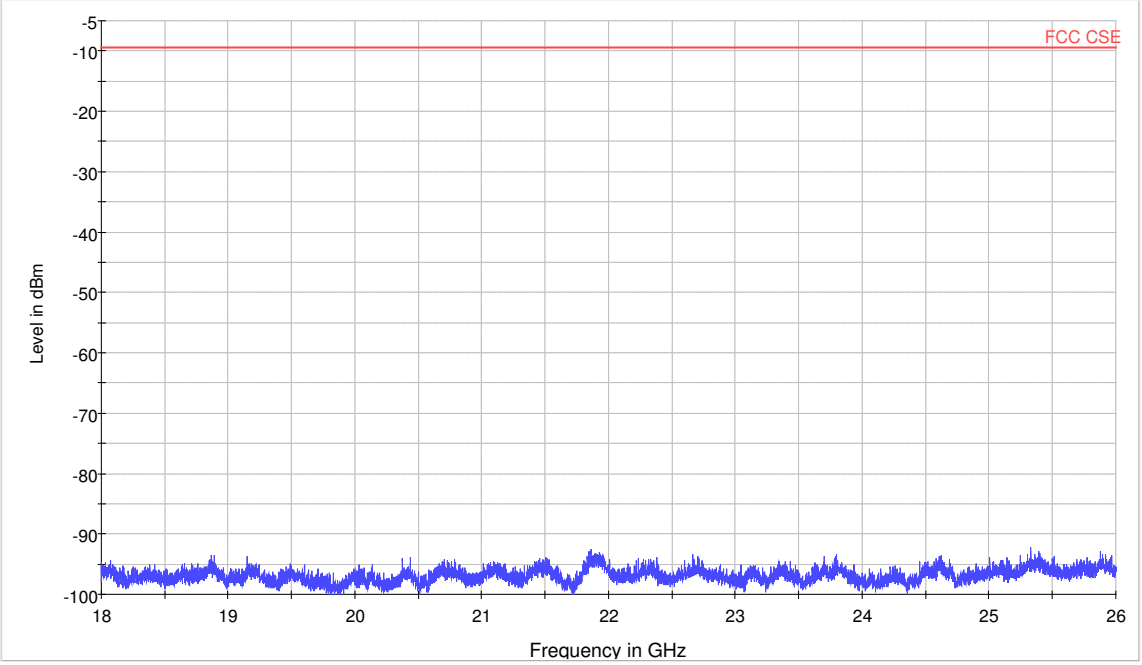
Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26GHz	1.407 dB

Test Results:

GFSK-CH0:

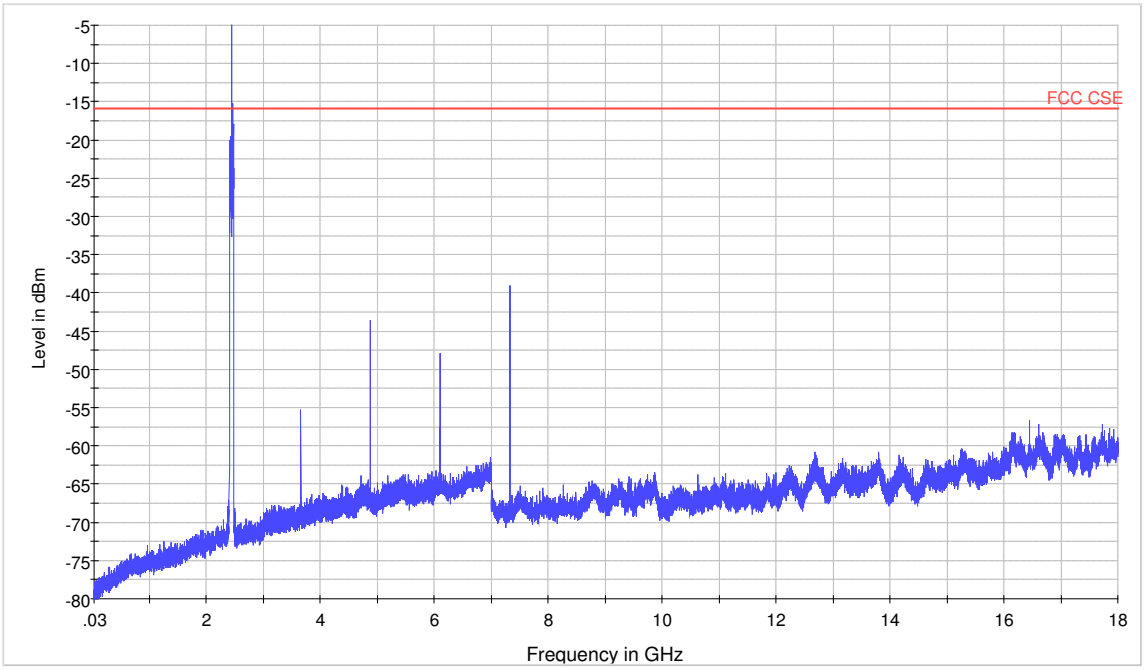


Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2402
Spurious RF conducted emissions from 30MHz to 18GHz



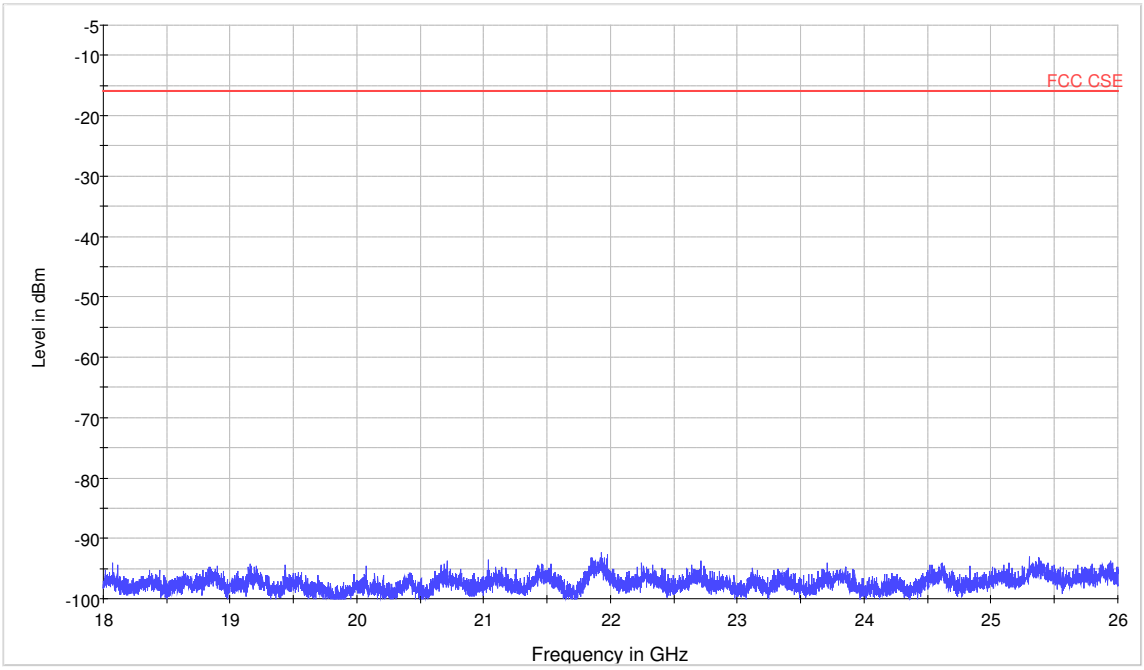
Spurious RF conducted emissions from 18GHz to 26.5GHz

GFSK-CH39：



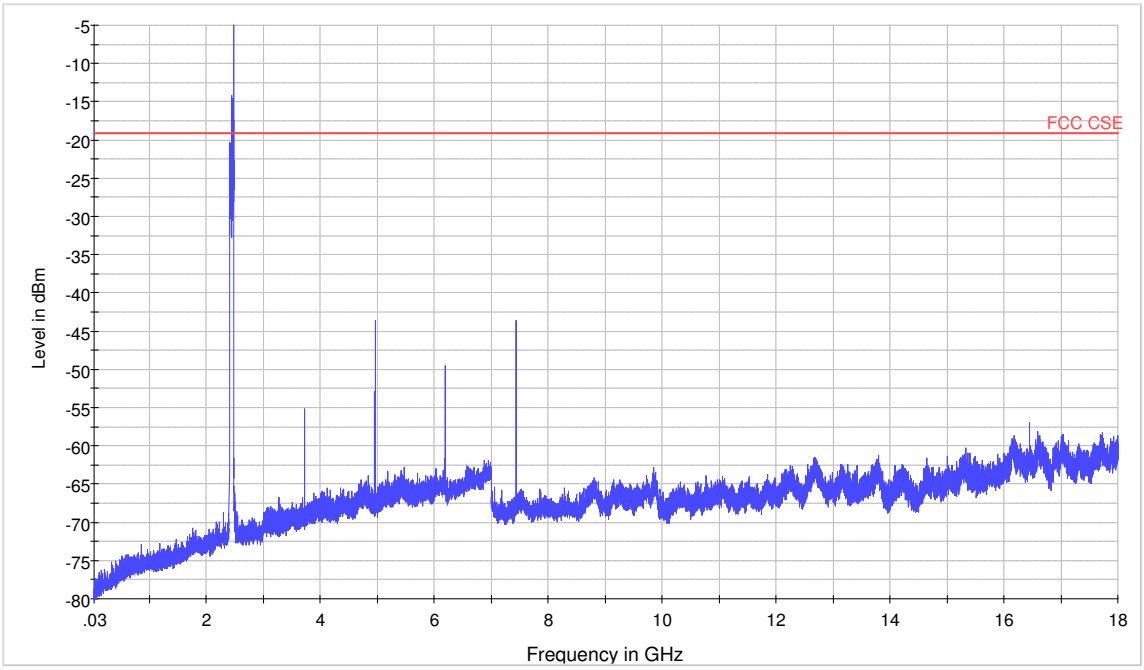
Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2441

Spurious RF conducted emissions from 30MHz to 18GHz



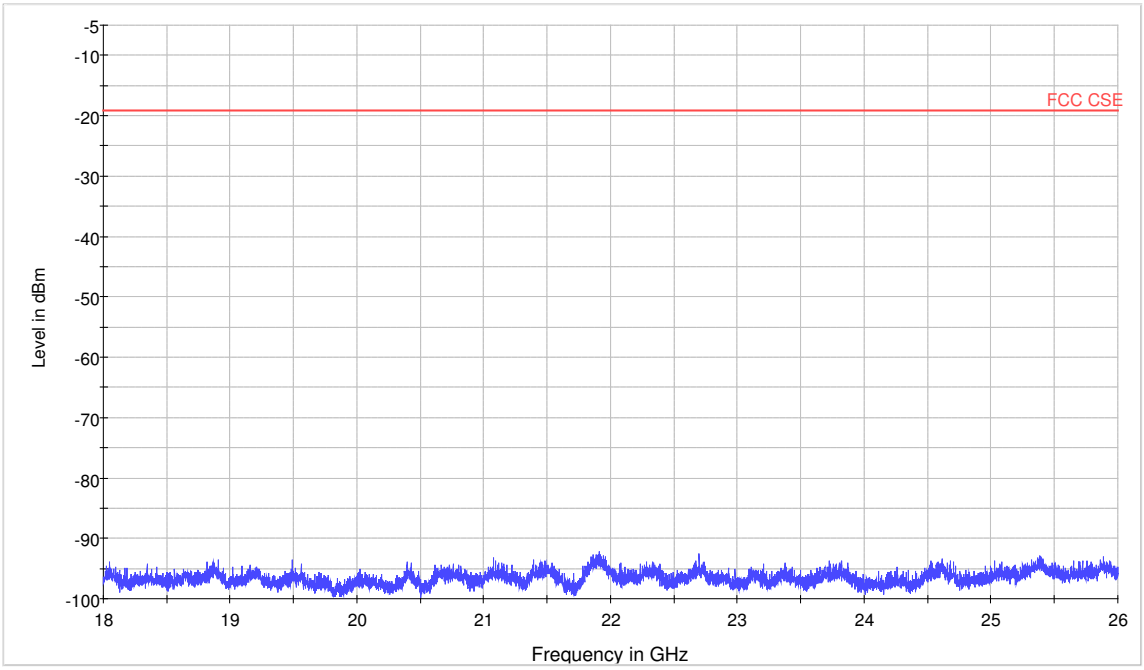
Spurious RF conducted emissions from 18GHz to 26.5GHz

GFSK-CH78：



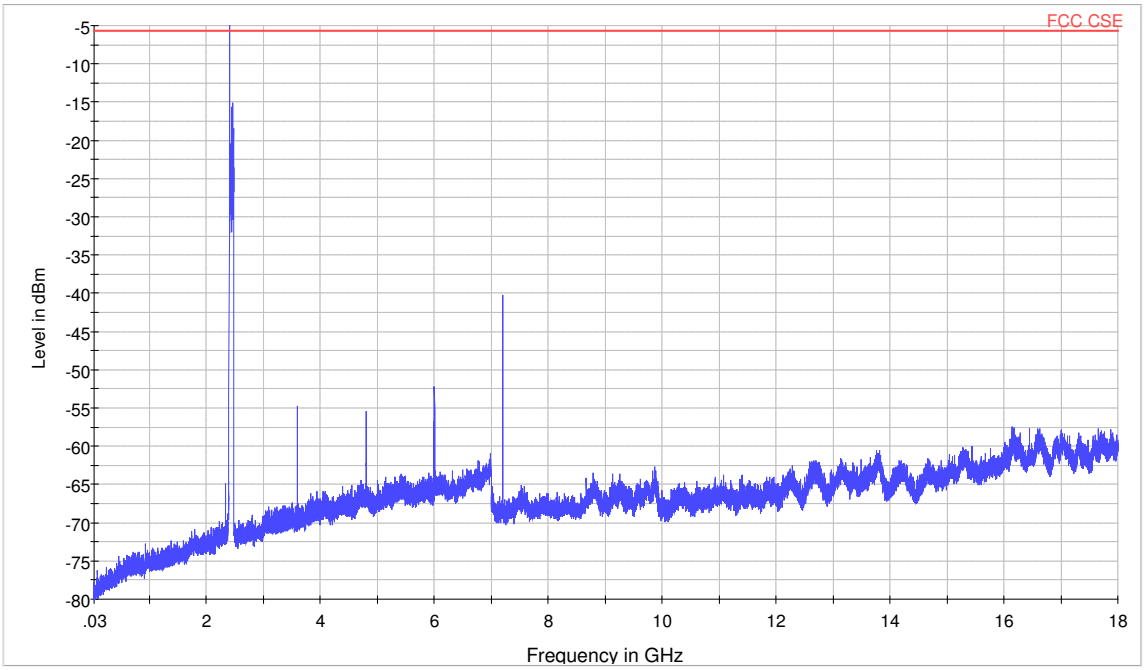
Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2480

Spurious RF conducted emissions from 30MHz to 18GHz



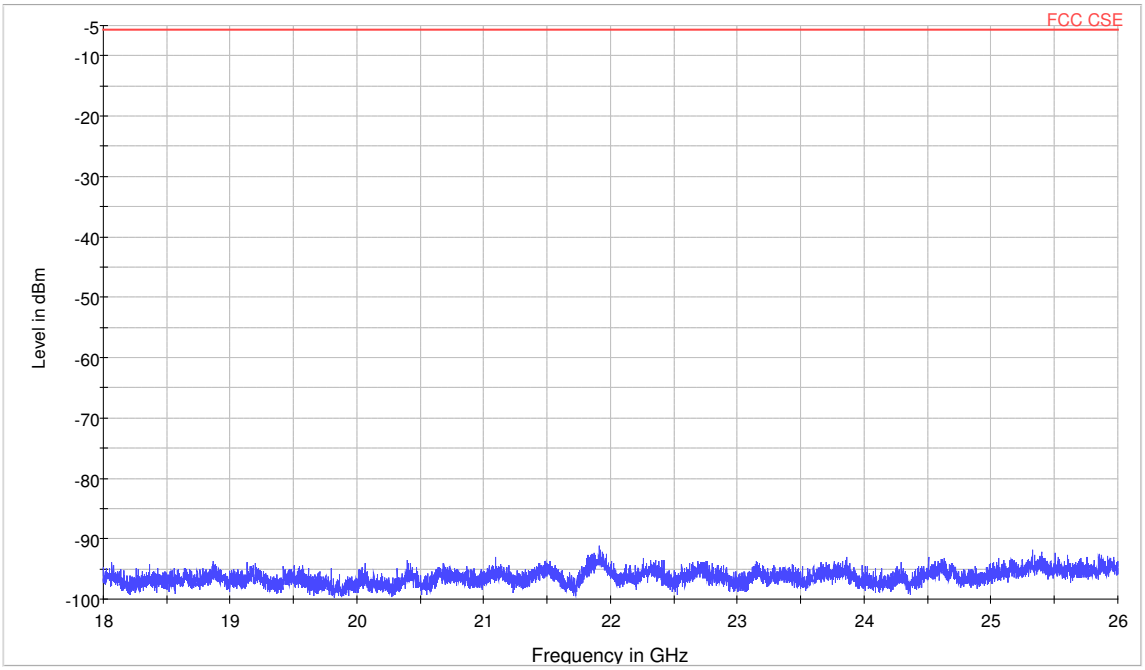
Spurious RF conducted emissions from 18GHz to 26.5GHz

EDR-CH0：



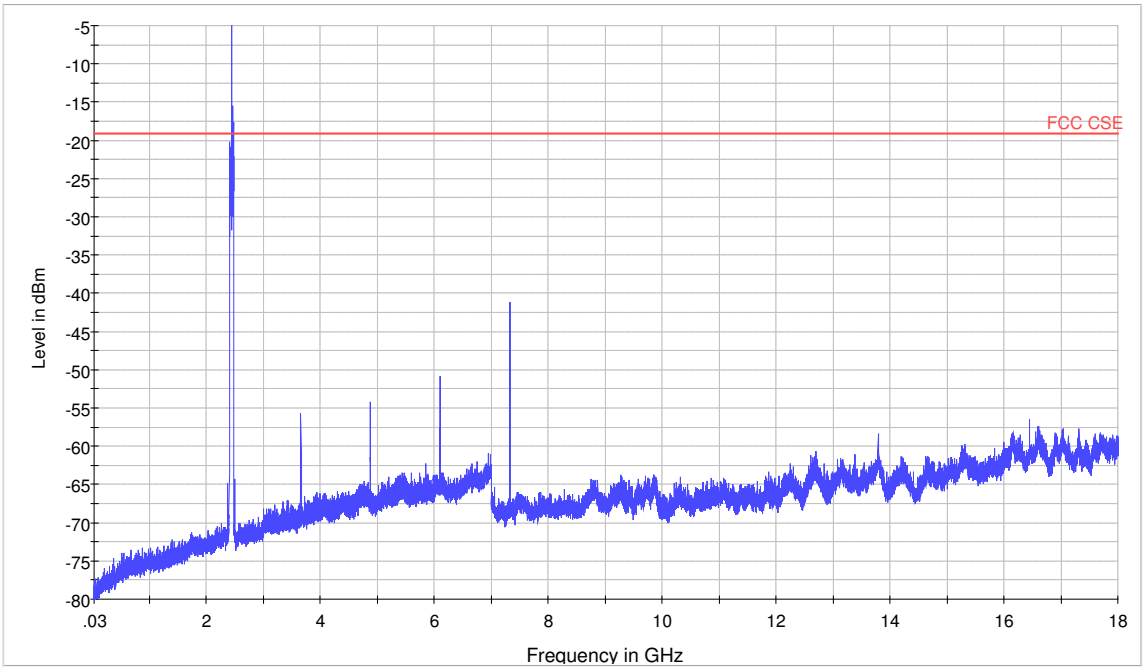
Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2402

Spurious RF conducted emissions from 30MHz to 18GHz

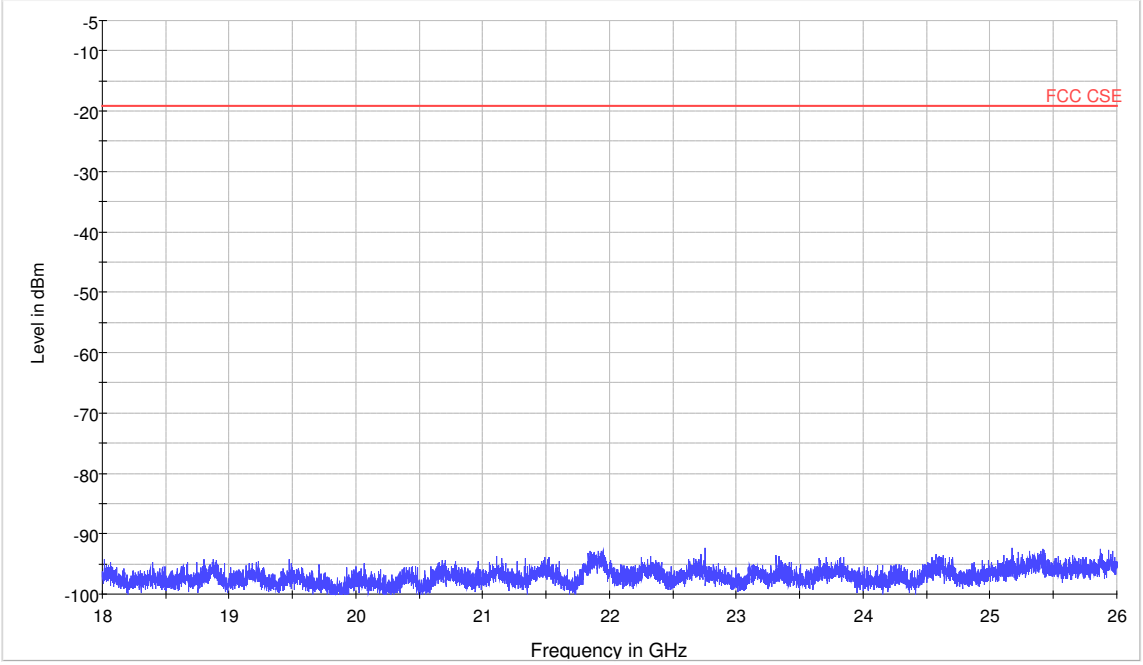


Spurious RF conducted emissions from 18GHz to 26.5GHz

EDR -CH39：

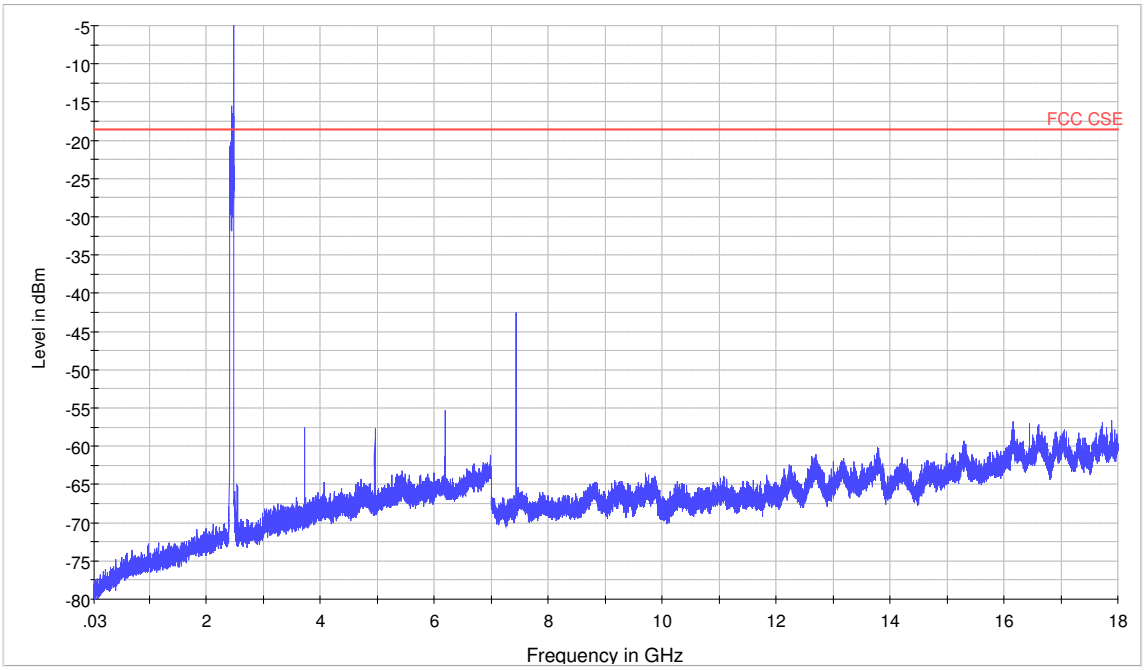


Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2441
Spurious RF conducted emissions from 30MHz to 18GHz

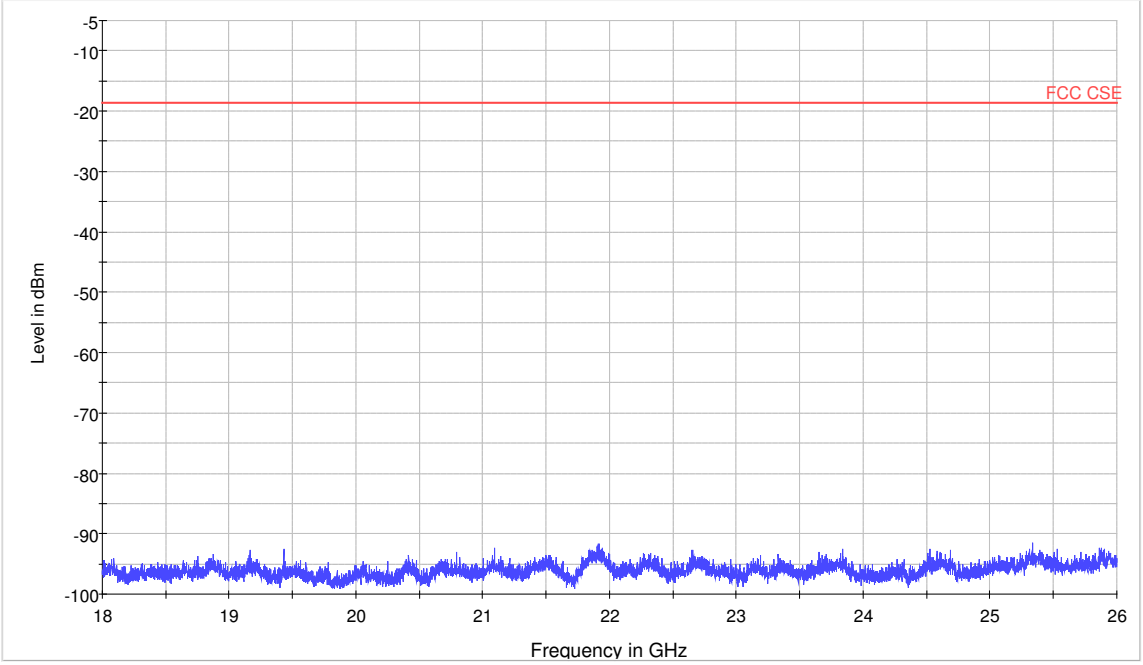


Spurious RF conducted emissions from 18GHz to 26.5GHz

EDR -CH78：



Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2480
Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 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

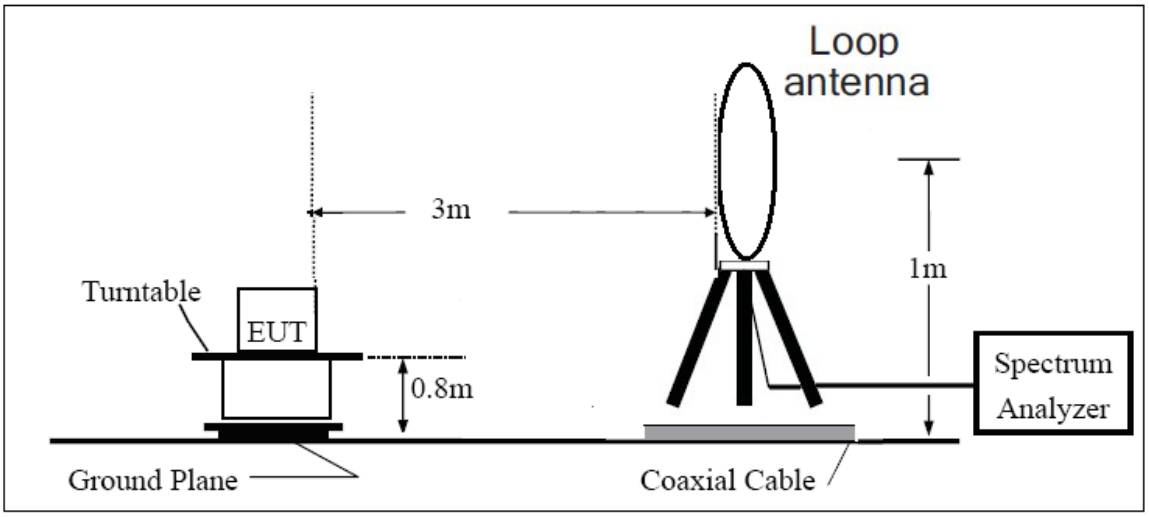
The test set-up was made in accordance to the general provisions of ANSI C63.4-2014.The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The radiated emissions measurements 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.

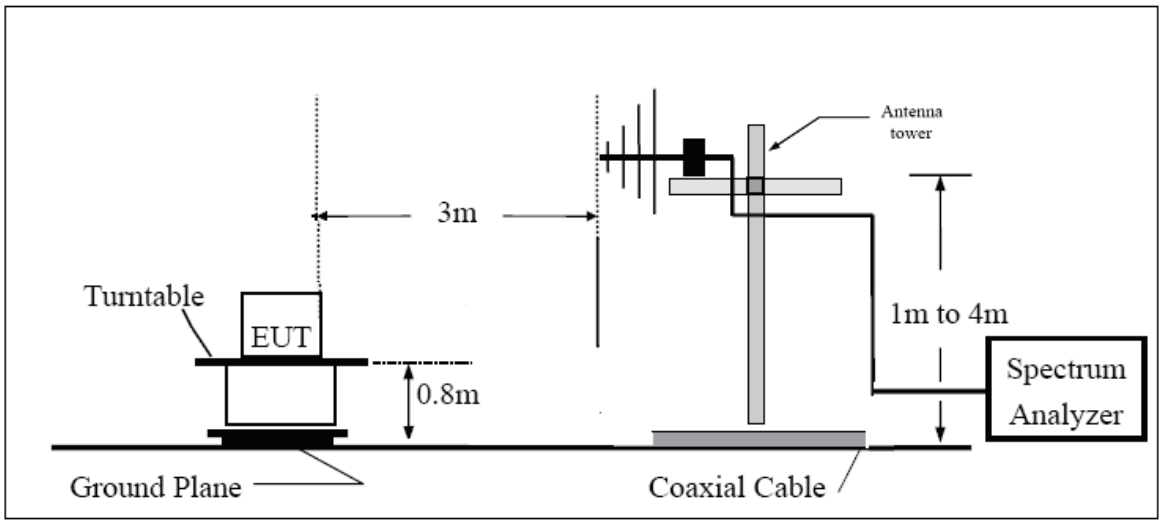
The test is in transmitting mode.

Test setup

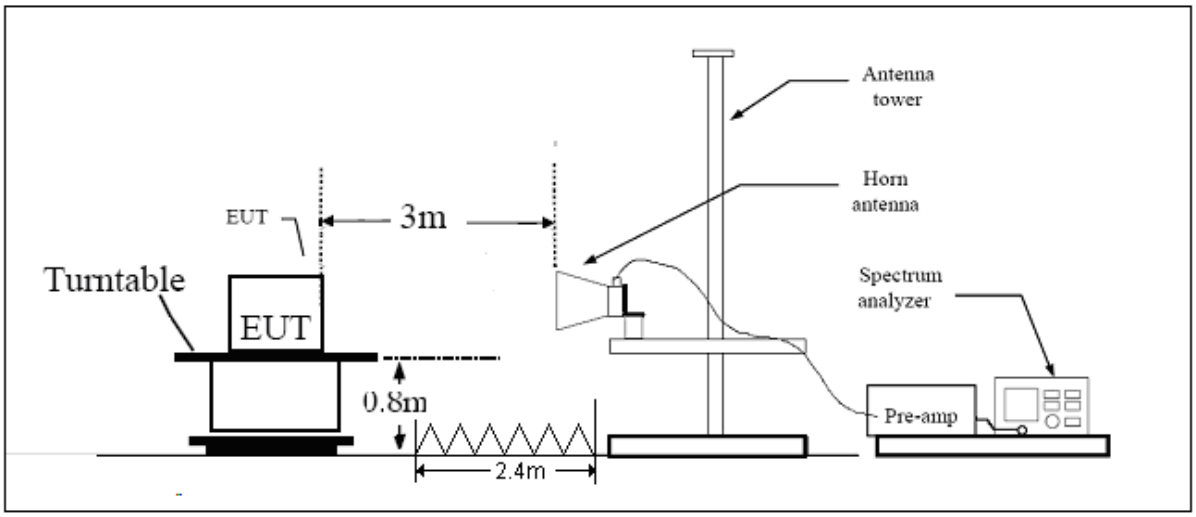
9KHz~~~ 30MHz



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

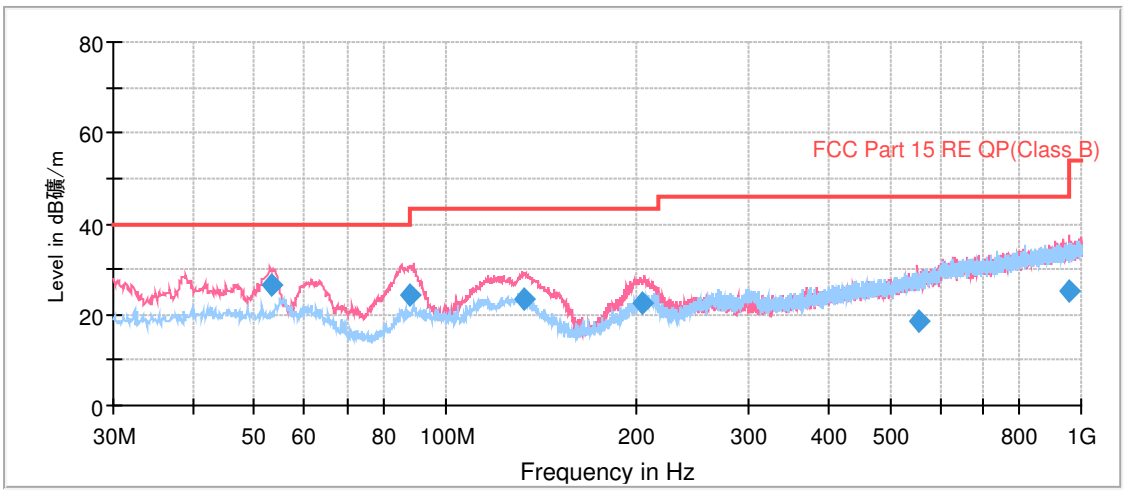
Sweep from 9 kHz to 30MHz, and the emissions more than 20 dB below the permissible value are not reported.

The messy code(dB碌V/m) including in the following plots mean dBuv/m.

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

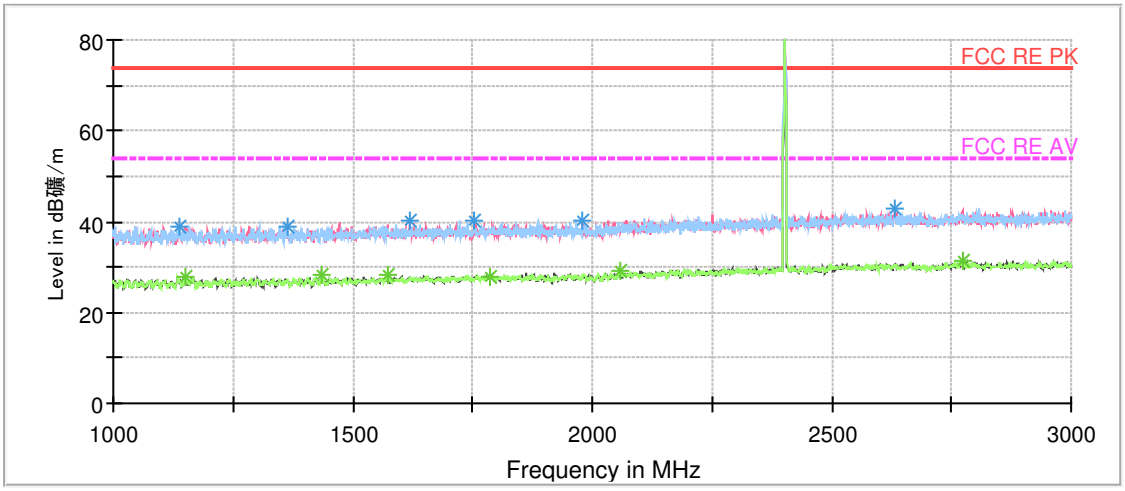


Radiates Emission from 30MHz to 1GHz

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)
53.317500	26.7	100.0	V	25.0	39.5	12.8	13.3	40.0
88.037500	24.1	100.0	V	78.0	35.4	11.3	19.4	43.5
132.492500	23.6	100.0	V	0.0	32.9	9.3	19.9	43.5
204.525000	22.4	100.0	V	359.0	34.6	12.2	21.1	43.5
553.875000	18.7	100.0	V	148.0	39.9	21.2	27.3	46.0
955.420000	25.3	100.0	V	279.0	51.4	26.1	20.7	46.0

RE 1G-3GHz PK+AV Class B



Radiates Emission from 1GHz to 3GHz

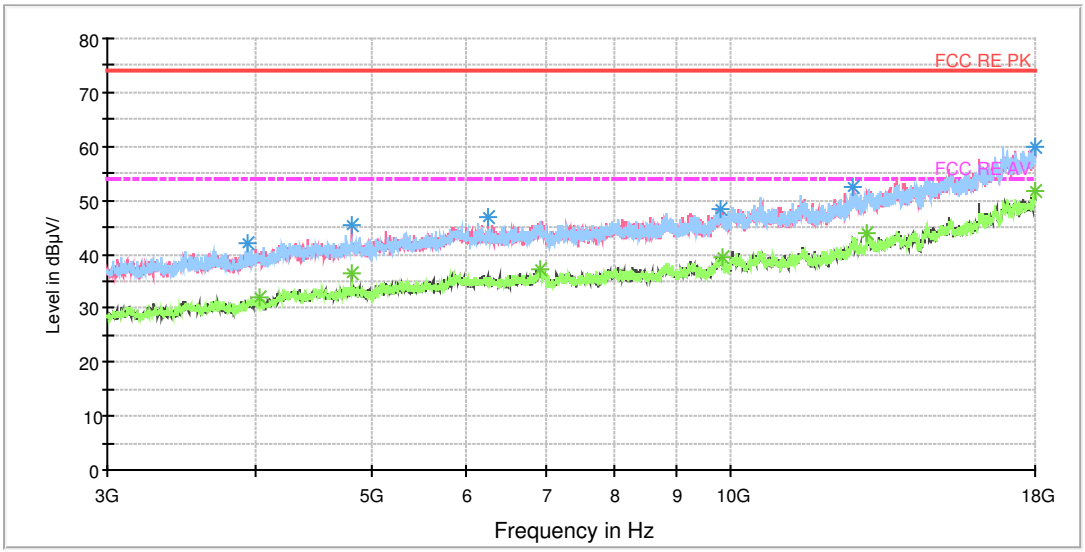
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1151.500000	37.8	100.0	V	213.0	48.6	-10.8	36.2	74
1437.000000	37.5	100.0	V	342.0	47.2	-9.7	36.5	74
1573.500000	38.2	100.0	H	53.0	47.3	-9.1	35.8	74
2057.500000	38.5	100.0	H	18.0	45.9	-7.4	35.5	74
2772.000000	42.5	100.0	V	359.0	46.8	-4.3	31.5	74
1787.000000	37.6	100.0	H	0.0	45.9	-8.3	36.4	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1151.500000	28.0	100.0	V	213.0	38.8	-10.8	26.0	54
1437.000000	28.2	100.0	V	342.0	37.9	-9.7	25.8	54
1573.500000	28.1	100.0	H	53.0	37.2	-9.1	25.9	54
2057.500000	29.0	100.0	H	18.0	36.4	-7.4	25.0	54
2772.000000	31.5	100.0	V	359.0	35.8	-4.3	22.5	54
1787.000000	28.0	100.0	H	0.0	36.3	-8.3	26.0	54

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

RE 3-18GHz PK+AV



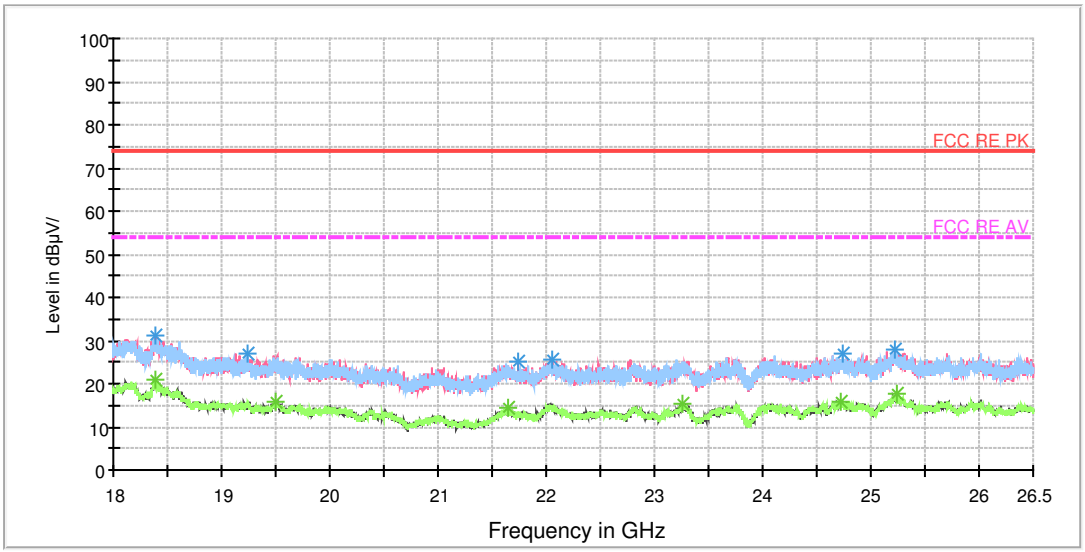
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4020.000000	38.7	100.0	H	106.0	39.2	0.5	35.3	74
4803.750000	45.5	100.0	V	13.0	48.2	2.7	28.5	74
6926.250000	44.0	100.0	V	314.0	50.8	6.8	30.0	74
9832.500000	46.2	100.0	V	264.0	58.1	11.9	27.8	74
13021.875000	51.9	100.0	V	0.0	68.1	16.2	22.1	74
17998.125000	60.1	100.0	V	314.0	85.5	25.4	13.9	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4020.000000	31.8	100.0	H	106.0	32.3	0.5	22.2	54
4803.750000	36.6	100.0	V	13.0	39.3	2.7	17.4	54
6926.250000	37.2	100.0	V	314.0	44.0	6.8	16.8	54
9832.500000	39.3	100.0	V	264.0	51.2	11.9	14.7	54
13021.875000	43.8	100.0	V	0.0	60.0	16.2	10.2	54
17998.125000	51.9	100.0	V	314.0	77.3	25.4	2.1	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

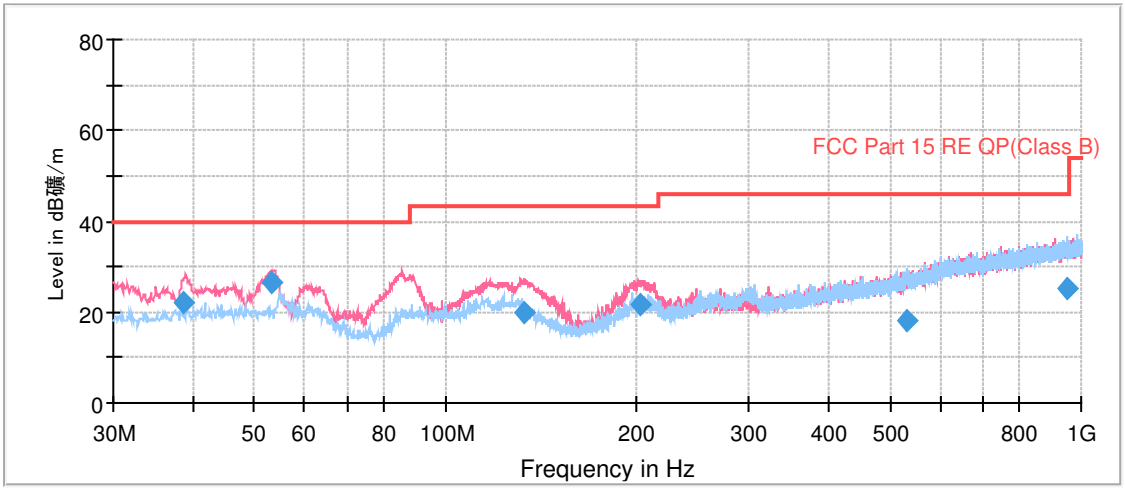
Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18388.875000	31.1	V	0.0	36.0	-4.9	42.9	74
19245.250000	26.8	H	0.0	33.6	-6.8	47.2	74
21740.000000	25.0	V	0.0	34.4	-9.4	49.0	74
22057.687500	25.5	V	0.0	33.6	-8.1	48.5	74
24733.062500	27.0	H	0.0	33.3	-6.3	47.0	74
25222.875000	28.1	V	0.0	34.0	-5.9	45.9	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18386.750000	20.9	V	0.0	25.7	-4.8	33.1	54
19501.312500	16.0	V	0.0	23.5	-7.5	38.0	54
21653.937500	14.4	H	0.0	23.6	-9.2	39.6	54
23261.500000	15.5	V	0.0	22.9	-7.4	38.5	54
24724.562500	16.0	H	0.0	22.2	-6.2	38.0	54
25232.437500	17.8	H	0.0	23.7	-5.9	36.2	54

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

GFSK-Channel 39

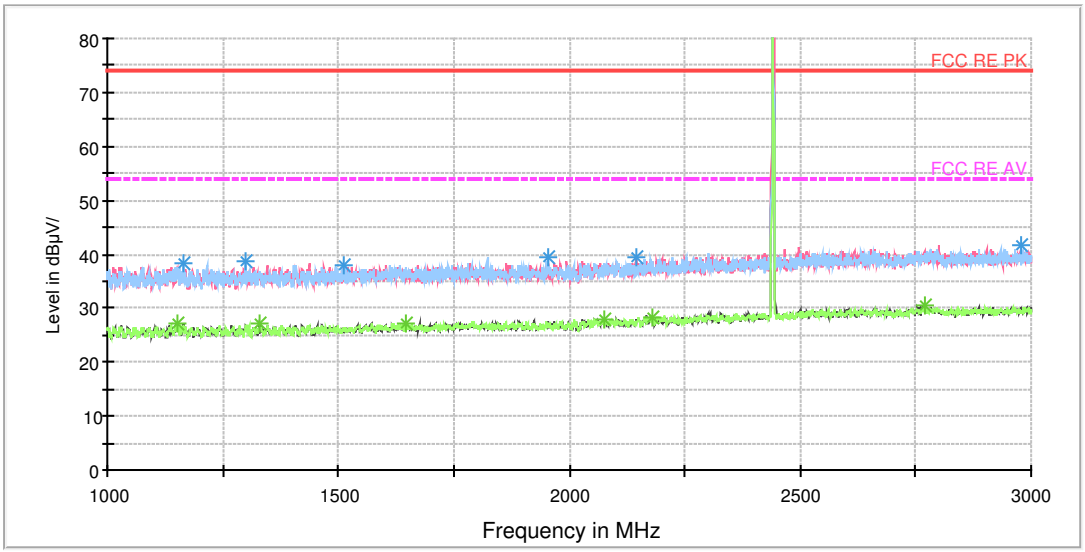
RE 0.03-1GHz QP Class B



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)
38.811250	22.3	100.0	V	57.0	35.2	12.9	17.7	40.0
53.326250	26.6	100.0	V	78.0	39.4	12.8	13.4	40.0
133.298750	20.1	100.0	V	290.0	29.3	9.2	23.4	43.5
202.058750	21.8	100.0	V	353.0	33.9	12.1	21.7	43.5
533.191250	18.1	100.0	H	22.0	38.8	20.7	27.9	46.0
947.745000	25.2	100.0	H	354.0	51.2	26.0	20.8	46.0

RE 1G-3GHz PK+AV Class B



Radiates Emission from 1GHz to 3GHz

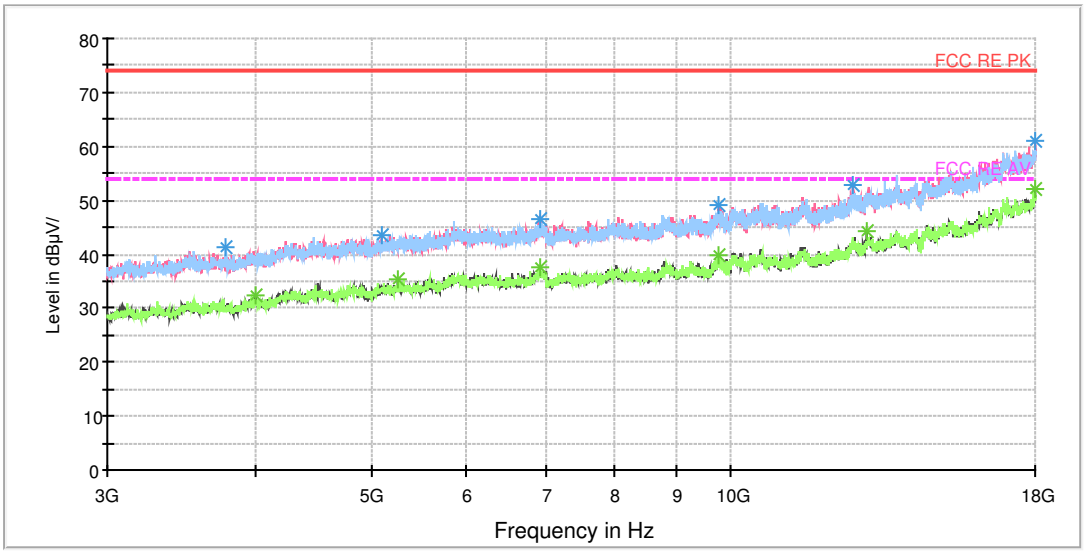
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1164.000000	38.2	100.0	H	0.0	49.0	-10.8	35.8	74
1301.000000	38.6	100.0	H	9.0	48.7	-10.1	35.4	74
1512.500000	37.9	100.0	H	0.0	47.3	-9.4	36.1	74
1954.000000	39.4	100.0	H	2.0	47.4	-8.0	34.6	74
2145.500000	39.5	100.0	V	20.0	46.4	-6.9	34.5	74
2978.000000	41.8	100.0	H	0.0	45.8	-4.0	32.2	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1153.500000	27.1	100.0	V	11.0	37.9	-10.8	26.9	54
1331.500000	27.1	100.0	V	20.0	37.1	-10.0	26.9	54
1647.000000	27.3	100.0	V	15.0	36.1	-8.8	26.7	54
2075.500000	28.0	100.0	H	0.0	35.3	-7.3	26.0	54
2180.000000	28.3	100.0	H	14.0	35.0	-6.7	25.7	54
2769.500000	30.5	100.0	H	1.0	34.8	-4.3	23.5	54

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

RE 3-18GHz PK+AV



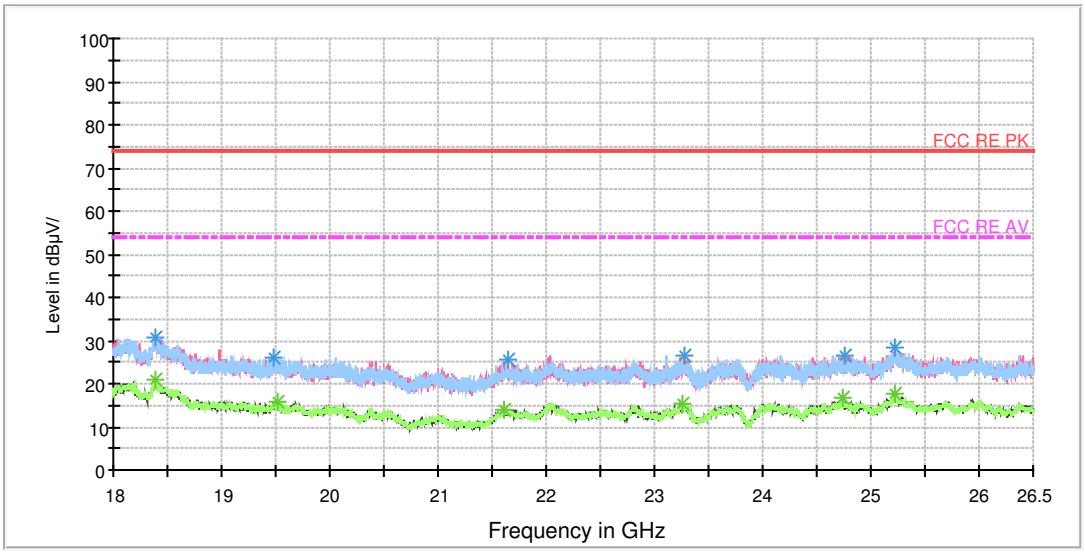
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3995.625000	38.1	100.0	V	138.0	38.6	0.5	35.9	74
5263.125000	42.4	100.0	V	3.0	46.1	3.7	31.6	74
6907.500000	44.1	100.0	H	95.0	51.0	6.9	29.9	74
9770.625000	46.0	100.0	H	32.0	57.9	11.9	28.0	74
13020.000000	51.4	100.0	V	226.0	67.6	16.2	22.6	74
17992.500000	58.0	100.0	V	262.0	83.3	25.3	16.0	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3995.625000	32.2	100.0	V	138.0	32.7	0.5	21.8	54
5263.125000	35.3	100.0	V	3.0	39.0	3.7	18.7	54
6907.500000	37.5	100.0	H	95.0	44.4	6.9	16.5	54
9770.625000	39.7	100.0	H	32.0	51.6	11.9	14.3	54
13020.000000	44.2	100.0	V	226.0	60.4	16.2	9.8	54
17992.500000	52.0	100.0	V	262.0	77.3	25.3	2.0	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)
18383.562500	30.5	V	0.0	35.3	-4.8	43.5	74
19482.187500	26.0	V	0.0	33.7	-7.7	48.0	74
21643.312500	25.5	V	0.0	34.6	-9.1	48.5	74
23285.937500	26.6	V	0.0	33.7	-7.1	47.4	74
24758.562500	26.7	V	0.0	33.4	-6.7	47.3	74
25230.312500	28.6	H	0.0	34.5	-5.9	45.4	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18389.937500	20.8	H	0.0	25.7	-4.9	33.2	54
19517.250000	16.0	V	0.0	23.4	-7.4	38.0	54
21613.562500	14.2	V	0.0	23.1	-8.9	39.8	54
23263.625000	15.4	V	0.0	22.7	-7.3	38.6	54
24736.250000	16.7	V	0.0	23.0	-6.3	37.3	54
25220.750000	17.6	V	0.0	23.6	-6.0	36.4	54

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

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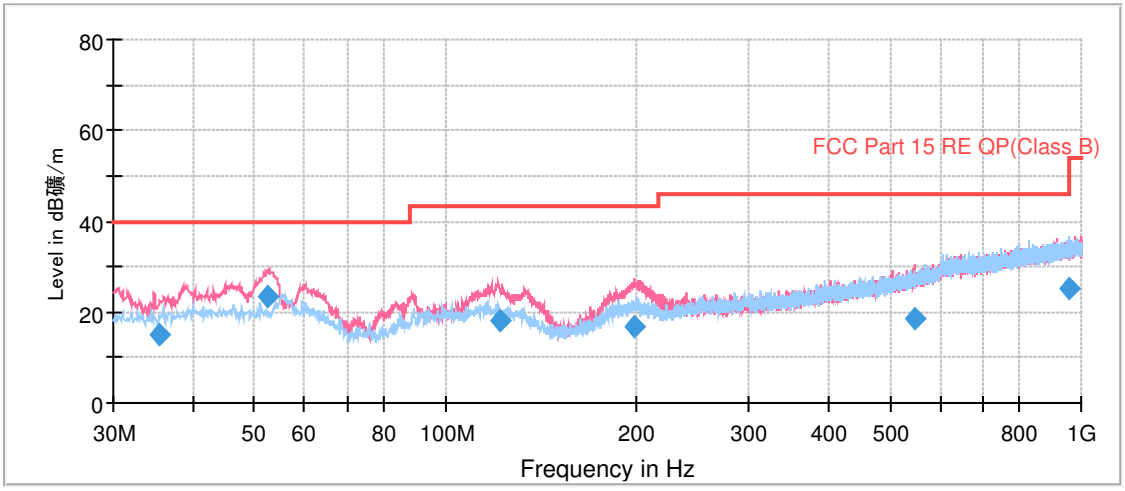
RE 0.03-1GHz QP Class B



Radiates Emission from 30MHz to 1GHz

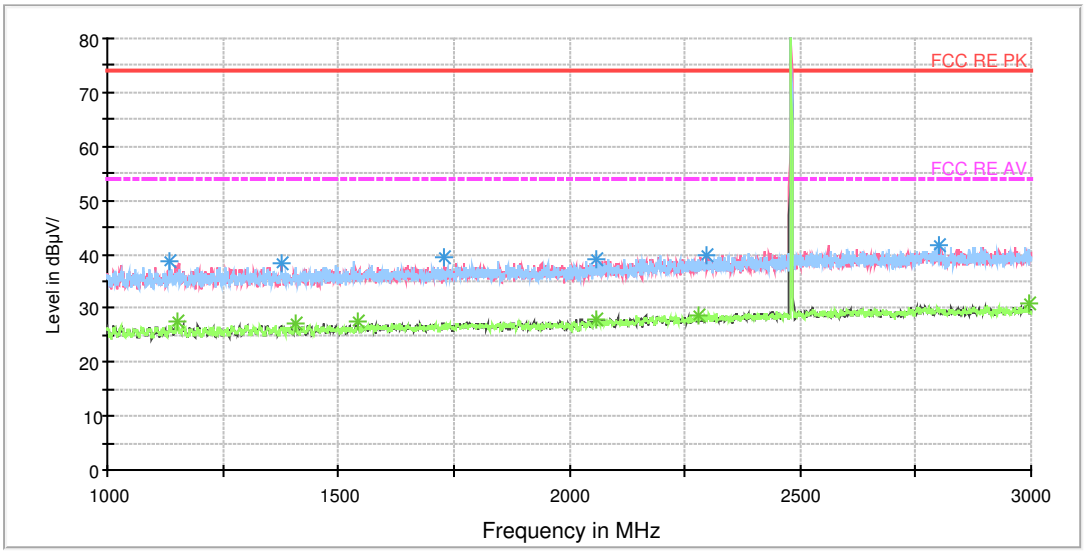
Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
35.328750	15.2	100.0	V	46.0	27.2	12.0	24.8	40.0
52.553750	23.5	100.0	V	71.0	36.4	12.9	16.5	40.0
121.901250	18.3	100.0	V	0.0	28.7	10.4	25.2	43.5
198.290000	16.8	100.0	V	122.0	28.8	12.0	26.7	43.5
549.188750	18.5	100.0	V	213.0	39.5	21.0	27.5	46.0
956.307500	25.2	100.0	H	80.0	51.3	26.1	20.8	46.0

Remark: 1. Quasi-Peak = Reading value + Correction factor

2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

3. Margin = Limit – Quasi-Peak

RE 1G-3GHz PK+AV Class B



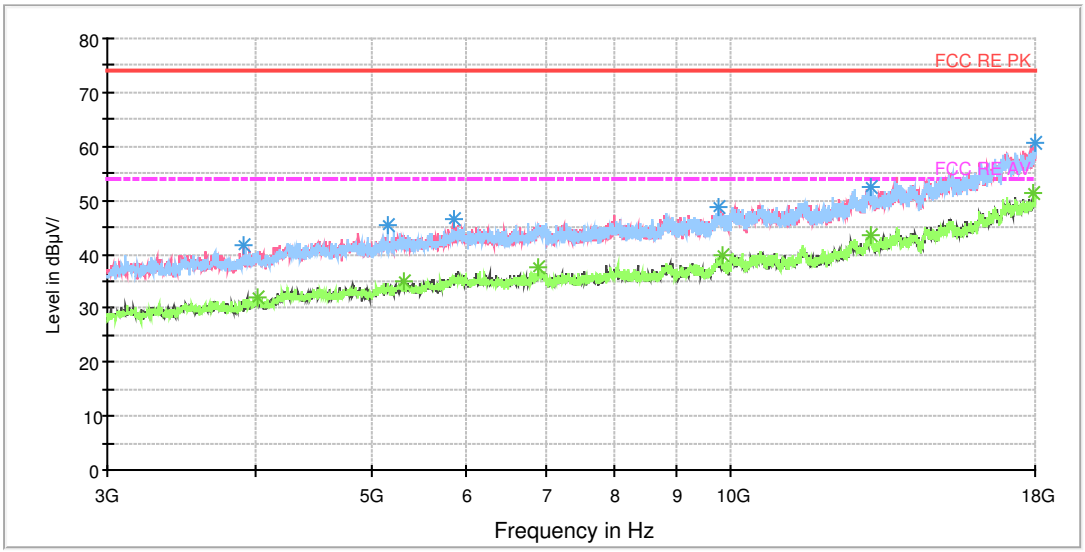
Radiates Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1135.000000	38.8	100.0	H	0.0	49.7	-10.9	35.2	74
1377.000000	38.2	100.0	V	18.0	48.1	-9.9	35.8	74
1728.000000	39.5	100.0	V	20.0	48.1	-8.6	34.5	74
2059.500000	39.0	100.0	V	20.0	46.4	-7.4	35.0	74
2298.500000	39.7	100.0	V	20.0	45.7	-6.0	34.3	74
2799.000000	41.7	100.0	V	20.0	45.8	-4.1	32.3	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1151.500000	27.4	100.0	H	5.0	38.2	-10.8	26.6	54
1407.500000	27.1	100.0	H	0.0	36.9	-9.8	26.9	54
1542.000000	27.4	100.0	V	19.0	36.7	-9.3	26.6	54
2058.000000	28.0	100.0	H	5.0	35.4	-7.4	26.0	54
2280.500000	28.7	100.0	V	15.0	34.8	-6.1	25.3	54
2994.000000	30.7	100.0	V	20.0	34.7	-4.0	23.3	54

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

RE 3-18GHz PK+AV



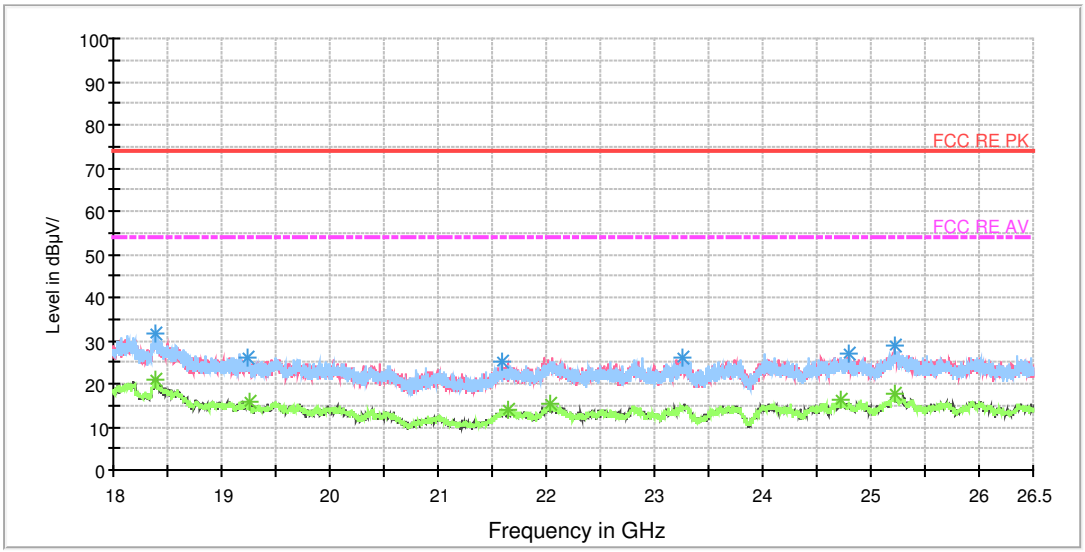
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4006.875000	39.1	100.0	H	171.0	39.6	0.5	34.9	74
5311.875000	42.4	100.0	H	171.0	46.2	3.8	31.6	74
6905.625000	44.4	100.0	H	184.0	51.3	6.9	29.6	74
9826.875000	47.4	100.0	V	226.0	59.4	12.0	26.6	74
13081.875000	50.7	100.0	H	0.0	66.9	16.2	23.3	74
17945.625000	58.8	100.0	V	311.0	83.6	24.8	15.2	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4006.875000	32.0	100.0	H	171.0	32.5	0.5	22.0	54
5311.875000	35.0	100.0	H	171.0	38.8	3.8	19.0	54
6905.625000	37.4	100.0	H	184.0	44.3	6.9	16.6	54
9826.875000	39.7	100.0	V	226.0	51.7	12.0	14.3	54
13081.875000	43.4	100.0	H	0.0	59.6	16.2	10.6	54
17945.625000	51.5	100.0	V	311.0	76.3	24.8	2.5	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

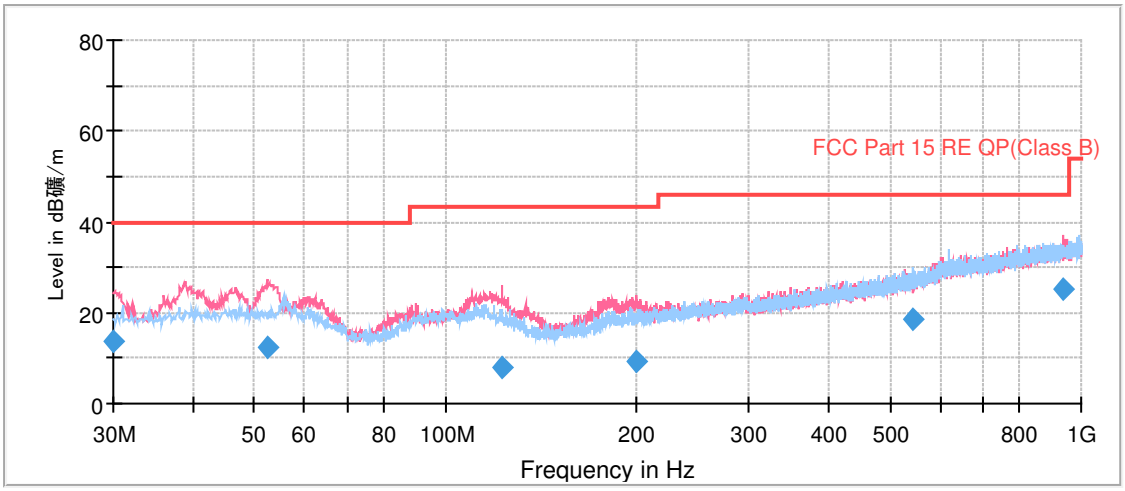
Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18380.375000	31.5	H	0.0	36.3	-4.8	42.5	74
19232.500000	26.3	V	0.0	33.1	-6.8	47.7	74
21598.687500	24.9	V	0.0	33.7	-8.8	49.1	74
23257.250000	26.1	V	0.0	33.5	-7.4	47.9	74
24801.062500	27.1	V	0.0	33.7	-6.6	46.9	74
25225.000000	28.9	V	0.0	34.8	-5.9	45.1	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18389.937500	21.0	V	0.0	25.9	-4.9	33.0	54
19254.812500	16.0	H	0.0	22.8	-6.8	38.0	54
21649.687500	14.1	V	0.0	23.3	-9.2	39.9	54
22039.625000	15.3	V	0.0	23.3	-8.0	38.7	54
24719.250000	16.0	V	0.0	22.3	-6.3	38.0	54
25225.000000	17.6	V	0.0	23.5	-5.9	36.4	54

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

EDR-Channel 0

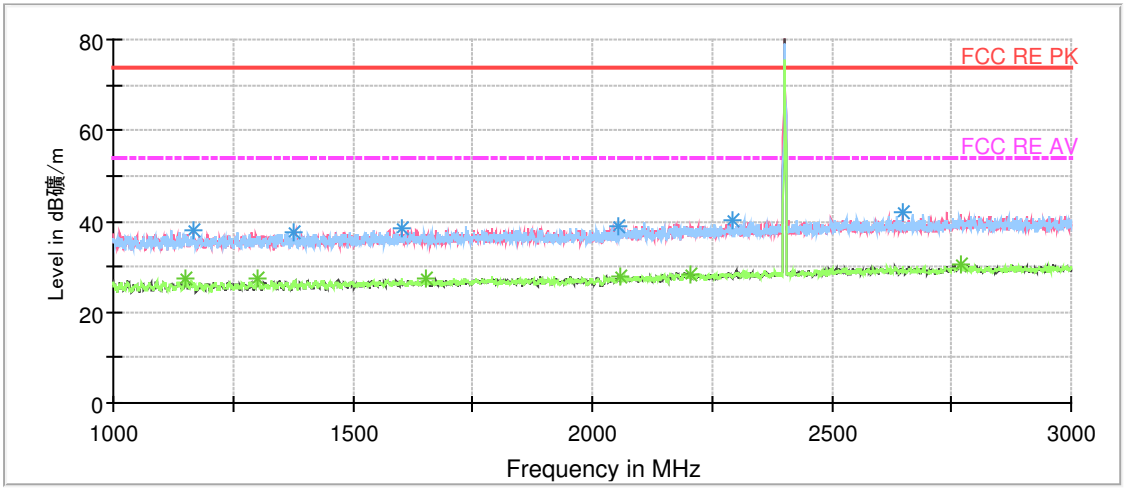
RE 0.03-1GHz QP Class B



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)
30.000000	13.9	100.0	V	239.0	25.8	11.9	26.1	40.0
52.350000	12.6	100.0	V	36.0	25.5	12.9	27.4	40.0
122.437500	8.1	100.0	V	6.0	18.4	10.3	35.4	43.5
198.947500	9.4	100.0	V	138.0	21.4	12.0	34.1	43.5
544.703750	18.4	100.0	H	335.0	39.3	20.9	27.6	46.0
934.522500	25.0	100.0	V	248.0	50.9	25.9	21.0	46.0

RE 1G-3GHz PK+AV Class B



Radiates Emission from 1GHz to 3GHz

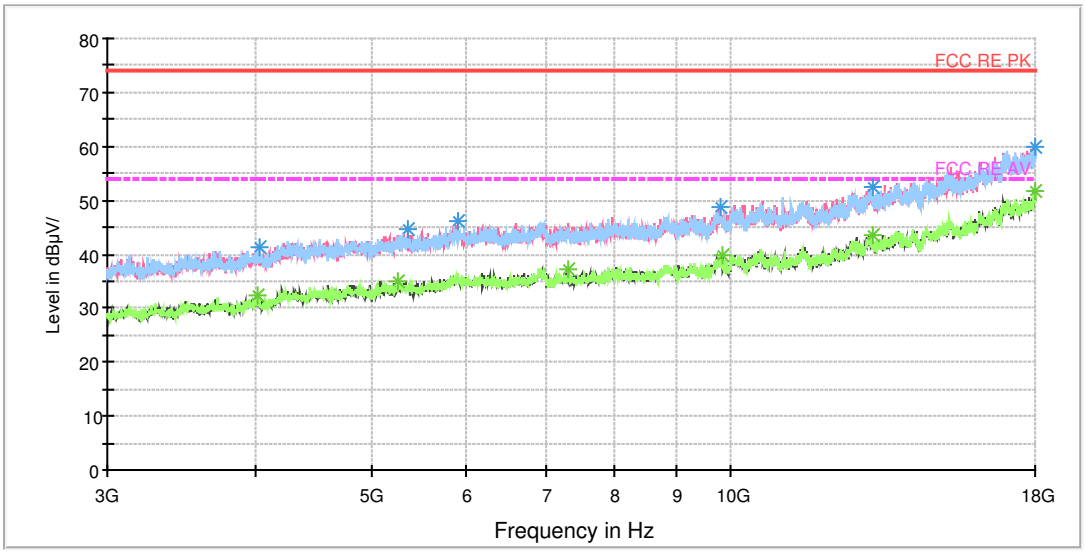
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1167.000000	38.2	100.0	V	19.0	49.0	-10.8	35.8	74
1377.000000	37.6	100.0	V	18.0	47.5	-9.9	36.4	74
1601.500000	38.4	100.0	V	20.0	47.4	-9.0	35.6	74
2056.000000	39.0	100.0	H	14.0	46.4	-7.4	35.0	74
2291.500000	40.4	100.0	H	9.0	46.5	-6.1	33.6	74
2649.000000	42.1	100.0	V	20.0	46.7	-4.6	31.9	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1149.500000	27.2	100.0	H	0.0	38.0	-10.8	26.8	54
1301.500000	27.2	100.0	V	16.0	37.3	-10.1	26.8	54
1652.000000	27.3	100.0	H	0.0	36.1	-8.8	26.7	54
2059.000000	28.0	100.0	V	20.0	35.4	-7.4	26.0	54
2206.500000	28.4	100.0	H	0.0	35.0	-6.6	25.6	54
2768.000000	30.4	100.0	H	0.0	34.7	-4.3	23.6	54

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

RE 3-18GHz PK+AV



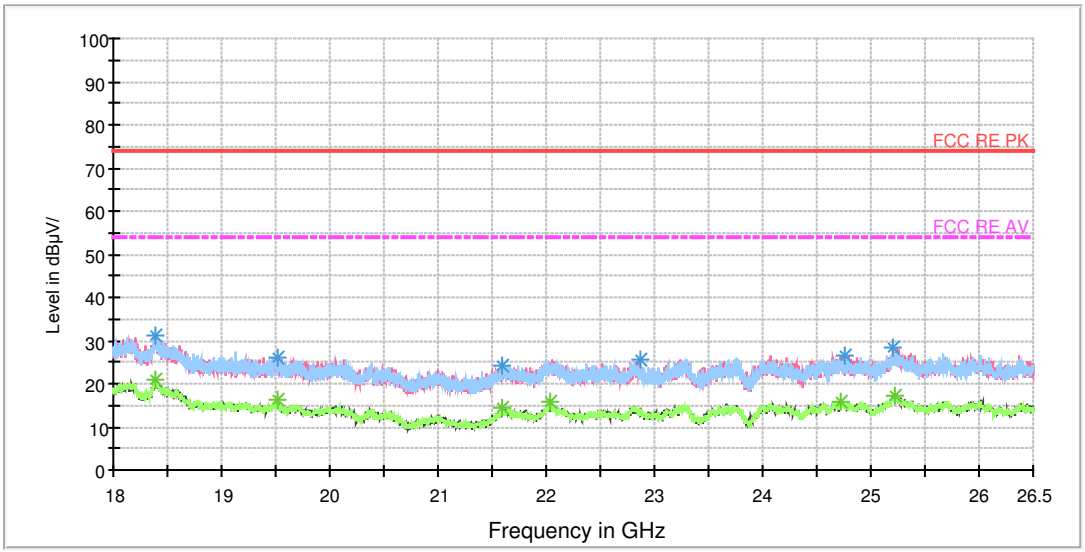
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4018.125000	41.2	100.0	H	98.0	41.7	0.5	32.8	74
5356.875000	44.6	100.0	V	0.0	48.3	3.7	29.4	74
5896.875000	46.2	100.0	H	48.0	52.3	6.1	27.8	74
9817.500000	48.6	100.0	H	159.0	60.7	12.1	25.4	74
13143.750000	52.4	100.0	H	220.0	68.0	15.6	21.6	74
17988.750000	59.9	100.0	H	98.0	85.2	25.3	14.1	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4006.875000	32.5	100.0	H	208.0	33.0	0.5	21.5	54
5265.000000	35.0	100.0	H	182.0	38.7	3.7	19.0	54
7308.750000	37.2	100.0	V	298.0	45.8	8.6	16.8	54
9838.125000	39.7	100.0	V	336.0	51.6	11.9	14.3	54
13136.250000	43.6	100.0	H	196.0	59.3	15.7	10.4	54
17977.500000	51.6	100.0	V	262.0	76.7	25.1	2.4	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

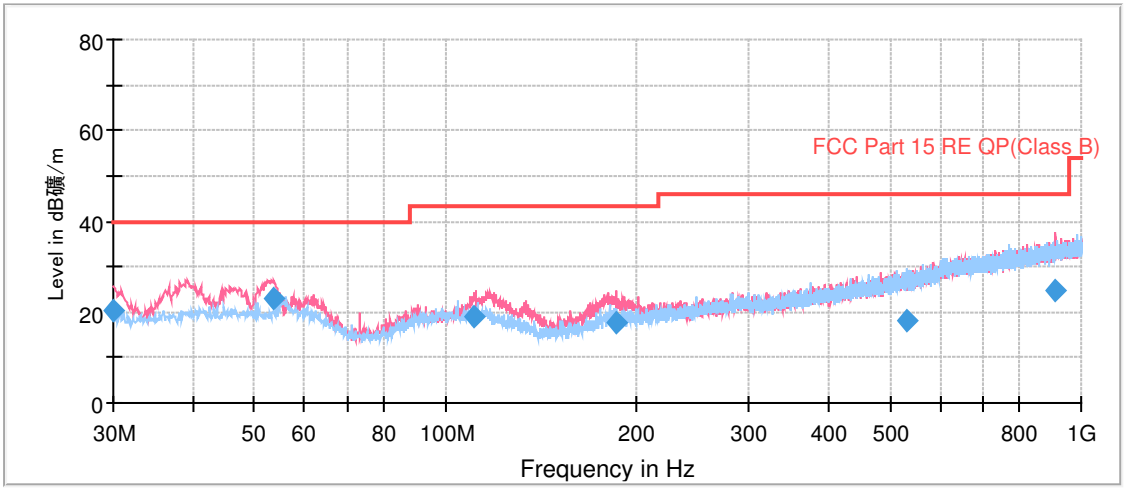
Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18385.687500	31.1	V	0.0	35.9	-4.8	42.9	74
19511.937500	26.2	V	0.0	33.7	-7.5	47.8	74
21596.562500	24.2	H	0.0	32.9	-8.7	49.8	74
22865.187500	25.5	H	0.0	33.1	-7.6	48.5	74
24768.125000	26.6	H	0.0	33.4	-6.8	47.4	74
25203.750000	28.3	V	0.0	34.7	-6.4	45.7	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18394.187500	20.9	H	0.0	25.8	-4.9	33.1	54
19509.812500	16.2	H	0.0	23.7	-7.5	37.8	54
21589.125000	14.5	H	0.0	23.2	-8.7	39.5	54
22038.562500	15.6	H	0.0	23.6	-8.0	38.4	54
24728.812500	15.9	V	0.0	22.1	-6.2	38.1	54
25220.750000	17.4	V	0.0	23.4	-6.0	36.6	54

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

EDR-Channel 39

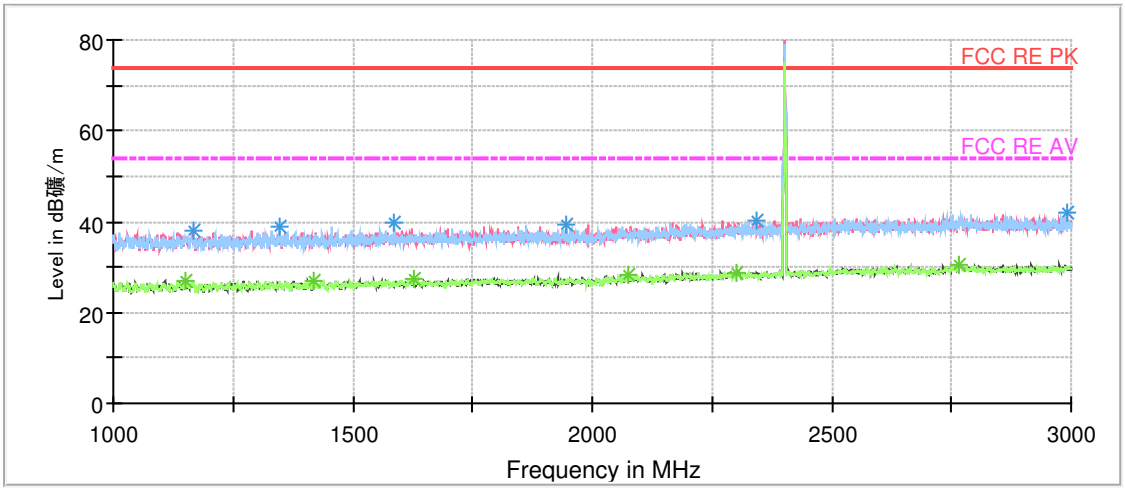
RE 0.03-1GHz QP Class B



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)
30.000000	20.1	100.0	V	359.0	32.0	11.9	19.9	40.0
53.445000	23.2	100.0	V	46.0	36.0	12.8	16.8	40.0
110.880000	18.8	100.0	V	259.0	31.0	12.2	24.7	43.5
185.688750	17.7	100.0	V	168.0	28.9	11.2	25.8	43.5
532.781250	18.1	100.0	H	293.0	38.8	20.7	27.9	46.0
910.806250	24.6	100.0	V	138.0	50.3	25.7	21.4	46.0

RE 1G-3GHz PK+AV Class B



Radiates Emission from 1GHz to 3GHz

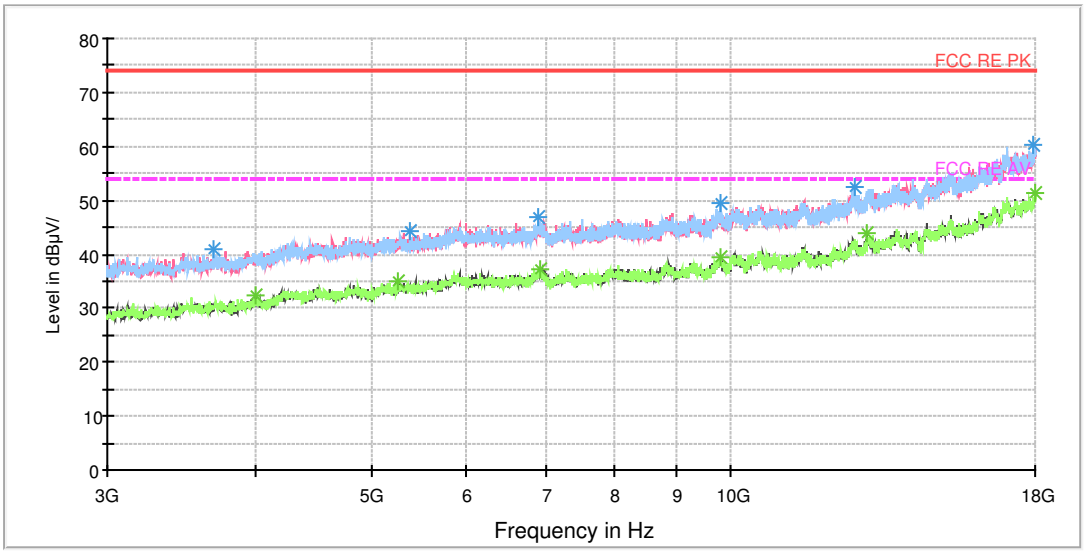
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1165.500000	38.0	100.0	V	20.0	48.8	-10.8	36.0	74
1348.500000	38.8	100.0	H	14.0	48.8	-10.0	35.2	74
1587.500000	39.7	100.0	H	0.0	48.7	-9.0	34.3	74
1947.500000	39.5	100.0	H	0.0	47.5	-8.0	34.5	74
2344.000000	40.4	100.0	V	20.0	46.3	-5.9	33.6	74
2992.500000	42.0	100.0	V	11.0	46.0	-4.0	32.0	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1150.000000	27.1	100.0	H	0.0	37.9	-10.8	26.9	54
1420.500000	27.1	100.0	H	3.0	36.9	-9.8	26.9	54
1629.000000	27.3	100.0	V	20.0	36.2	-8.9	26.7	54
2074.000000	28.2	100.0	V	0.0	35.5	-7.3	25.8	54
2299.500000	28.6	100.0	V	19.0	34.6	-6.0	25.4	54
2767.000000	30.6	100.0	H	5.0	34.9	-4.3	23.4	54

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

RE 3-18GHz PK+AV



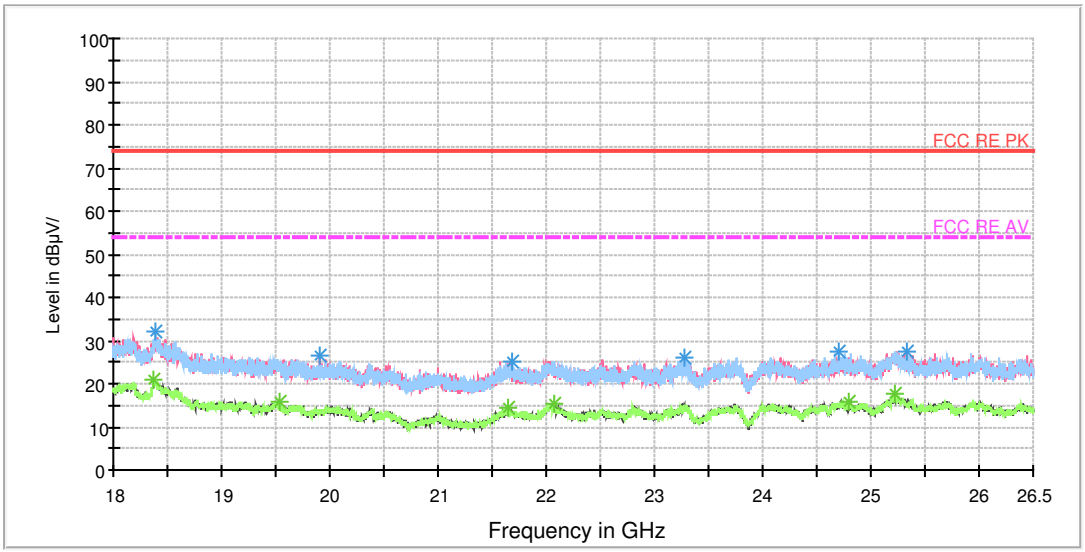
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3999.375000	39.5	100.0	V	99.0	40.0	0.5	34.5	74
5255.625000	41.2	100.0	V	59.0	44.9	3.7	32.8	74
6911.250000	45.1	100.0	H	0.0	52.0	6.9	28.9	74
9798.750000	47.3	100.0	H	111.0	59.6	12.3	26.7	74
13018.125000	50.2	100.0	V	86.0	66.4	16.2	23.8	74
17988.750000	58.2	100.0	V	325.0	83.5	25.3	15.8	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3999.375000	32.4	100.0	V	99.0	32.9	0.5	21.6	54
5255.625000	34.9	100.0	V	59.0	38.6	3.7	19.1	54
6911.250000	37.4	100.0	H	0.0	44.3	6.9	16.6	54
9798.750000	39.4	100.0	H	111.0	51.7	12.3	14.6	54
13018.125000	43.8	100.0	V	86.0	60.0	16.2	10.2	54
17988.750000	51.5	100.0	V	325.0	76.8	25.3	2.5	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

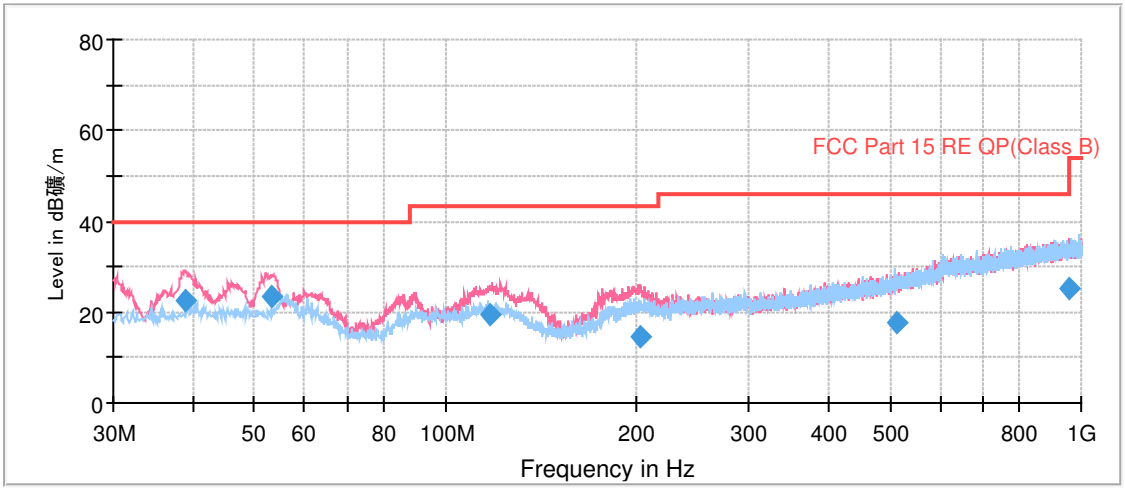
Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18387.812500	32.2	H	0.0	37.1	-4.9	41.8	74
19907.187500	26.4	V	0.0	34.5	-8.1	47.6	74
21694.312500	25.0	H	0.0	34.3	-9.3	49.0	74
23285.937500	26.1	H	0.0	33.2	-7.1	47.9	74
24712.875000	27.5	H	0.0	34.0	-6.5	46.5	74
25333.375000	27.6	H	0.0	34.7	-7.1	46.4	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18374.000000	20.8	H	0.0	25.5	-4.7	33.2	54
19528.937500	15.8	H	0.0	23.2	-7.4	38.2	54
21650.750000	14.3	V	0.0	23.5	-9.2	39.7	54
22065.125000	15.2	H	0.0	23.3	-8.1	38.8	54
24795.750000	16.0	V	0.0	22.7	-6.7	38.0	54
25226.062500	17.7	V	0.0	23.6	-5.9	36.3	54

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

EDR-Channel 78

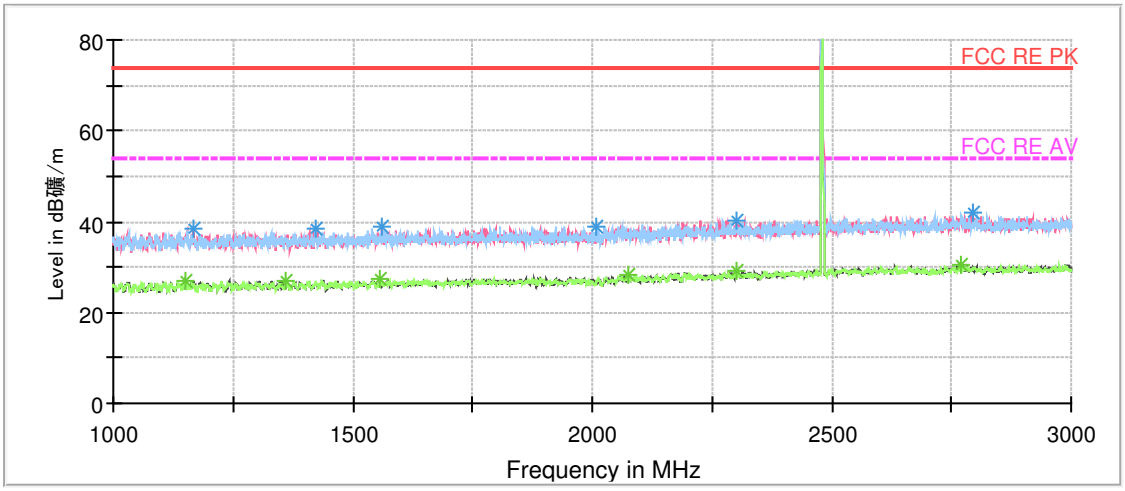
RE 0.03-1GHz QP Class B



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)
39.010000	22.5	100.0	V	147.0	35.4	12.9	17.5	40.0
53.326250	23.6	100.0	V	46.0	36.4	12.8	16.4	40.0
117.587500	19.7	100.0	V	6.0	30.7	11.0	23.8	43.5
202.496250	14.6	100.0	V	187.0	26.7	12.1	28.9	43.5
511.073750	17.5	100.0	H	120.0	37.7	20.2	28.5	46.0
958.083750	25.3	100.0	V	0.0	51.5	26.2	20.7	46.0

RE 1G-3GHz PK+AV Class B



Radiates Emission from 1GHz to 3GHz

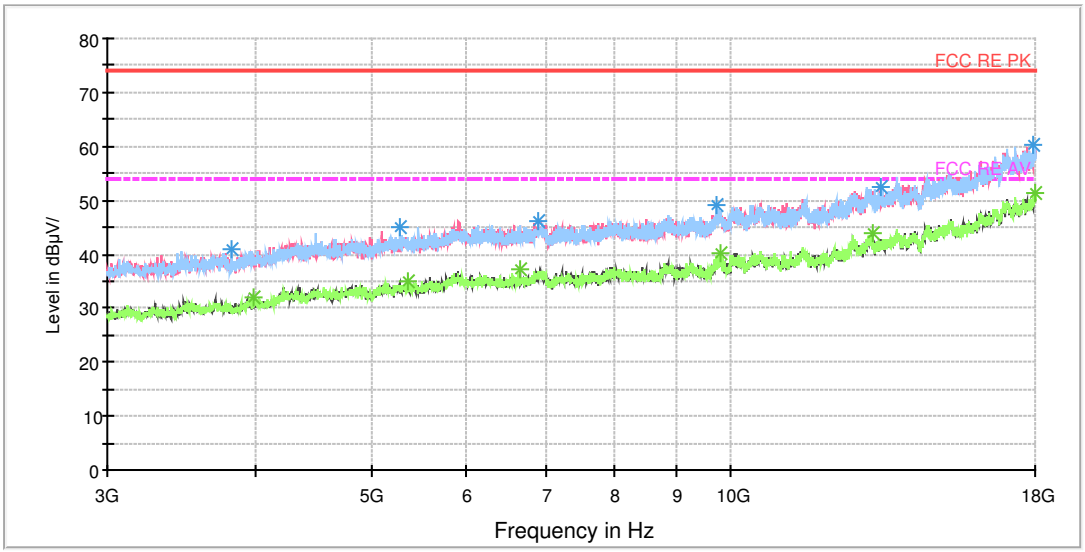
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1165.500000	38.4	100.0	V	20.0	49.2	-10.8	35.6	74
1421.000000	38.5	100.0	V	18.0	48.3	-9.8	35.5	74
1560.000000	38.7	100.0	V	20.0	47.9	-9.2	35.3	74
2010.000000	39.1	100.0	H	2.0	46.9	-7.8	34.9	74
2302.500000	40.1	100.0	V	18.0	46.1	-6.0	33.9	74
2796.500000	41.9	100.0	H	9.0	46.1	-4.2	32.1	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1152.000000	27.1	100.0	V	20.0	37.9	-10.8	26.9	54
1361.500000	27.1	100.0	H	2.0	37.1	-10.0	26.9	54
1558.500000	27.2	100.0	H	1.0	36.4	-9.2	26.8	54
2074.500000	28.3	100.0	H	9.0	35.6	-7.3	25.7	54
2301.500000	29.0	100.0	V	17.0	35.0	-6.0	25.0	54
2768.000000	30.7	100.0	H	1.0	35.0	-4.3	23.3	54

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

RE 3-18GHz PK+AV



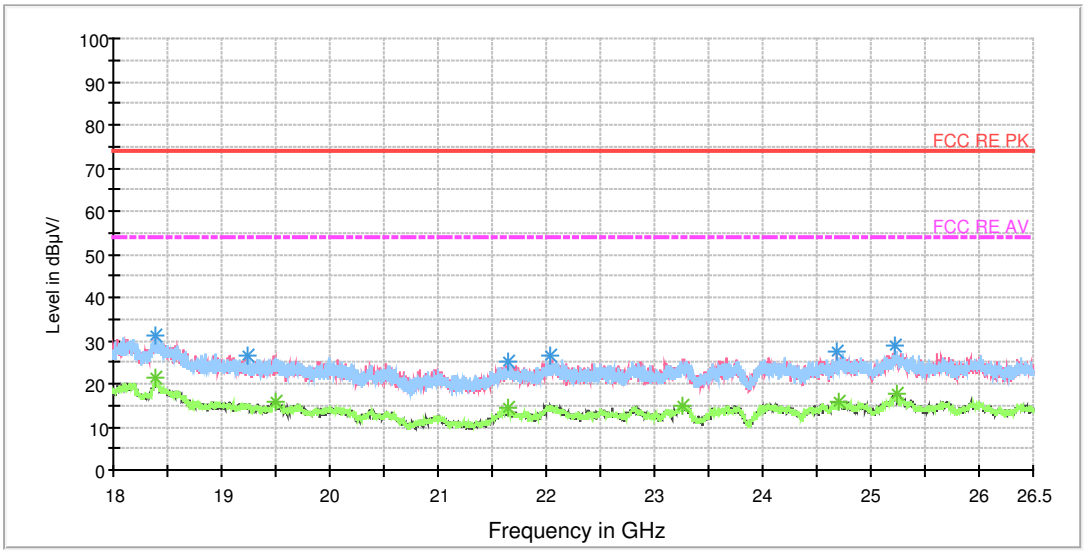
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3986.250000	39.8	100.0	V	126.0	40.2	0.4	34.2	74
5351.250000	41.1	100.0	H	273.0	44.8	3.7	32.9	74
6654.375000	43.4	100.0	V	114.0	49.4	6.0	30.6	74
9806.250000	47.1	100.0	H	329.0	59.3	12.2	26.9	74
13151.250000	51.1	100.0	V	0.0	66.7	15.6	22.9	74
17990.625000	59.6	100.0	H	196.0	84.9	25.3	14.4	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3986.250000	32.2	100.0	V	126.0	32.6	0.4	21.8	54
5351.250000	35.1	100.0	H	273.0	38.8	3.7	18.9	54
6654.375000	37.2	100.0	V	114.0	43.2	6.0	16.8	54
9806.250000	40.4	100.0	H	329.0	52.6	12.2	13.6	54
13151.250000	43.8	100.0	V	0.0	59.4	15.6	10.2	54
17990.625000	51.4	100.0	H	196.0	76.7	25.3	2.6	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)
18380.375000	31.3	H	0.0	36.1	-4.8	42.7	74
19244.187500	26.6	H	0.0	33.4	-6.8	47.4	74
21645.437500	25.2	V	0.0	34.3	-9.1	48.8	74
22037.500000	26.7	H	0.0	34.7	-8.0	47.3	74
24692.687500	27.4	V	0.0	34.3	-6.9	46.6	74
25230.312500	28.6	H	0.0	34.5	-5.9	45.4	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18388.875000	21.2	H	0.0	26.1	-4.9	32.8	54
19494.937500	15.8	H	0.0	23.4	-7.6	38.2	54
21657.125000	14.3	H	0.0	23.5	-9.2	39.7	54
23266.812500	15.1	H	0.0	22.4	-7.3	38.9	54
24698.000000	16.0	V	0.0	22.8	-6.8	38.0	54
25233.500000	17.5	V	0.0	23.4	-5.9	36.5	54

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

4.11 Conducted Emission

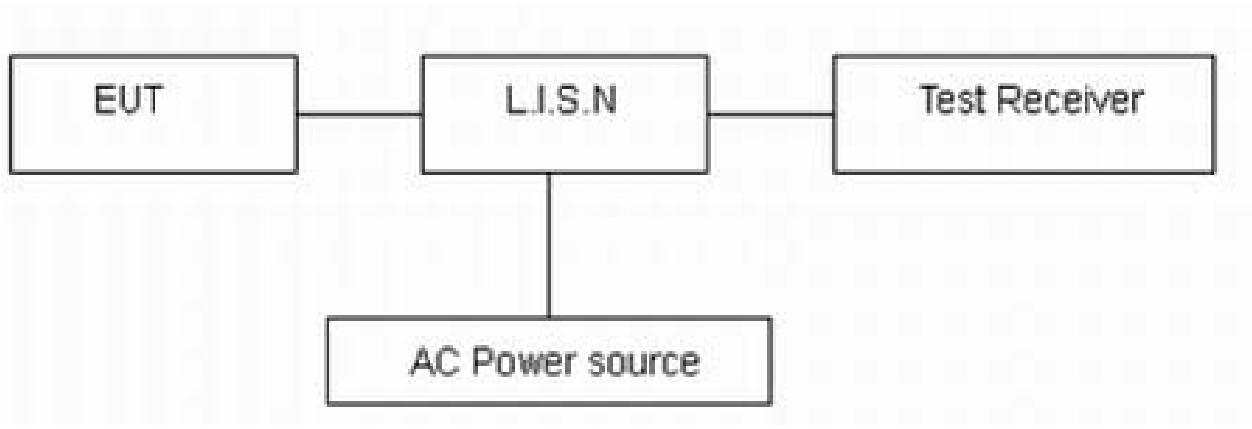
Ambient condition

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 C63.4-2014. 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.		

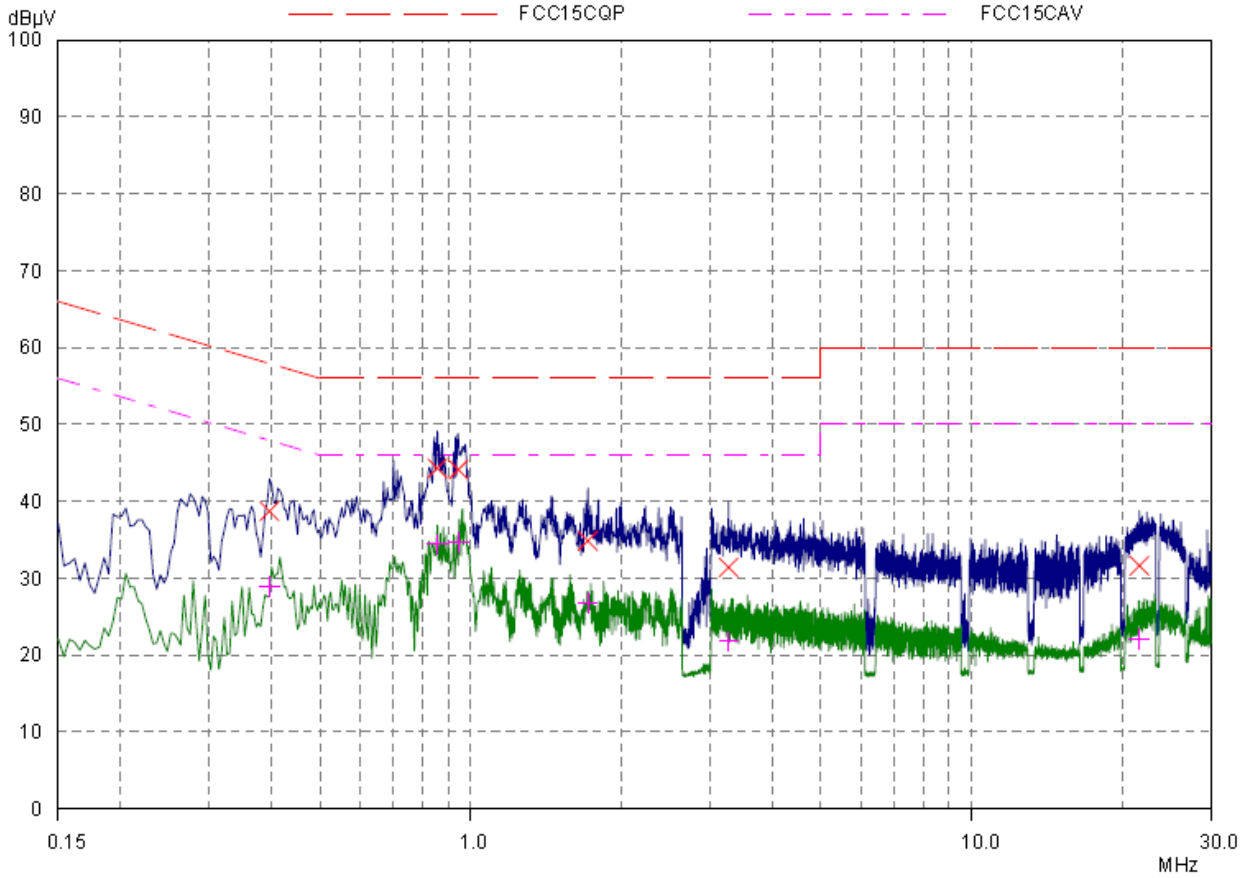
Measurement Uncertainty

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-CH0

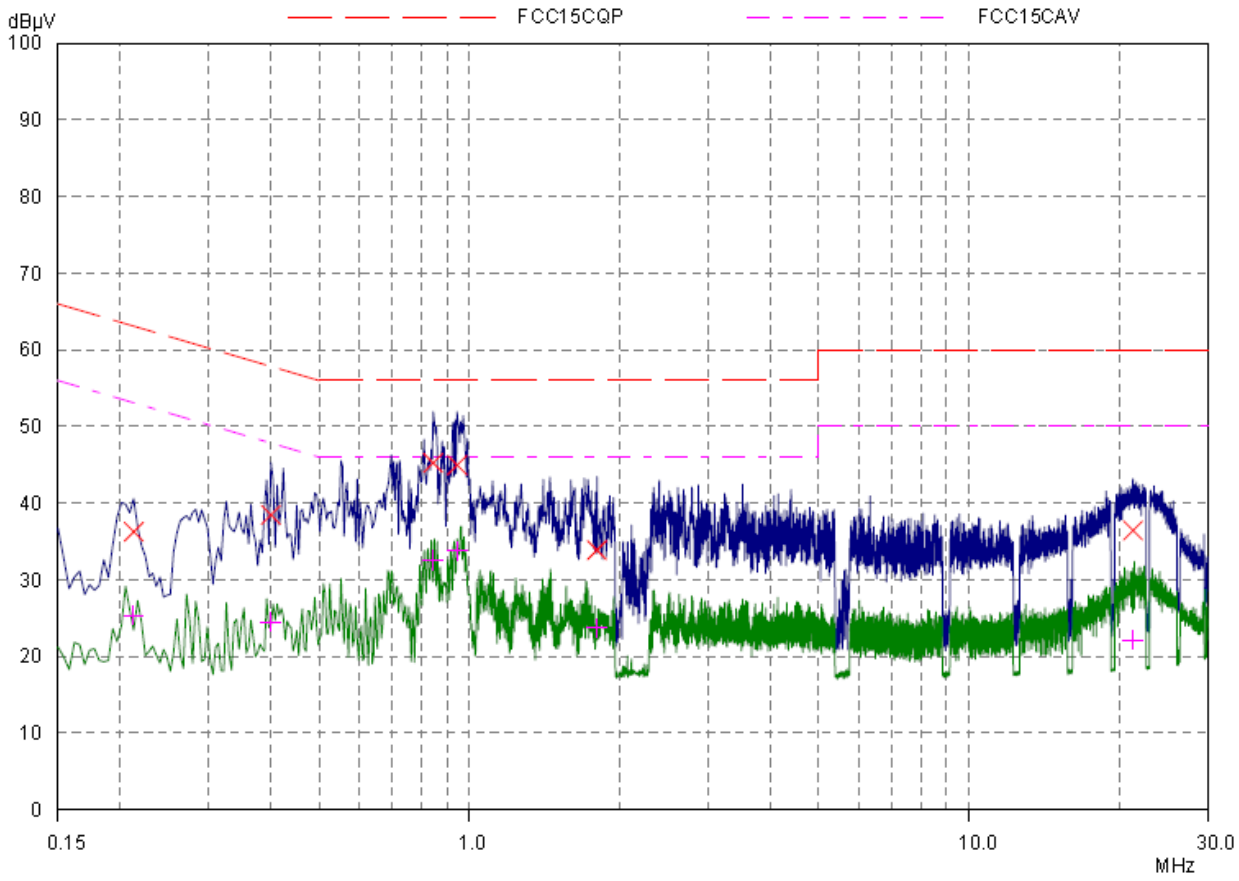


Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.39609	38.72	57.93	19.21	L1	gnd
0.85703	44.31	56.00	11.69	L1	gnd
0.94296	44.13	56.00	11.87	L1	gnd
1.7125	34.85	56.00	21.15	L1	gnd
3.26718	31.42	56.00	24.58	L1	gnd
21.61093	31.64	60.00	28.36	L1	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.39609	28.94	47.93	18.99	L1	gnd
0.85703	34.45	46.00	11.55	L1	gnd
0.94296	34.70	46.00	11.30	L1	gnd
1.7125	26.80	46.00	19.20	L1	gnd
3.26718	21.82	46.00	24.18	L1	gnd
21.61093	22.11	50.00	27.89	L1	gnd

L Line



Final Measurement Results

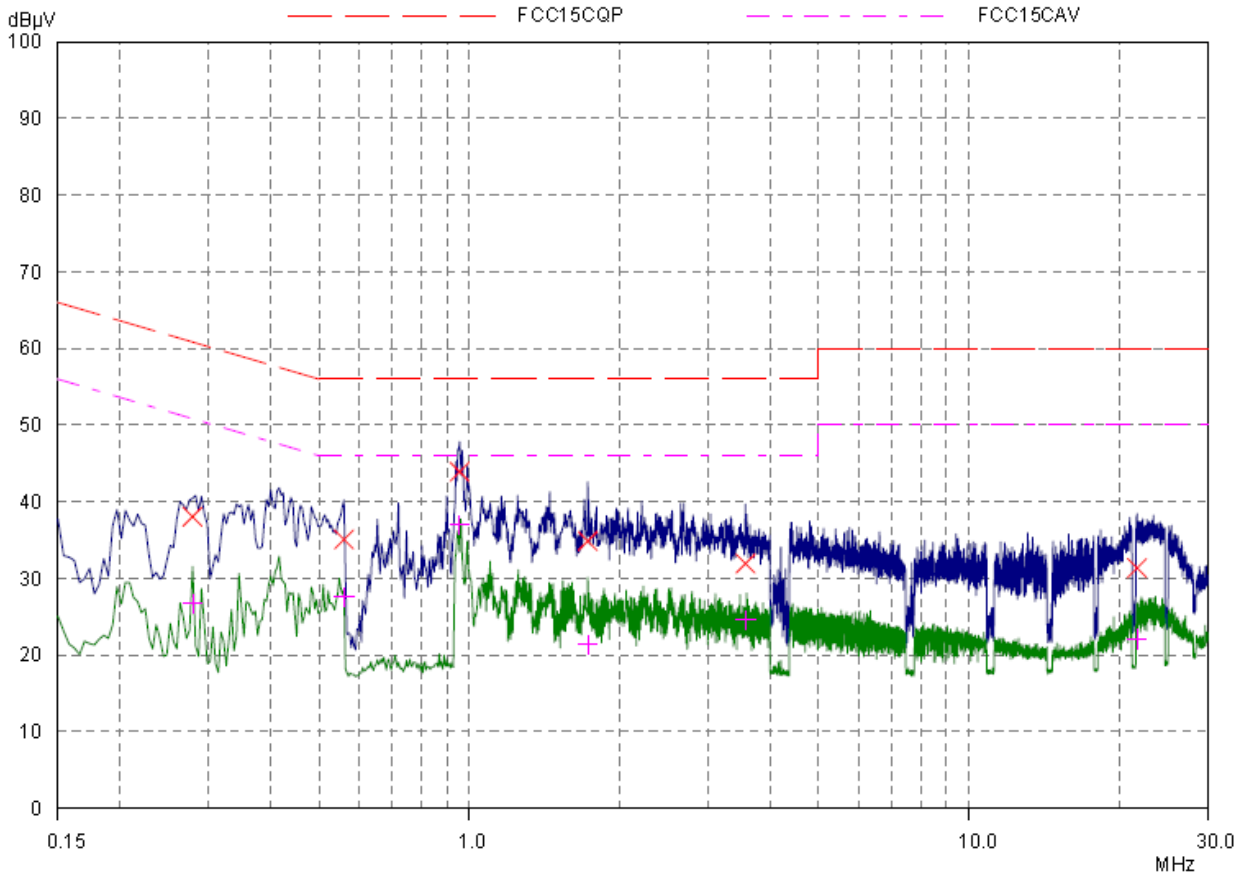
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.2125	36.27	63.11	26.84	N	gnd
0.4	38.48	57.85	19.37	N	gnd
0.84531	45.25	56.00	10.75	N	gnd
0.94296	44.97	56.00	11.03	N	gnd
1.79843	33.87	56.00	22.13	N	gnd
21.26328	36.43	60.00	23.57	N	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.2125	25.38	53.11	27.73	N	gnd
0.4	24.51	47.85	23.34	N	gnd
0.84531	32.57	46.00	13.43	N	gnd
0.94296	33.78	46.00	12.22	N	gnd
1.79843	23.74	46.00	22.26	N	gnd
21.26328	22.14	50.00	27.86	N	gnd

N Line

Conducted Emission from 150 KHz to 30 MHz

Basic Rate-CH39

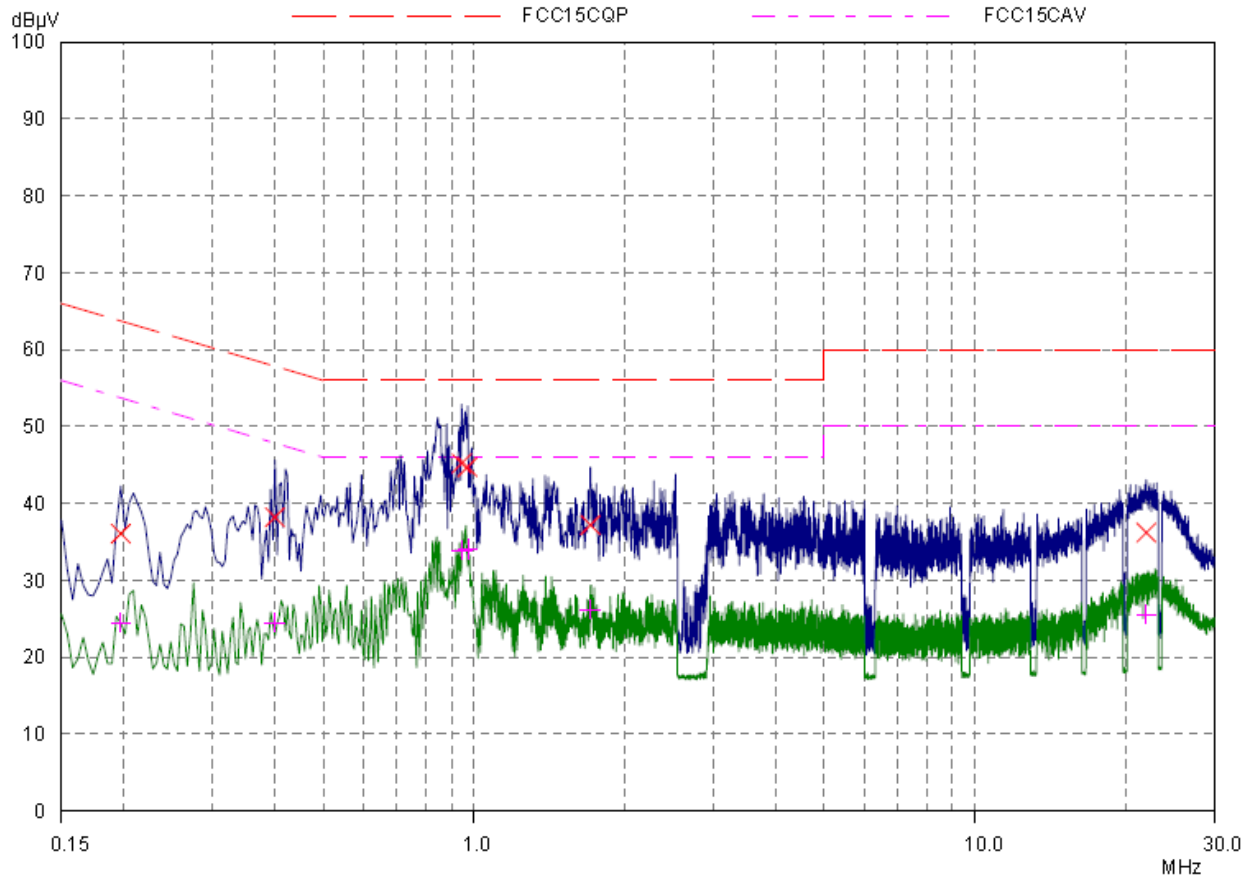


Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.2789	38.07	60.85	22.78	L1	gnd
0.56015	35.10	56.00	20.90	L1	gnd
0.95468	43.92	56.00	12.08	L1	gnd
1.72421	34.87	56.00	21.13	L1	gnd
3.56406	31.93	56.00	24.07	L1	gnd
21.68906	31.35	60.00	28.65	L1	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.2789	26.74	50.85	24.11	L1	gnd
0.56015	27.55	46.00	18.45	L1	gnd
0.95468	36.96	46.00	9.04	L1	gnd
1.72421	21.36	46.00	24.64	L1	gnd
3.56406	24.59	46.00	21.41	L1	gnd
21.68906	22.12	50.00	27.88	L1	gnd

L Line



Final Measurement Results

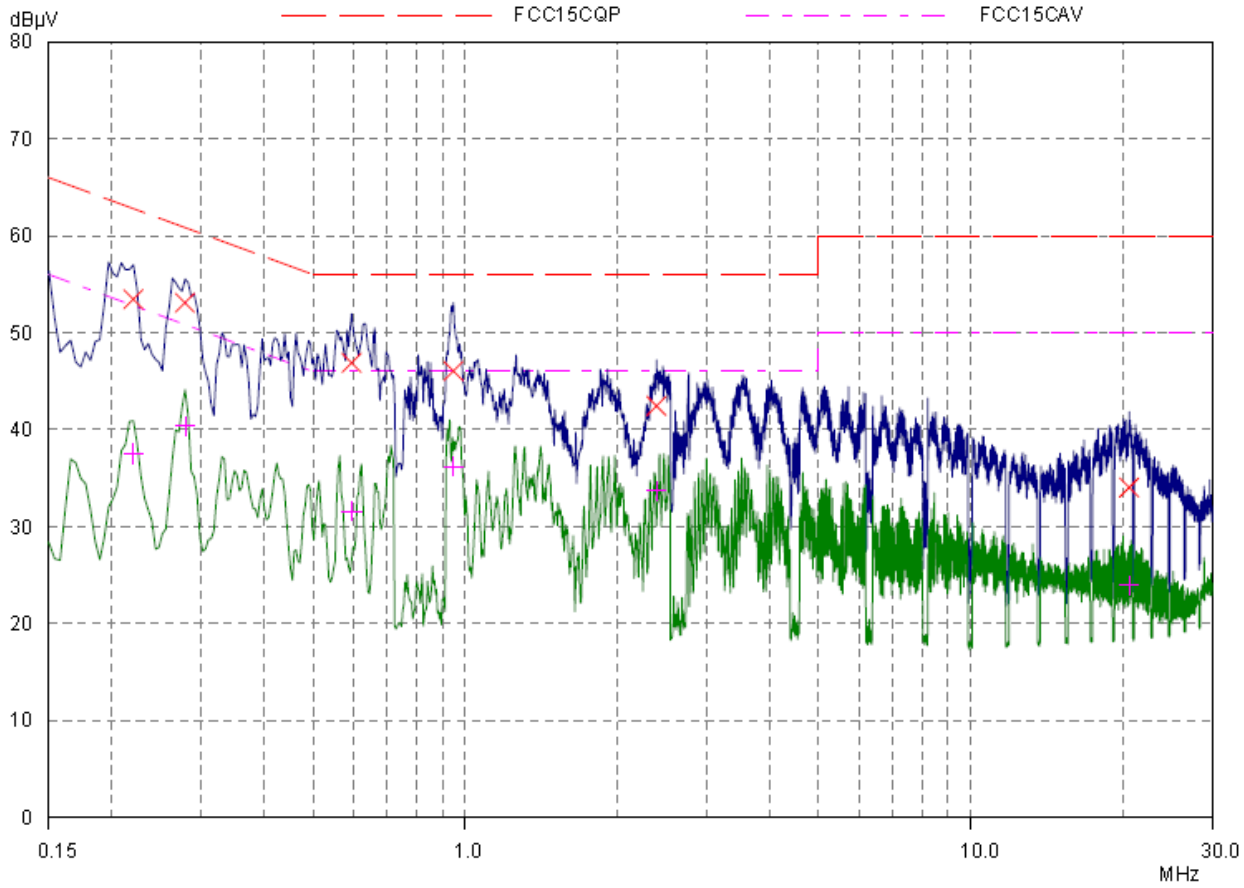
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.19687	36.10	63.74	27.64	N	gnd
0.4	38.24	57.85	19.61	N	gnd
0.94296	45.21	56.00	10.79	N	gnd
0.97031	44.76	56.00	11.24	N	gnd
1.70468	37.21	56.00	18.79	N	gnd
21.9625	36.23	60.00	23.77	N	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.19687	24.49	53.74	29.25	N	gnd
0.4	24.51	47.85	23.34	N	gnd
0.94296	33.94	46.00	12.06	N	gnd
0.97031	34.03	46.00	11.97	N	gnd
1.70468	26.24	46.00	19.76	N	gnd
21.9625	25.61	50.00	24.39	N	gnd

N Line

Conducted Emission from 150 KHz to 30 MHz

Basic Rate-CH78

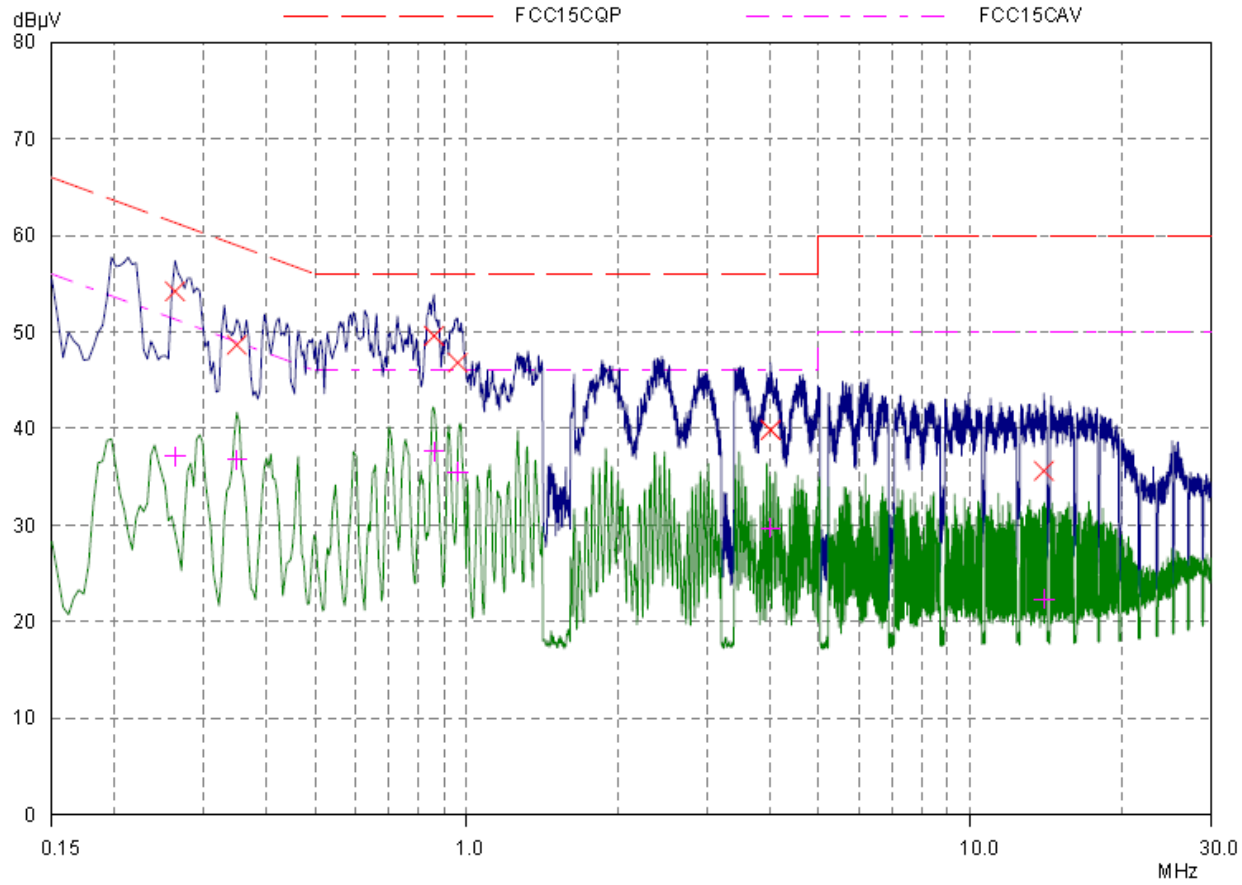


Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.22031	53.45	62.81	9.36	L1	gnd
0.2789	53.09	60.85	7.76	L1	gnd
0.59531	46.90	56.00	9.10	L1	gnd
0.94687	46.07	56.00	9.93	L1	gnd
2.38828	42.44	56.00	13.56	L1	gnd
20.55625	34.05	60.00	25.95	L1	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.22031	37.49	52.81	15.32	L1	gnd
0.2789	40.38	50.85	10.47	L1	gnd
0.59531	31.61	46.00	14.39	L1	gnd
0.94687	36.20	46.00	9.80	L1	gnd
2.38828	33.68	46.00	12.32	L1	gnd
20.55625	23.95	50.00	26.05	L1	gnd

L Line



Final Measurement Results

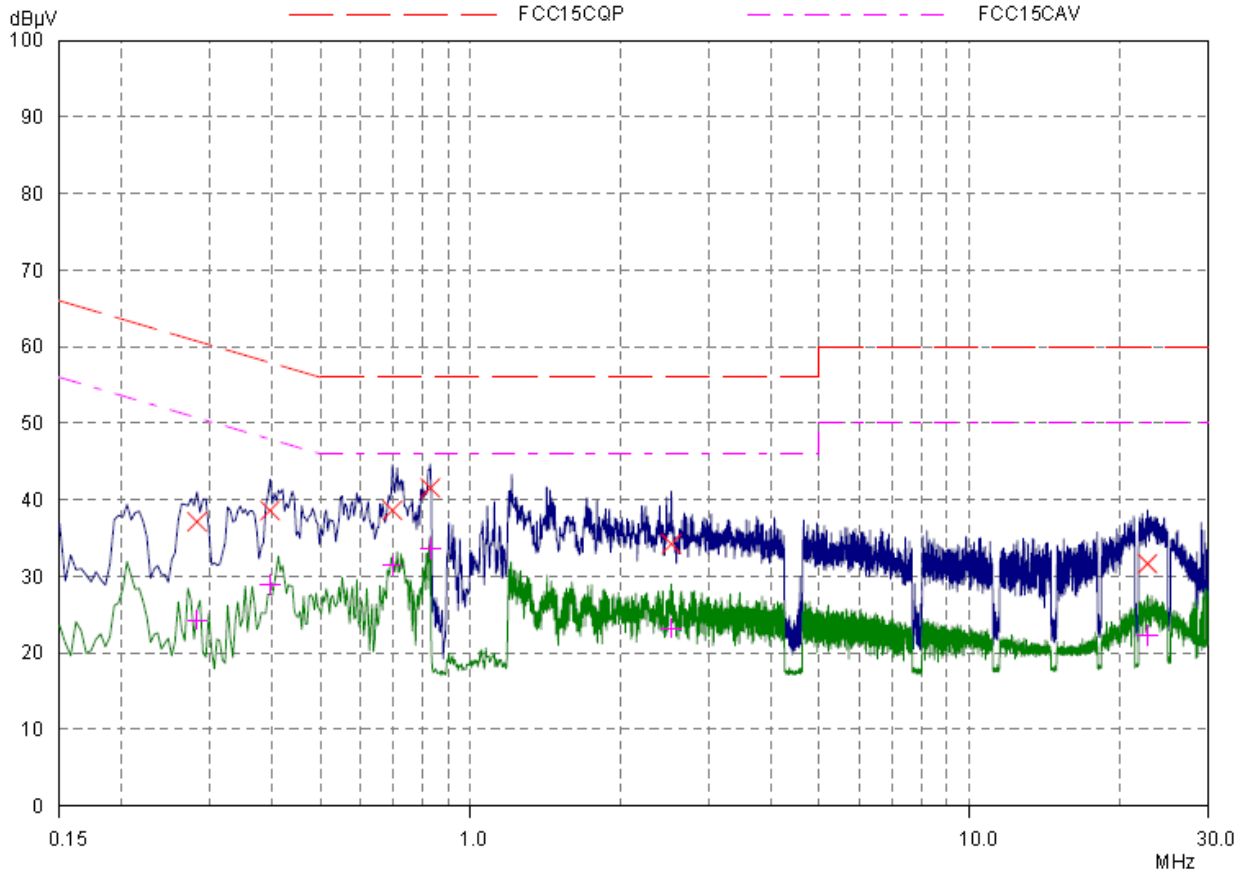
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.26328	54.21	61.33	7.12	N	gnd
0.34921	48.67	58.98	10.31	N	gnd
0.86093	49.59	56.00	6.41	N	gnd
0.95859	46.84	56.00	9.16	N	gnd
4.00936	39.86	56.00	16.14	N	gnd
13.99765	35.62	60.00	24.38	N	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.26328	37.11	51.33	14.22	N	gnd
0.34921	36.79	48.98	12.19	N	gnd
0.86093	37.62	46.00	8.38	N	gnd
0.95859	35.51	46.00	10.49	N	gnd
4.00936	29.73	46.00	16.27	N	gnd
13.99765	22.35	50.00	27.65	N	gnd

N Line

Conducted Emission from 150 KHz to 30 MHz

EDR-CH0

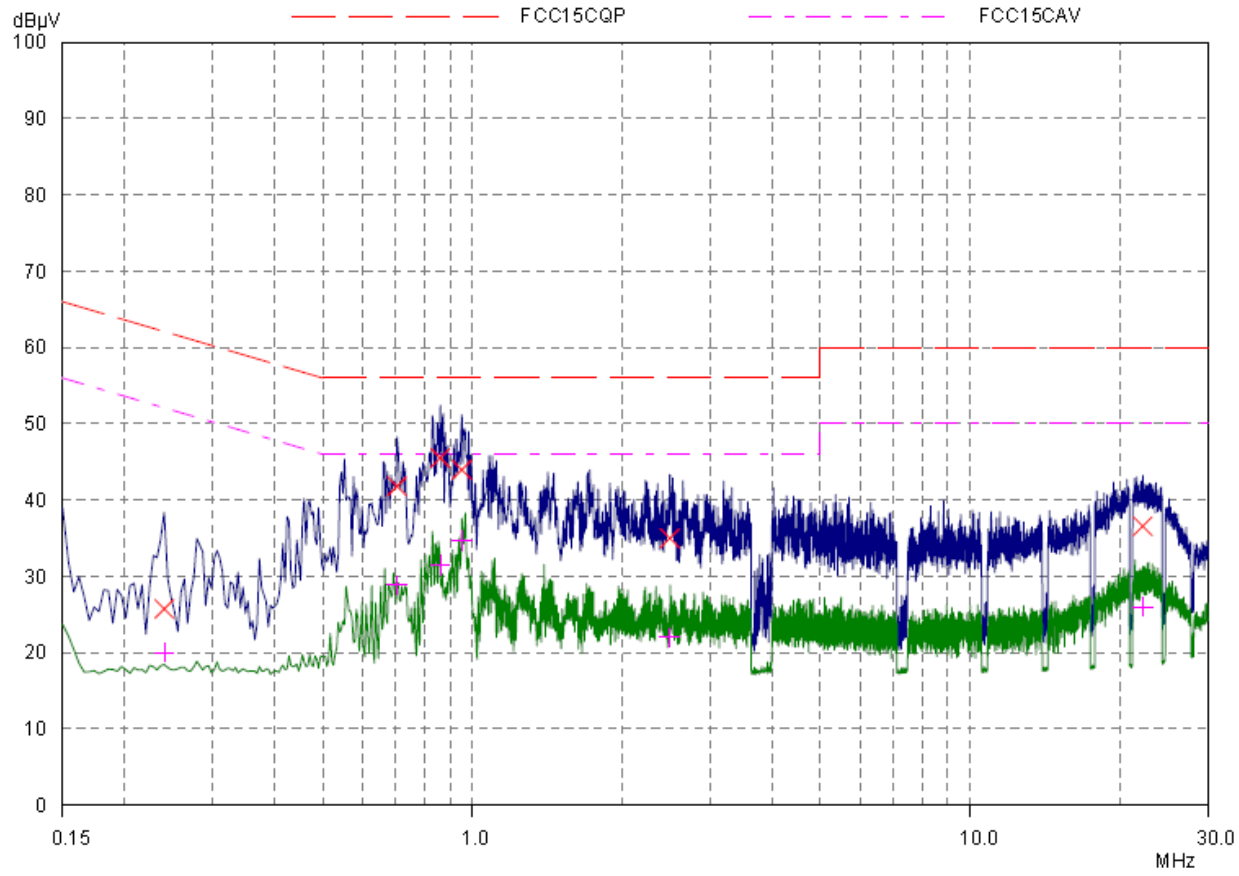


Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.28281	37.16	60.73	23.57	L1	gnd
0.39609	38.60	57.93	19.33	L1	gnd
0.69687	38.65	56.00	17.35	L1	gnd
0.82968	41.55	56.00	14.45	L1	gnd
2.525	34.24	56.00	21.76	L1	gnd
22.73984	31.67	60.00	28.33	L1	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.28281	24.29	50.73	26.44	L1	gnd
0.39609	28.94	47.93	18.99	L1	gnd
0.69687	31.39	46.00	14.61	L1	gnd
0.82968	33.67	46.00	12.33	L1	gnd
2.525	23.23	46.00	22.77	L1	gnd
22.73984	22.34	50.00	27.66	L1	gnd

L Line



Final Measurement Results

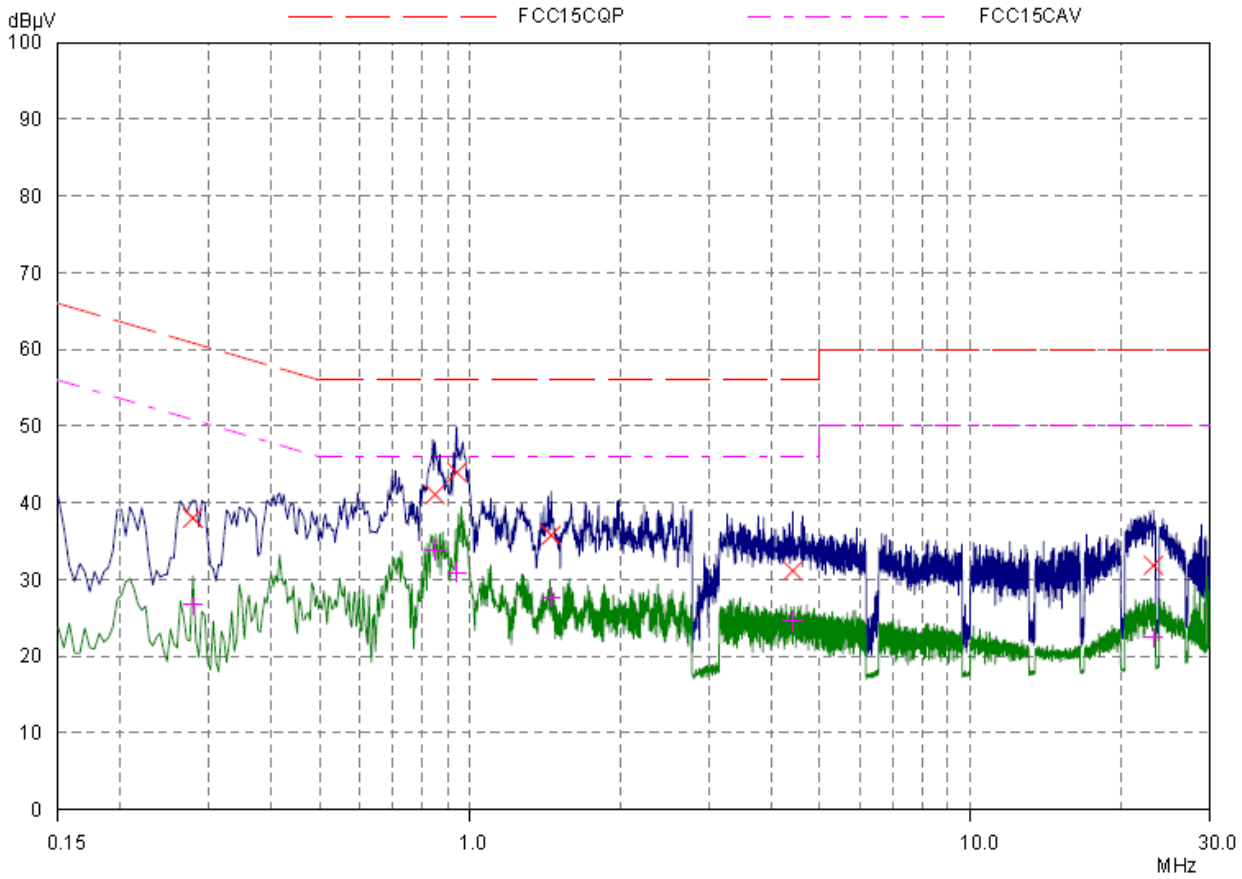
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.23984	25.74	62.10	36.36	N	gnd
0.70468	41.81	56.00	14.19	N	gnd
0.86093	45.53	56.00	10.47	N	gnd
0.95078	43.97	56.00	12.03	N	gnd
2.48984	34.98	56.00	21.02	N	gnd
22.22421	36.56	60.00	23.44	N	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.23984	20.03	52.10	32.07	N	gnd
0.70468	28.87	46.00	17.13	N	gnd
0.86093	31.46	46.00	14.54	N	gnd
0.95078	34.74	46.00	11.26	N	gnd
2.48984	22.01	46.00	23.99	N	gnd
22.22421	26.01	50.00	23.99	N	gnd

N Line

Conducted Emission from 150 KHz to 30 MHz

EDR-CH39

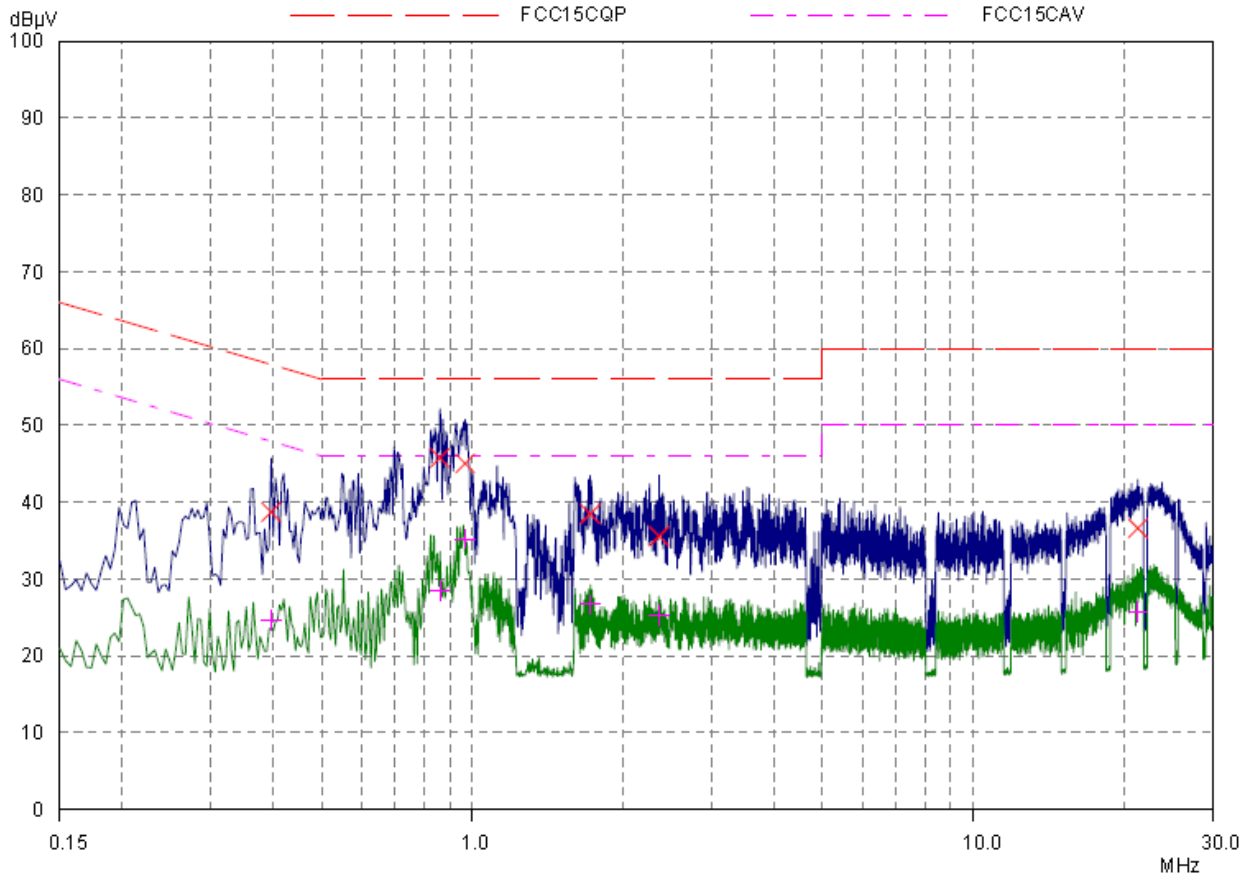


Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.2789	38.03	60.85	22.82	L1	gnd
0.84921	41.09	56.00	14.91	L1	gnd
0.93906	43.99	56.00	12.01	L1	gnd
1.45078	35.77	56.00	20.23	L1	gnd
4.41171	31.15	56.00	24.85	L1	gnd
23.20468	31.83	60.00	28.17	L1	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.2789	26.74	50.85	24.11	L1	gnd
0.84921	33.83	46.00	12.17	L1	gnd
0.93906	30.95	46.00	15.05	L1	gnd
1.45078	27.71	46.00	18.29	L1	gnd
4.41171	24.61	46.00	21.39	L1	gnd
23.20468	22.43	50.00	27.57	L1	gnd

L Line



Final Measurement Results

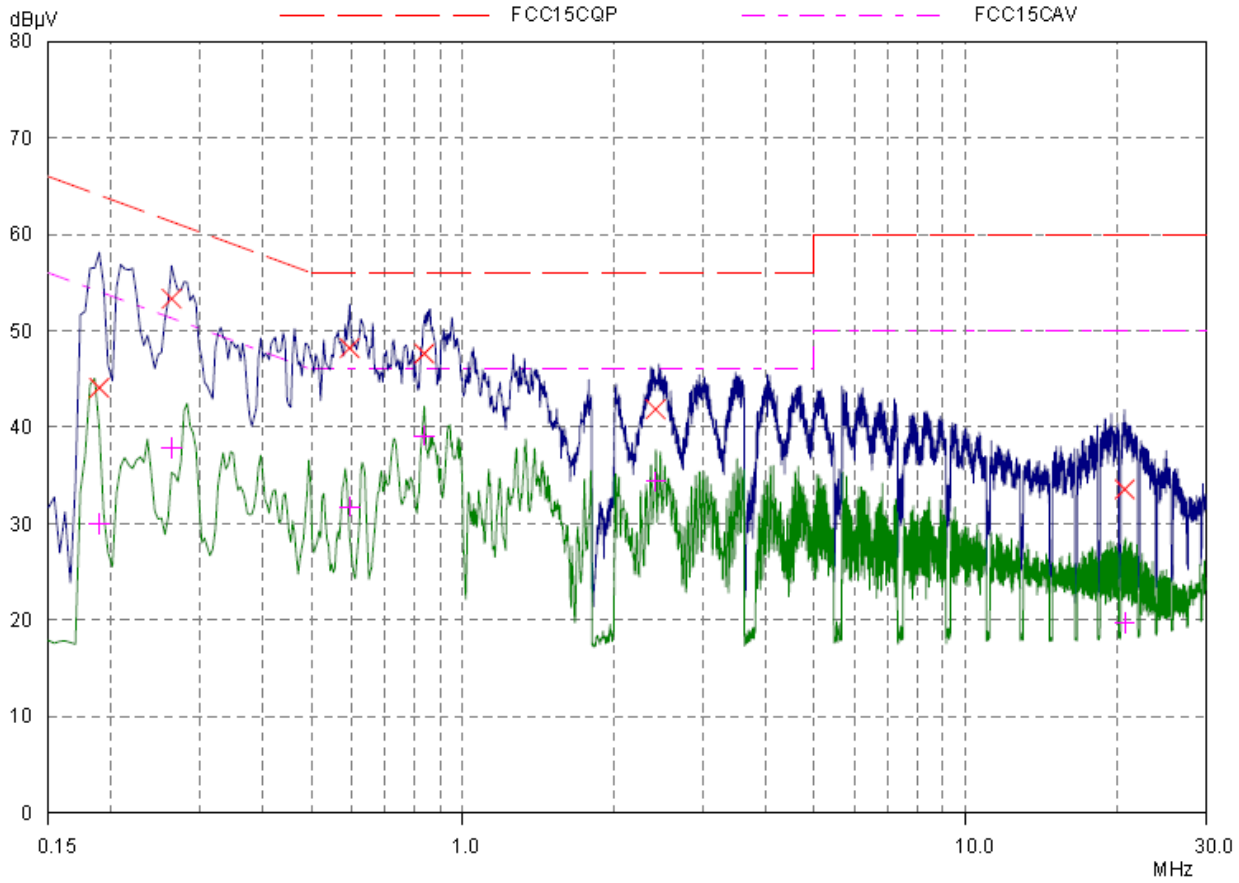
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.39609	38.72	57.93	19.21	N	gnd
0.86093	45.79	56.00	10.21	N	gnd
0.9664	45.06	56.00	10.94	N	gnd
1.7164	38.47	56.00	17.53	N	gnd
2.35703	35.58	56.00	20.42	N	gnd
21.2789	36.61	60.00	23.39	N	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.39609	24.66	47.93	23.27	N	gnd
0.86093	28.48	46.00	17.52	N	gnd
0.9664	35.20	46.00	10.80	N	gnd
1.7164	26.68	46.00	19.32	N	gnd
2.35703	25.24	46.00	20.76	N	gnd
21.2789	25.70	50.00	24.30	N	gnd

N Line

Conducted Emission from 150 KHz to 30 MHz

EDR-CH78

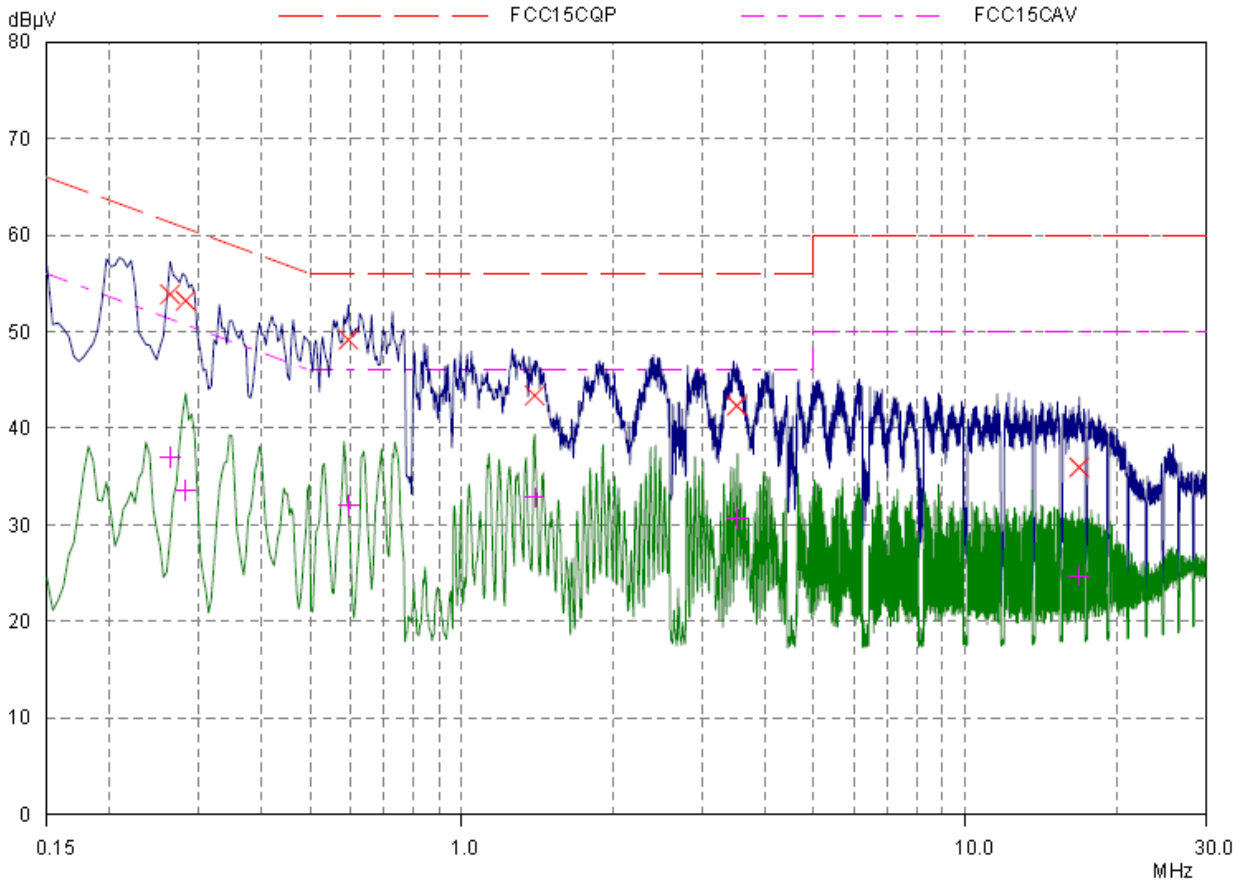


Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.18906	44.09	64.08	19.99	L1	gnd
0.26328	53.33	61.33	8.00	L1	gnd
0.59531	48.20	56.00	7.80	L1	gnd
0.8375	47.63	56.00	8.37	L1	gnd
2.41562	41.86	56.00	14.14	L1	gnd
20.70859	33.55	60.00	26.45	L1	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.18906	29.95	54.08	24.13	L1	gnd
0.26328	37.88	51.33	13.45	L1	gnd
0.59531	31.74	46.00	14.26	L1	gnd
0.8375	39.13	46.00	6.87	L1	gnd
2.41562	34.36	46.00	11.64	L1	gnd
20.70859	19.71	50.00	30.29	L1	gnd

L Line



Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.26328	53.87	61.33	7.46	N	gnd
0.28281	53.22	60.73	7.51	N	gnd
0.59531	49.18	56.00	6.82	N	gnd
1.39609	43.39	56.00	12.61	N	gnd
3.51328	42.33	56.00	13.67	N	gnd
16.83359	35.96	60.00	24.04	N	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.26328	37.03	51.33	14.30	N	gnd
0.28281	33.61	50.73	17.12	N	gnd
0.59531	32.01	46.00	13.99	N	gnd
1.39609	32.82	46.00	13.18	N	gnd
3.51328	30.69	46.00	15.31	N	gnd
16.83359	24.75	50.00	25.25	N	gnd

N Line

Conducted Emission from 150 KHz to 30 MHz

5 Main Test Instruments

Name	Type	Manufacturer	Serial Number	Calibration Date	Expiration Time
BT Base Station Simulator	CBT	R&S	100271	2015-05-25	2016-05-24
Loop Antenna	FMZB1519	SCHWARZBECK	1519-047	2014-02-29	2017-02-28
EMI Test Receiver	ESCS30	R&S	100138	2015-12-17	2016-12-16
LISN	ENV216	R&S	101171	2013-12-18	2016-12-17
EMI Test Receiver	ESCI	R&S	100948	2015-05-25	2016-05-24
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	2015-12-17	2016-12-16
Spectrum Analyzer	N9010A	Agilent	MY47191109	2015-05-22	2016-05-21
Standard Gain Horn	3160-09	ETS-Lindgren	00102644	2015-05-19	2018-05-18
RF Cable	SMA 15cm	Agilent	0001	2015-12-09	2016-02-08

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

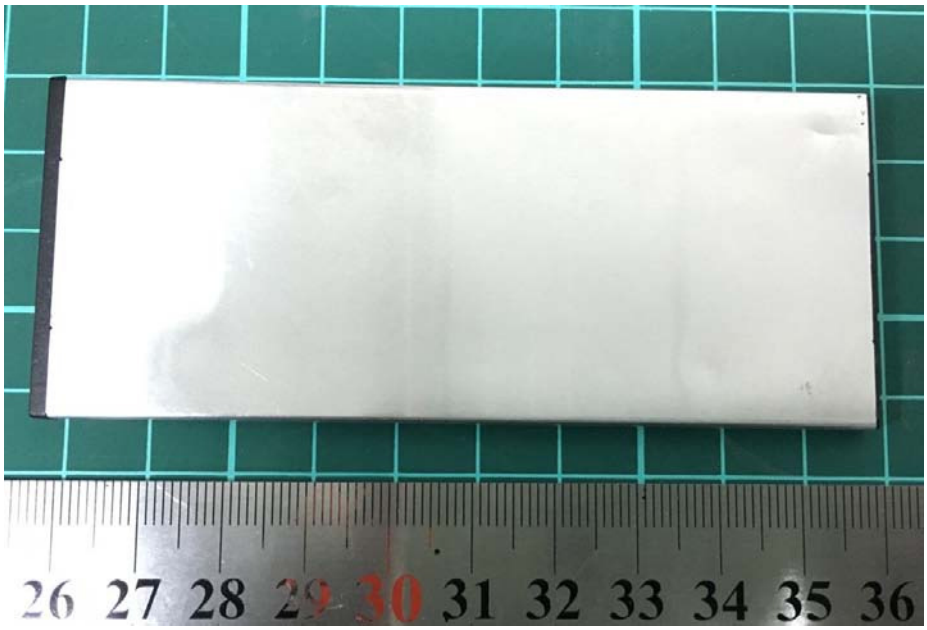
ANNEX A: EUT Appearance and Test Setup

A.1 EUT Appearance

Front Side

Back Side

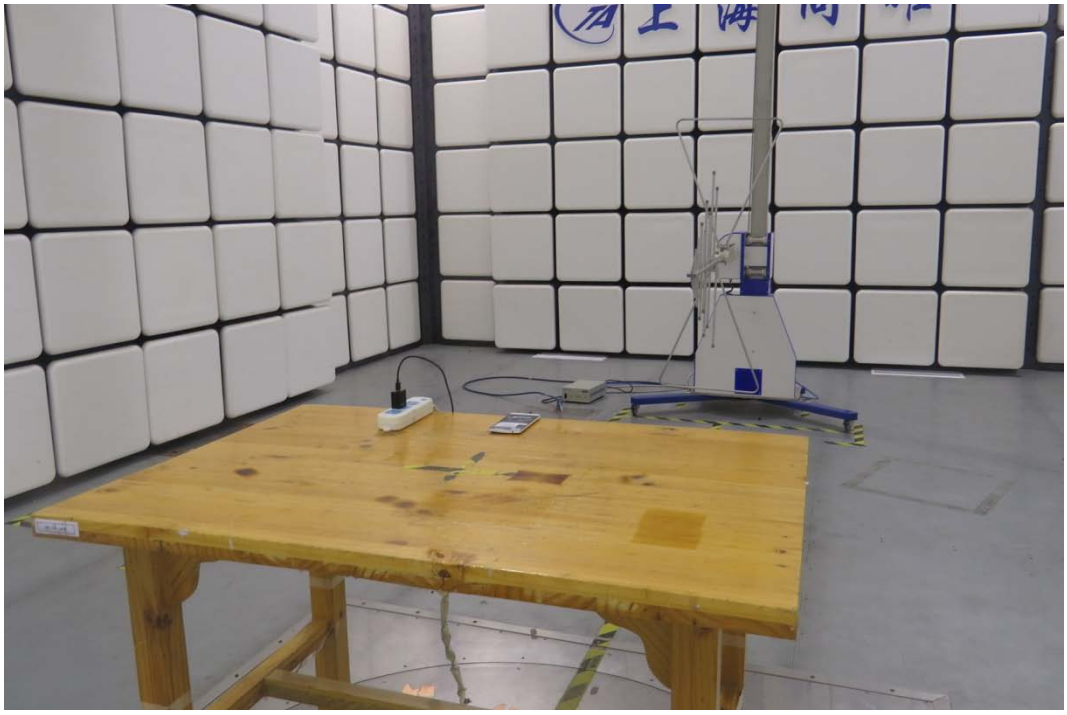
a: EUT



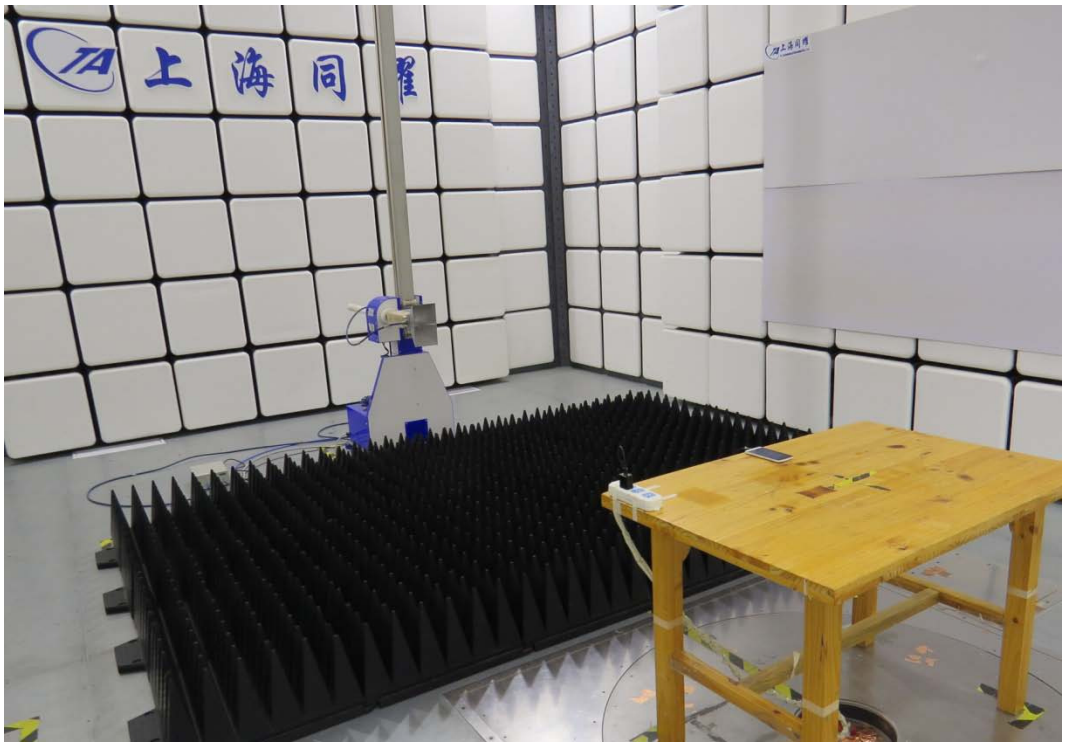
b: Battery

Picture 1 EUT

A.2 Test Setup



Below 1GHz



Above 1GHz

Picture 2 Radiated Emission Test Setup

Picture 3 Conducted Emission Test Setup