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检测
TESTING
CNAS L2264

RF TEST REPORT

Applicant ShangHai Ehong Technology Co.,Ltd.
FCC ID 2ACCRMB05
Product Bluetooth module
Model EH-MB05
Report No. RXA1702-0023RF01R4
Issue Date April 1, 2017

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15C (2016)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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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 20, 2017 ~ February 15, 2017 and March 23, 2017			

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
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E-mail: xukai@ta-shanghai.com

2 General Description of Equipment under Test

Client Information

Applicant	ShangHai Ehong Technology Co.,Ltd.
Applicant address	Rm1505,Blk 1st, No.833, South Hongmei Road,Minhang District, Shanghai, P.R.China
Manufacturer	Zhejiang Techain Electronics Technology Co., Ltd.
Manufacturer address	No.1052, Yatai RD, Nanhu District, Jiaxing city, Zhejiang Province, P.R.China

General information

EUT Description			
Model	EH-MB05		
SN	RT001		
HW Version	V2.0		
SW Version	V1.0		
Power Supply	External power supply		
Antenna Type:	Integrated antenna on PCB		
Antenna Connector:	A permanently attached antenna (meet with the standard FCC Part 15.203 requirement)		
Antenna Gain:	4 dBi		
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	5.171dBm		
Tested Frequency Range(s)	2400 ~ 2483.5 MHz		
EUT Accessory			
Memory 1	Model: U3- S29AL016D70BFI020		
Memory 2	Model: MX29LV160DBXBI-70G		
Memory 3	Model: M29W160EB70ZA6E		
Note: 1. The information of the EUT is declared by the manufacturer. Please refer to the specifications or user manual for details. 2. There is more than one Memory, each one should be applied throughout the compliance test respectively, however, only the worst case (Memory 1) will be recorded in this report.			



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 (2016) Radio Frequency Devices**
- **ANSI C63.10 (2013)**
- **DA00-705 Filing and Frequency Measurement Guidelines For Frequency Hopping Spread Spectrum System (2000).**

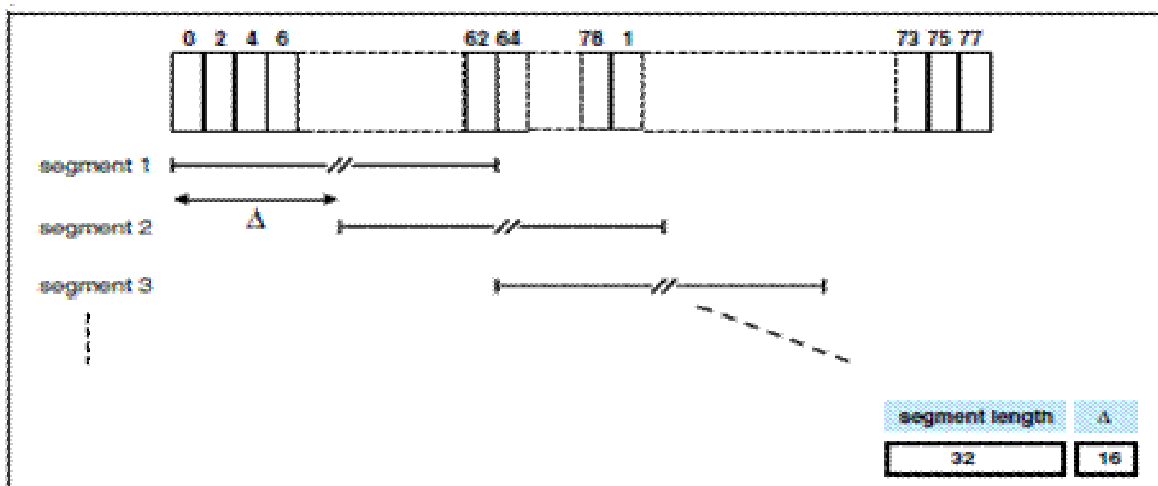
3 Information about the FHSS characteristics

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.

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, $\pi/4$ -DQPSK and 8-DPSK modulation, For RSE and CSE, only the maximum RF output power is chosen.

4.2 Peak Power Output –Conducted

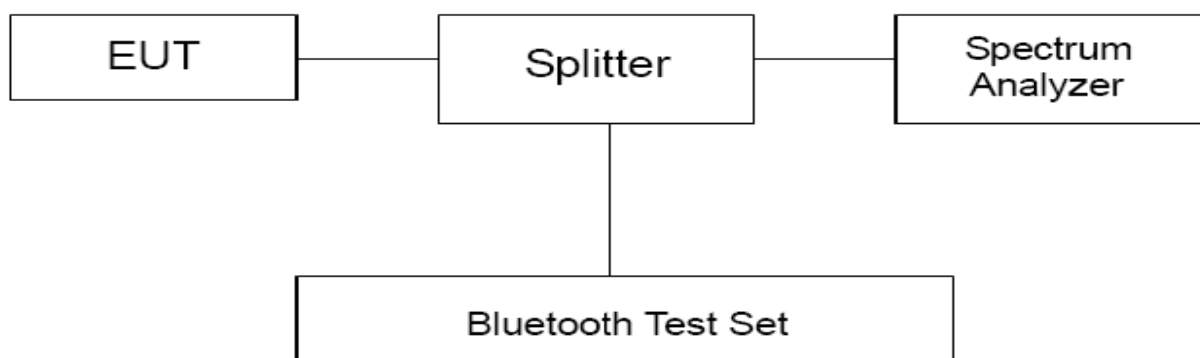
Ambient condition

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	$\leq 0.125W$ (21dBm)
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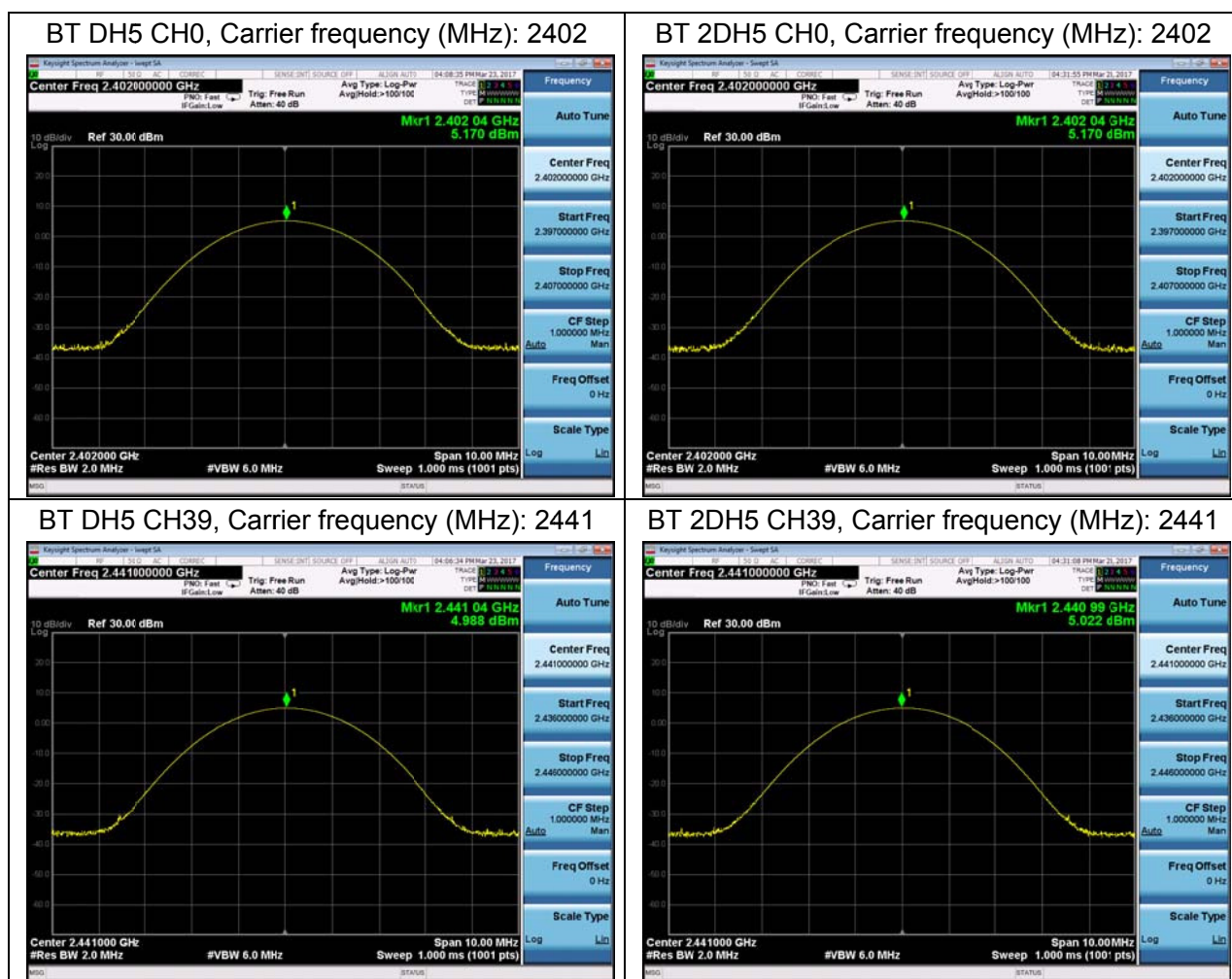
Measurement Uncertainty

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

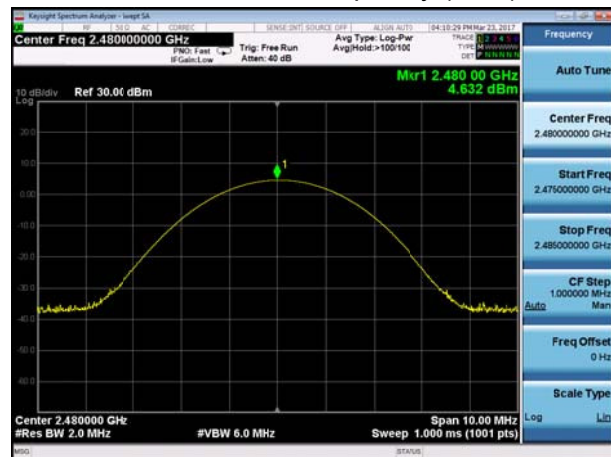
Channel	Frequency (MHz)	Peak Output Power (dBm)			Conclusion
		DH5	2DH5	3DH5	
0	2402	5.170	5.170	5.171	PASS
39	2441	4.988	5.022	5.001	PASS
78	2480	4.632	4.648	4.645	PASS

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





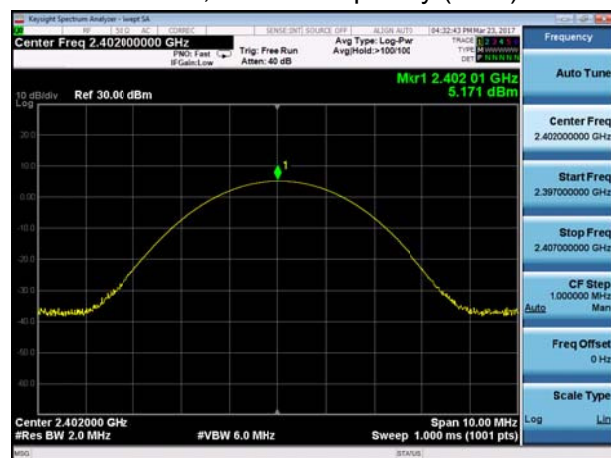
BT DH5 CH78, Carrier frequency (MHz): 2480



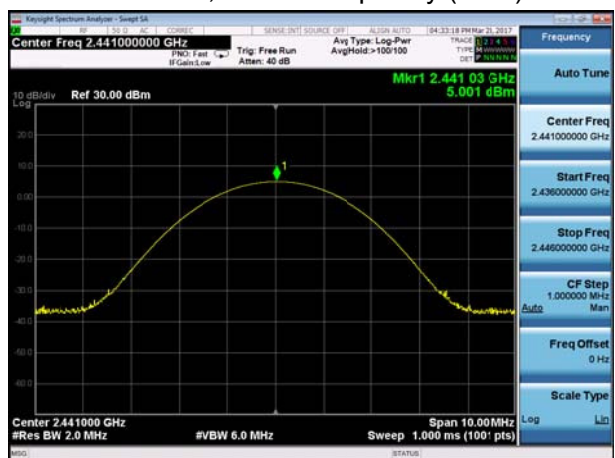
BT 2DH5 CH78, Carrier frequency (MHz): 2480



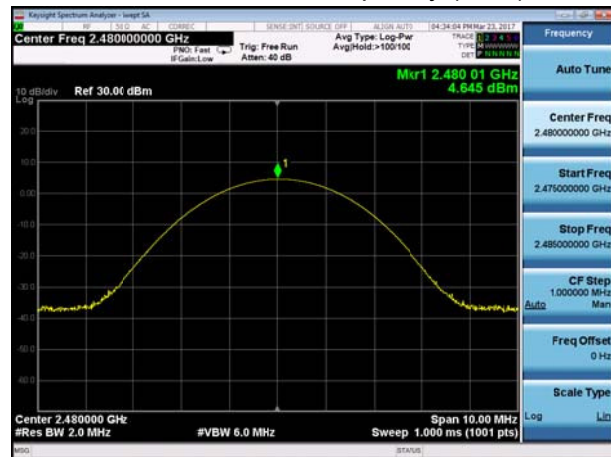
BT 3DH5 CH0, Carrier frequency (MHz): 2402



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



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



4.3 Occupied Bandwidth (20dB)

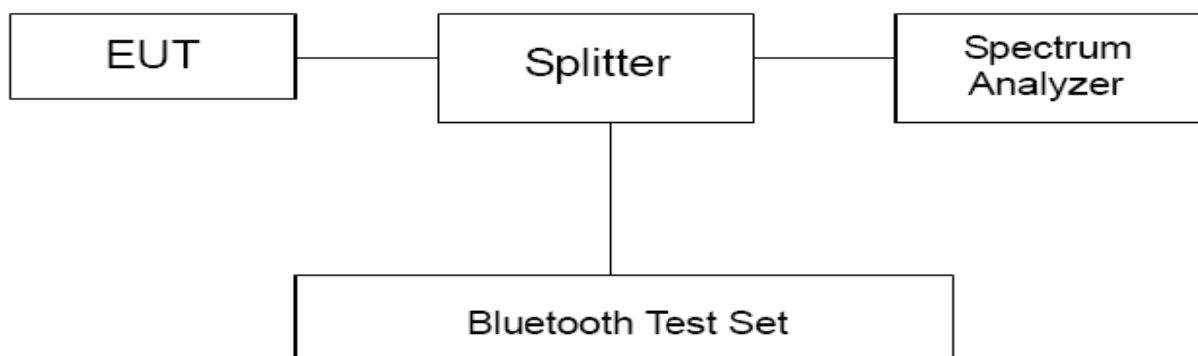
Ambient condition

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

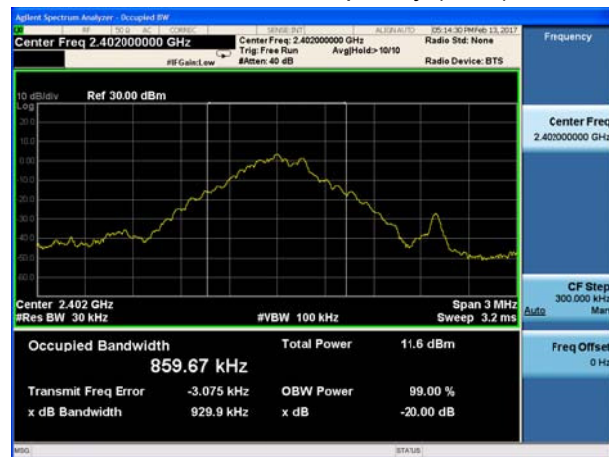
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U=936$ Hz.

**Test Results**

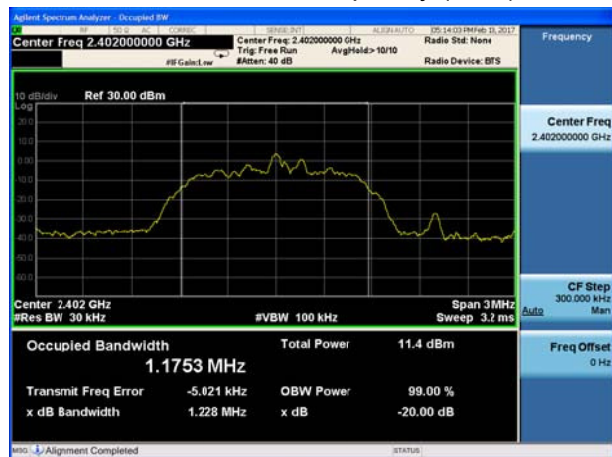
Mode	Channel	Frequency (MHz)	20dB Bandwidth(kHz)
DH5	0	2402	929.9
DH5	39	2441	928.7
DH5	78	2480	930.9
2DH5	0	2402	1228.0
2DH5	39	2441	1233.0
2DH5	78	2480	1245.0
3DH5	0	2402	1268.0
3DH5	39	2441	1270.0
3DH5	78	2480	1296.0



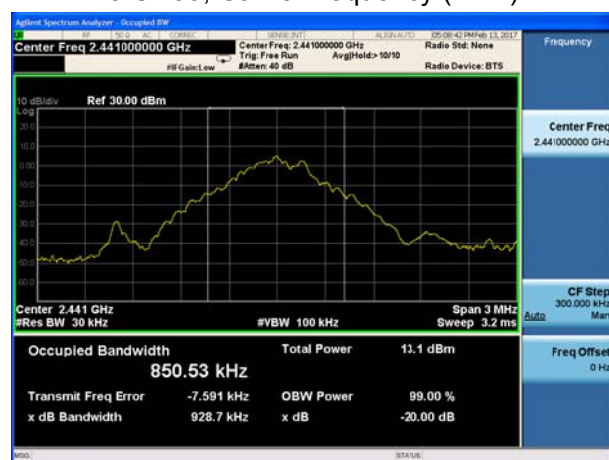
BT DH5 CH0, Carrier frequency (MHz): 2402



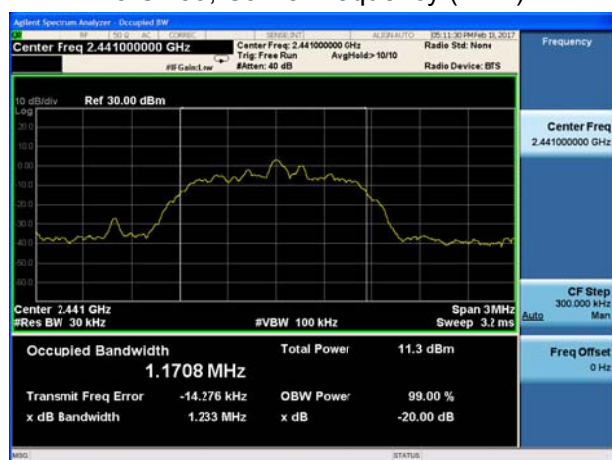
BT 2DH5 CH0, Carrier frequency (MHz): 2402



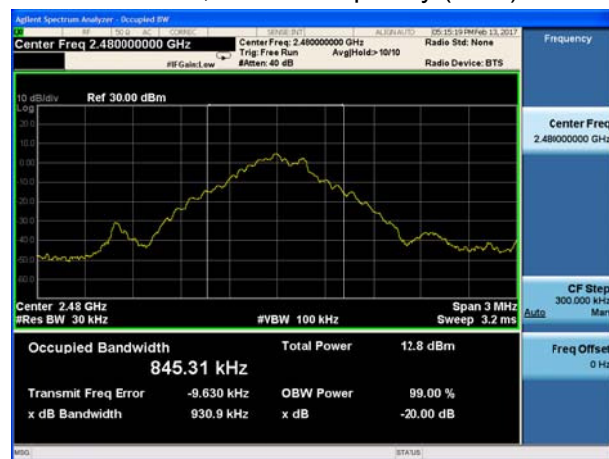
BT DH5 CH39, Carrier frequency (MHz): 2441



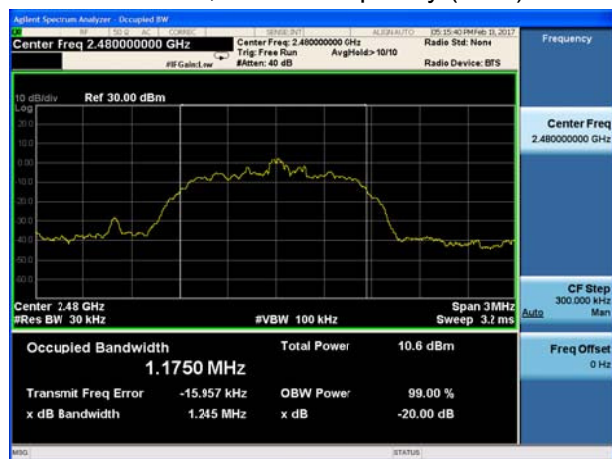
BT 2DH5 CH39, Carrier frequency (MHz): 2441



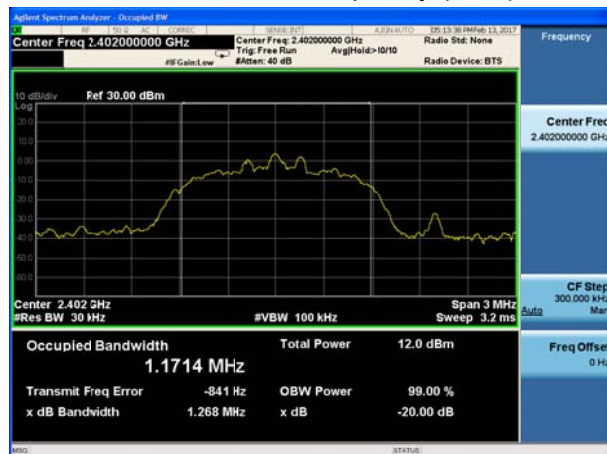
BT DH5 CH78, Carrier frequency (MHz): 2480



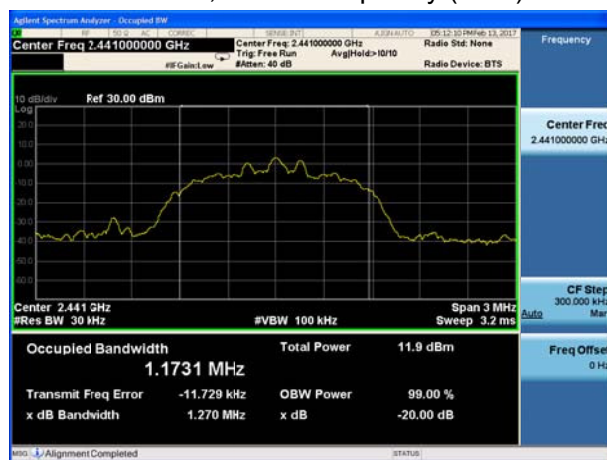
BT 2DH5 CH78, Carrier frequency (MHz): 2480



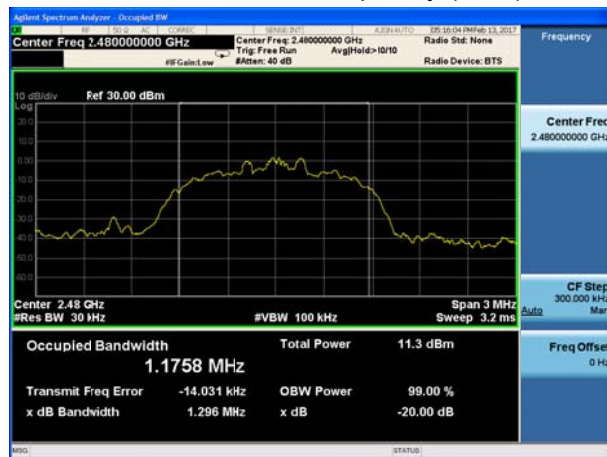
BT 3DH5 CH0, Carrier frequency (MHz): 2402



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



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



4.4 Frequency Separation

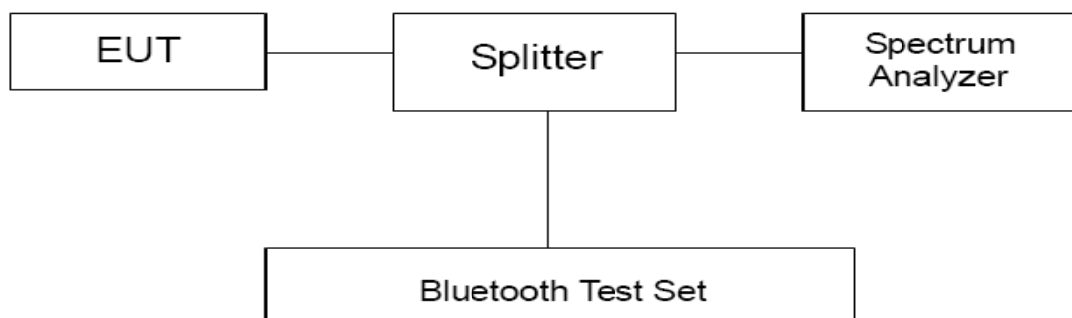
Ambient condition

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:

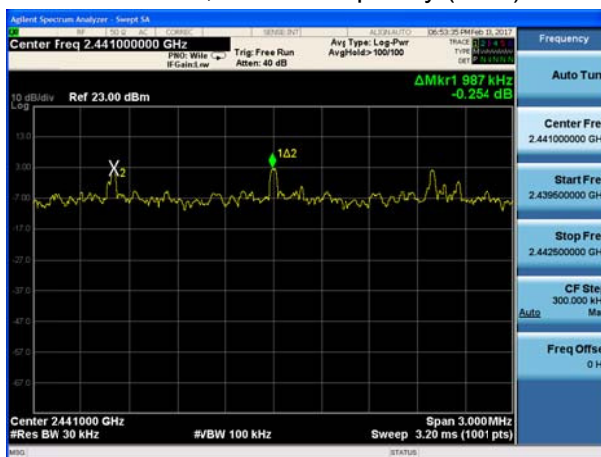
Packet type	Carrier frequency (MHz)	Carrier frequency separation(kHz)	20dB Bandwidth(kHz)	Limit (kHz)	Conclusion
DH5	2441	1014	928.7	619.1	PASS
2DH5	2441	987	1233.0	822.0	PASS
3DH5	2441	1005	1270.0	846.7	PASS

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

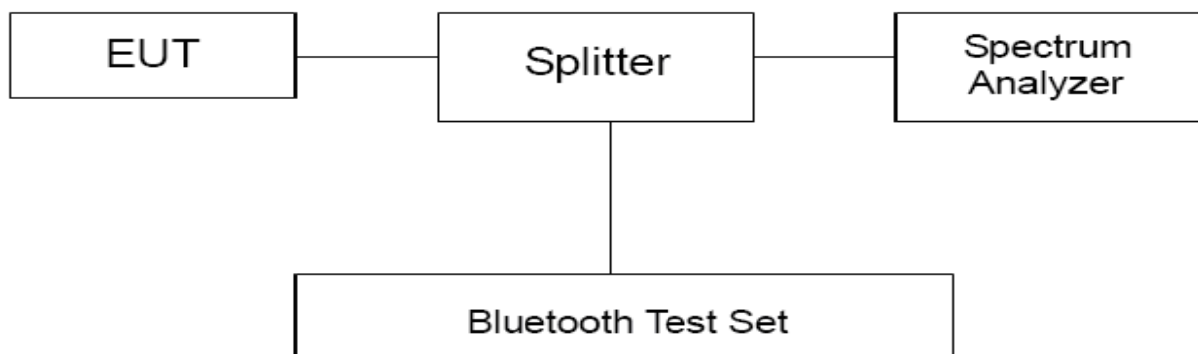
Methods of Measurement

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 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=1600/2 * 1/s for DH1 packet =800
- hop rate=1600/4 * 1/s for DH3 packet =400
- hop rate=1600/6 * 1/s for DH5 packet =266.67

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

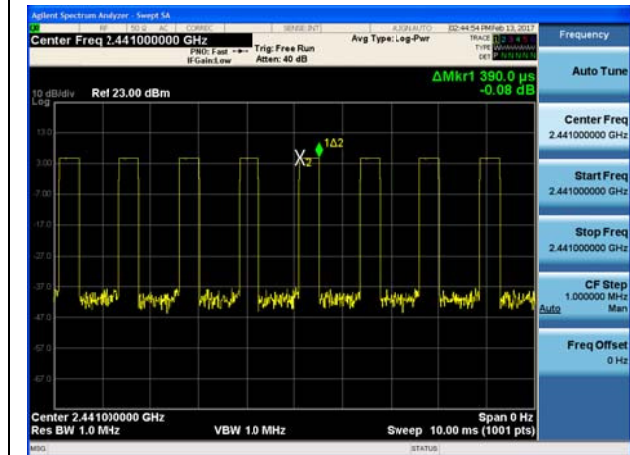
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$.

Requirements	Uncertainty	
Dwell Time	DH1	$U=0.64\text{ms}$
	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	$U=0.70\text{ms}$

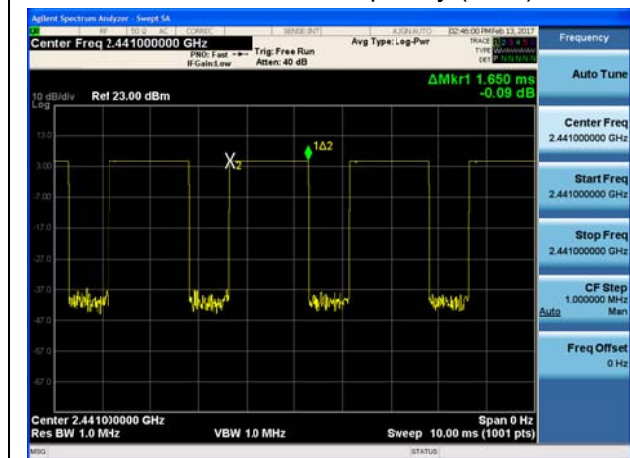
**Test Results:**

Channel 39					
Packet type	hop rate (1/s)	Time slot length(ms)	Dwell time (ms)	Limit (ms)	Conclusion
DH1	800	0.39	115.20	400	PASS
DH3	400	1.65	259.20	400	PASS
DH5	266.67	2.90	306.14	400	PASS
Note: Dwell time = time slot length * hop rate * 0.4s					

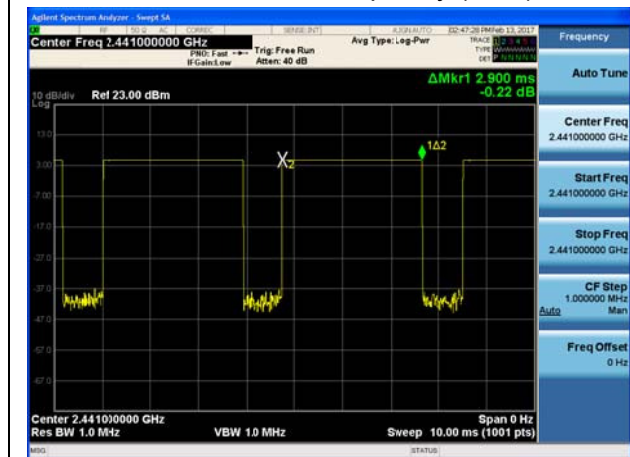
BT DH1 CH39, Carrier frequency (MHz): 2441



BT DH3 CH39, Carrier frequency (MHz): 2441



BT DH5 CH39, Carrier frequency (MHz): 2441



4.6 Band Edge Compliance

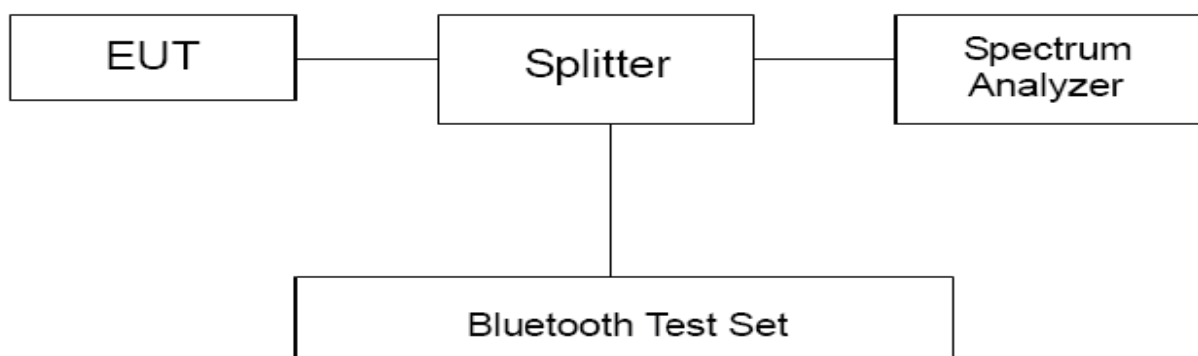
Ambient condition

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 $k = 1.96$.

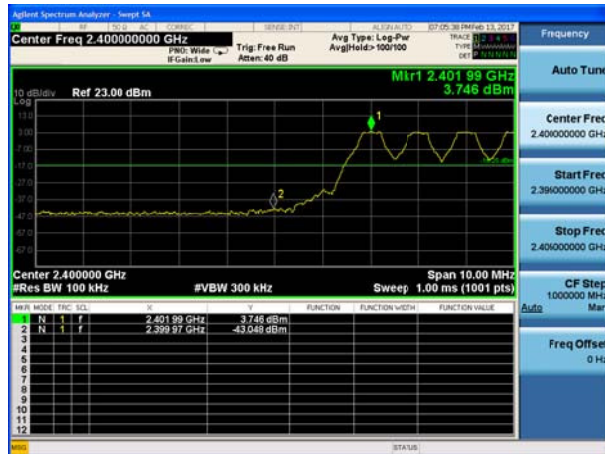
Frequency	Uncertainty
2GHz-3GHz	1.407 dB



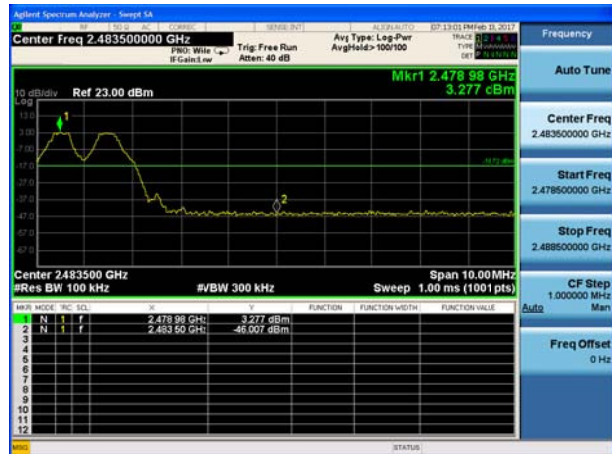
Test Results

Hopping On

BT DH5 CH0, Carrier frequency (MHz): 2402



BT DH5 CH78, Carrier frequency (MHz): 2480



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



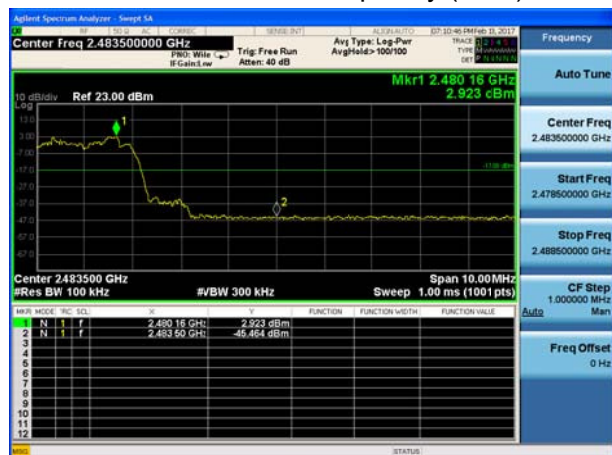
BT 2DH5 CH78, Carrier frequency (MHz): 2480



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



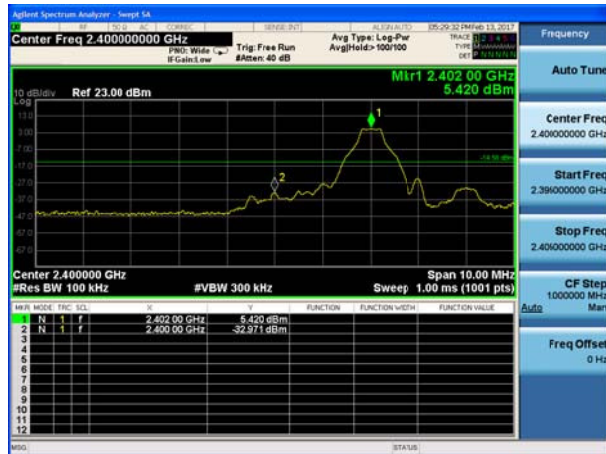
BT 3DH5 CH78, Carrier frequency (MHz): 2480



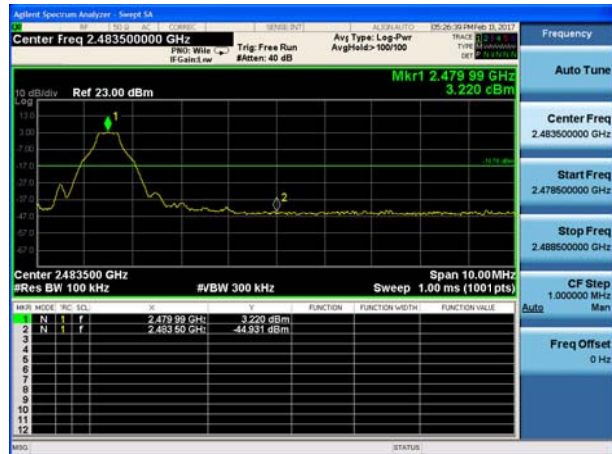


Hopping Off

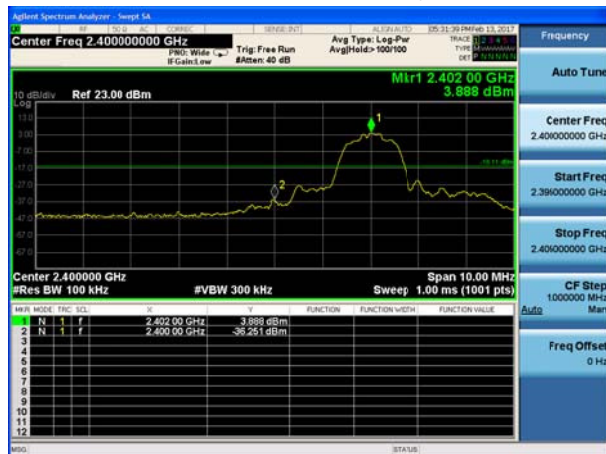
BT DH5 CH0, Carrier frequency (MHz): 2402



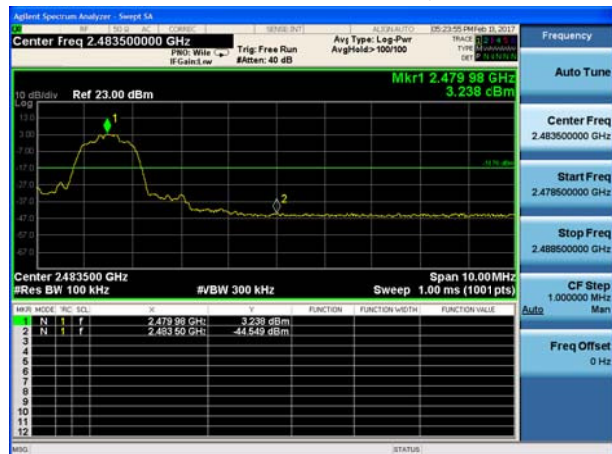
BT DH5 CH78, Carrier frequency (MHz): 2480



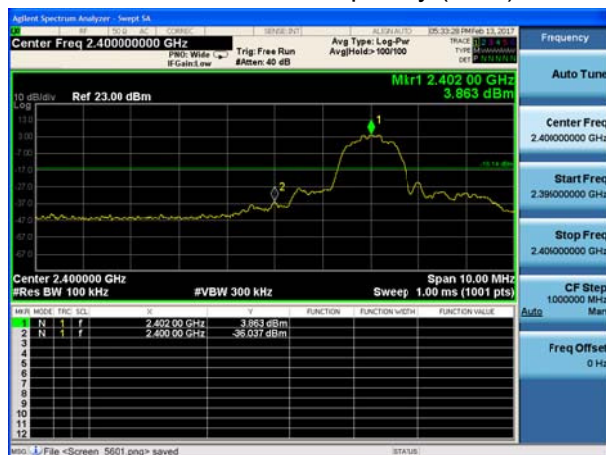
BT 2DH5 CH0, Carrier frequency (MHz): 2402



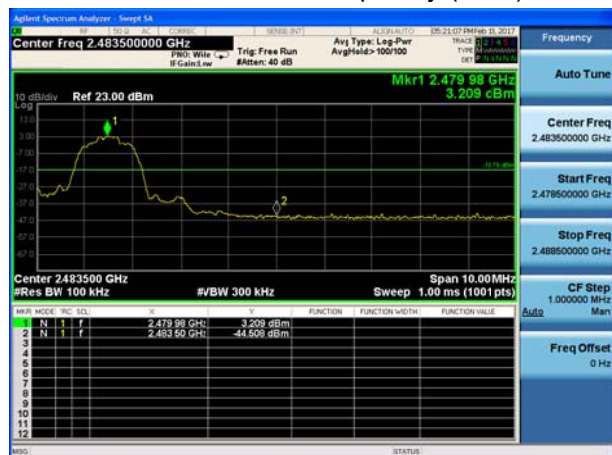
BT 2DH5 CH78, Carrier frequency (MHz): 2480



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.

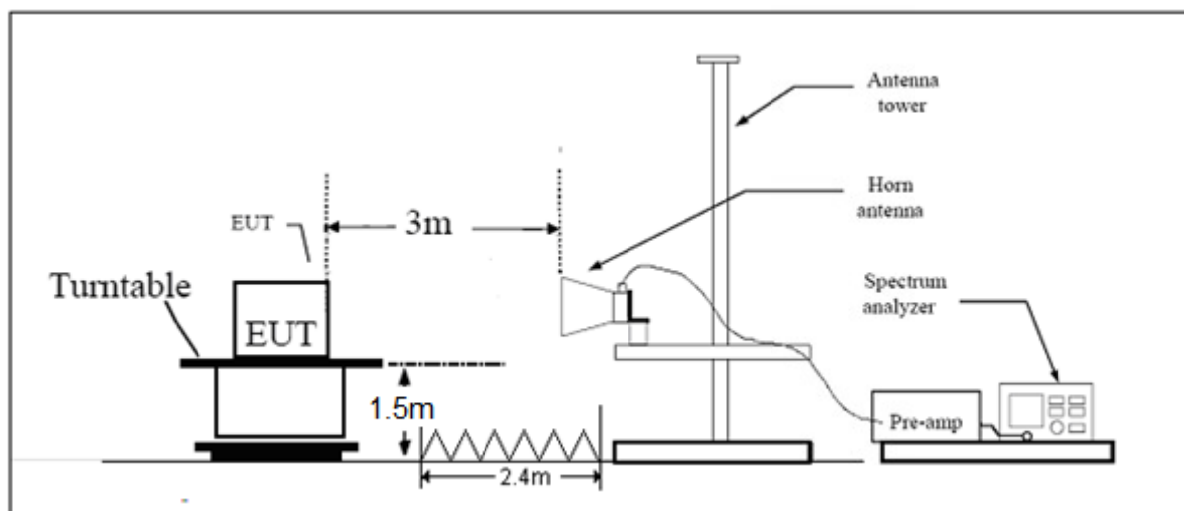
Set the spectrum analyzer in the following:

- (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

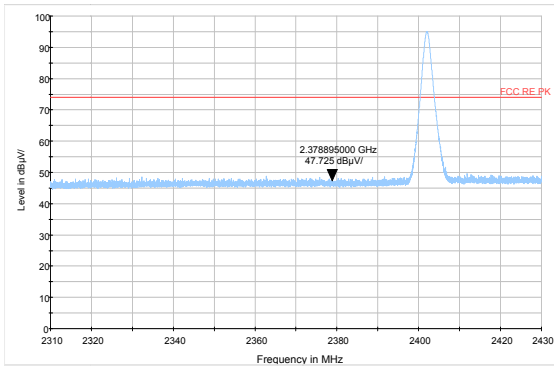
Measurement Uncertainty

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.

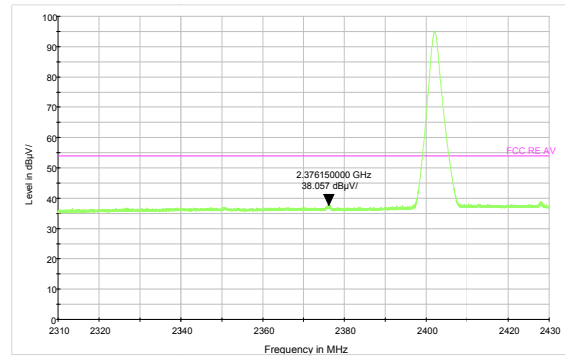


Test Results:

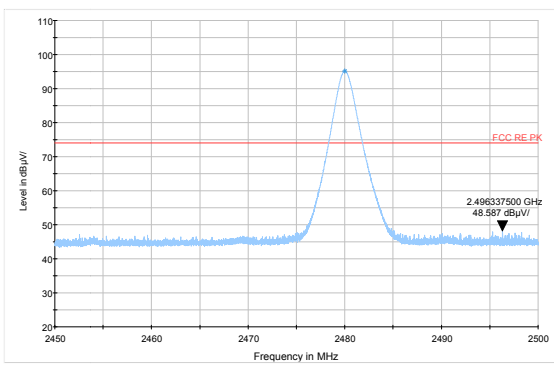
DH5-Channel 0: Peak



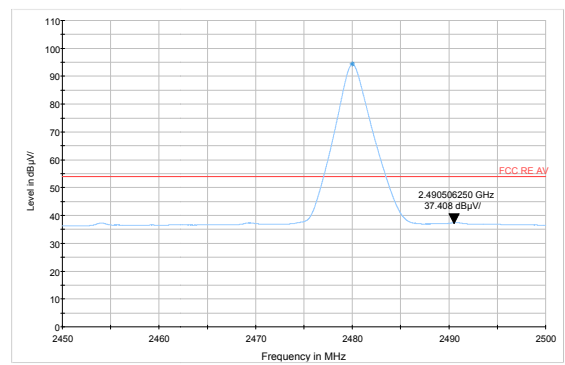
DH5-Channel 0: Average



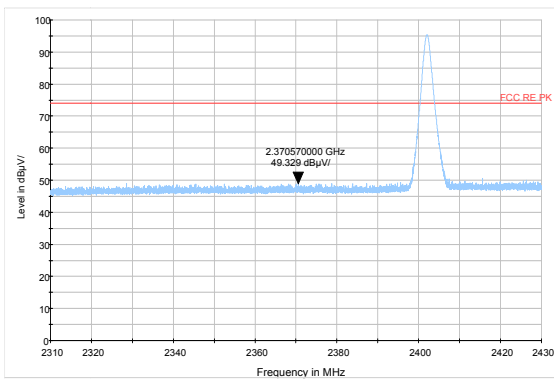
DH5-Channel 78: Peak



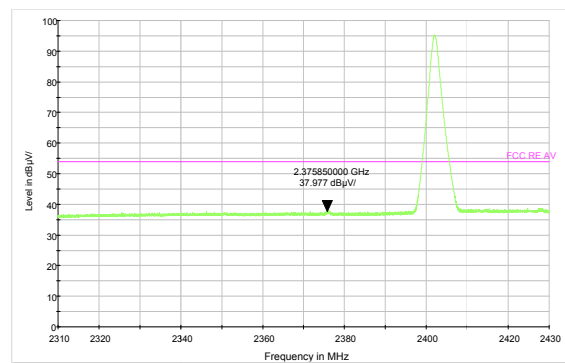
DH5-Channel 78: Average



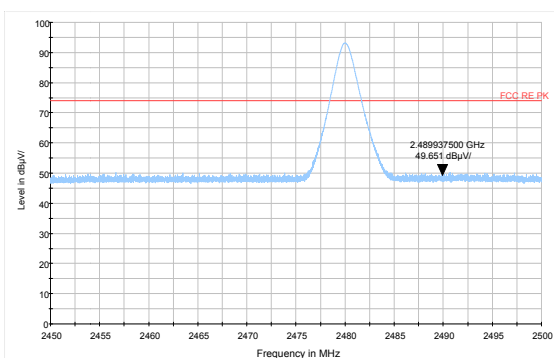
3DH5-Channel 0: Peak



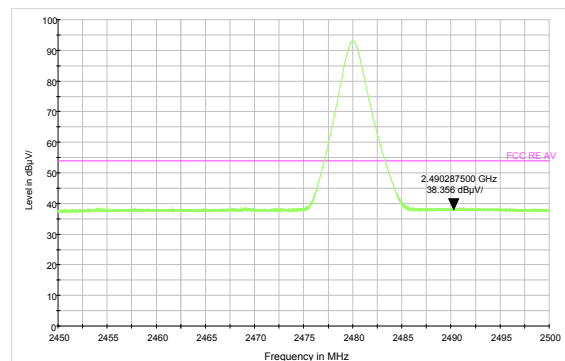
3DH5-Channel 0: Average



3DH5-Channel 78: Peak



3DH5-Channel 78: Average



4.8 Number of hopping Frequency

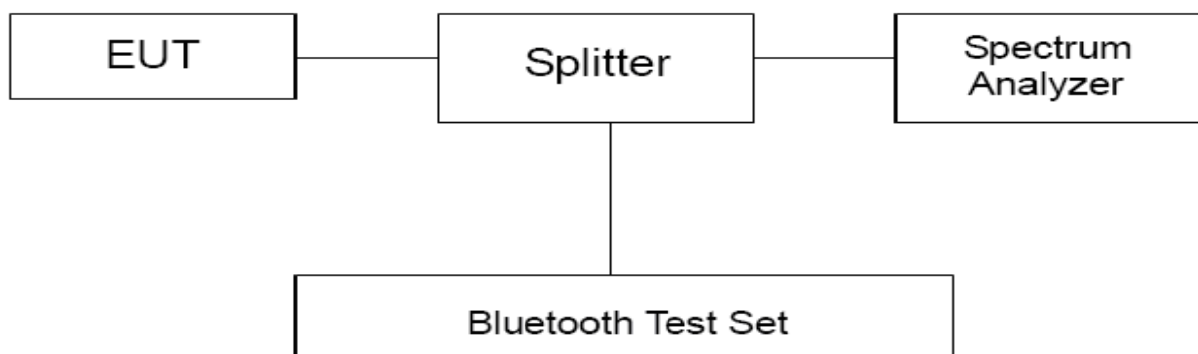
Ambient condition

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.”

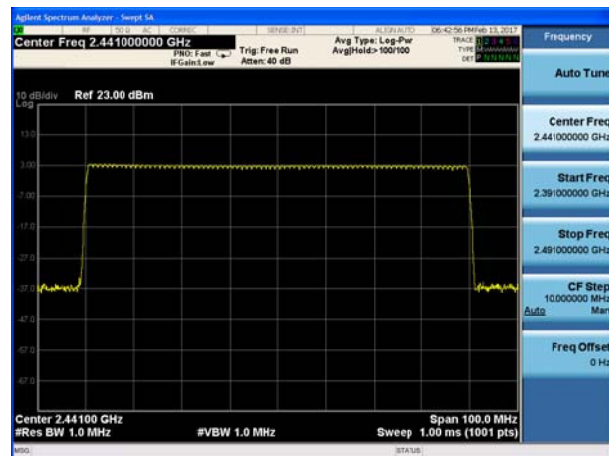
Limits	≥ 15 channels
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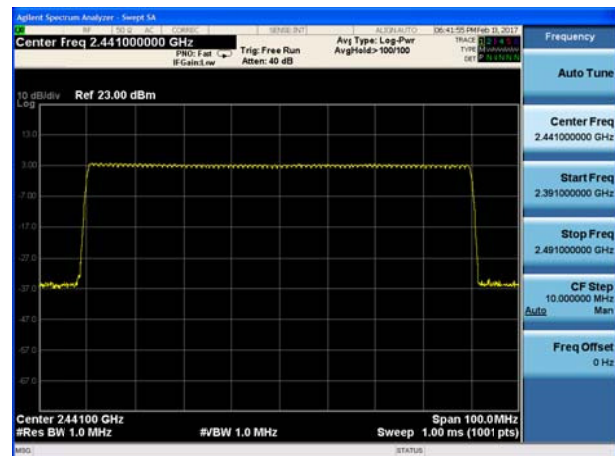
Test Results:

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

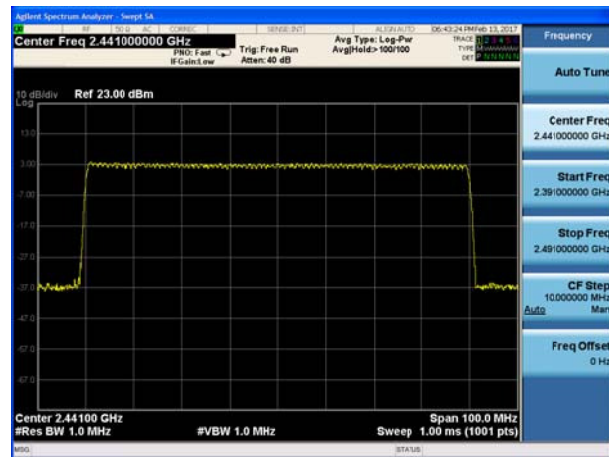
DH5 2400 MHz – 2483.5 MHz



2DH5 2400 MHz – 2483.5 MHz



3DH5 2400 MHz – 2483.5 MHz



4.9 Spurious RF Conducted Emissions

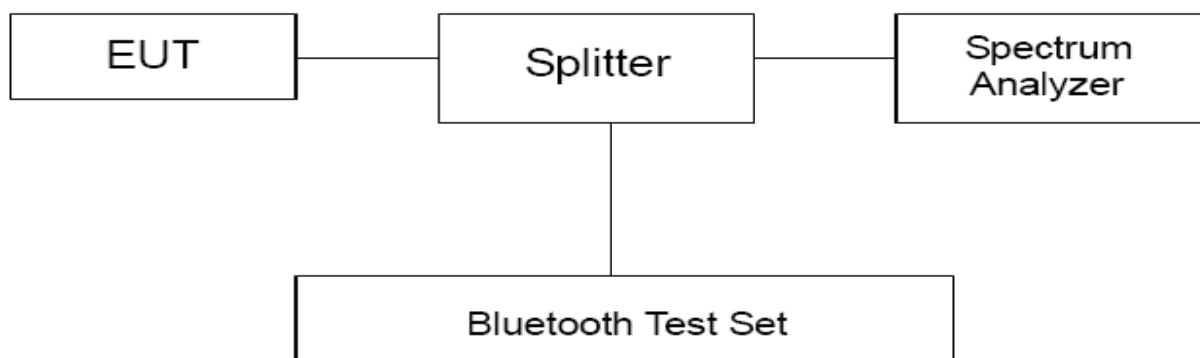
Ambient condition

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	-10.31	-30.31
	2441	-12.35	-32.35
	2480	-10.70	-30.70
EDR (3DH5)	2402	-10.95	-30.95
	2441	-12.16	-32.16
	2480	-12.60	-32.60

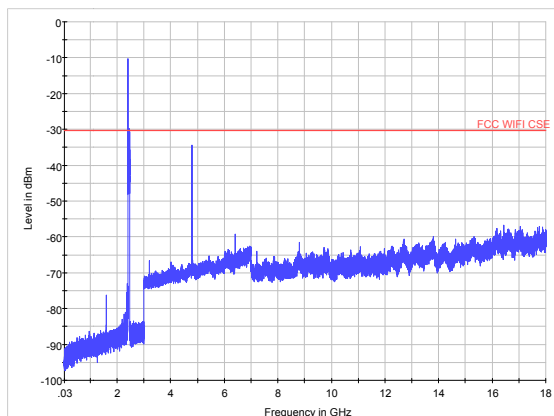
Measurement Uncertainty

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

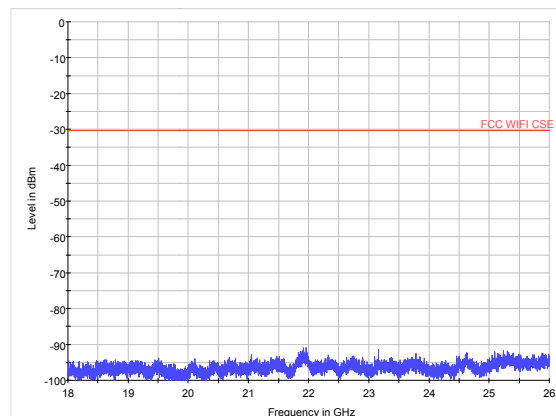
Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26GHz	1.407 dB

**Test Results:**

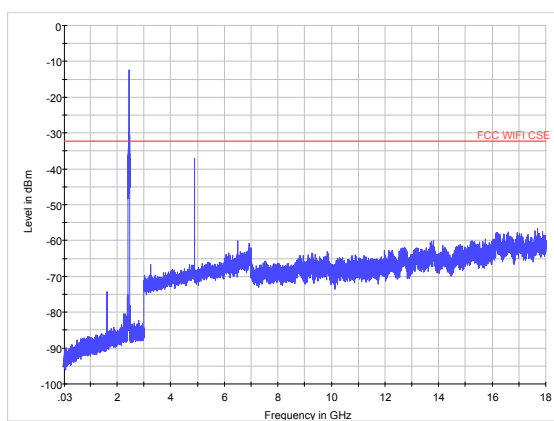
GFSK-CH0 30MHz to 18GHz



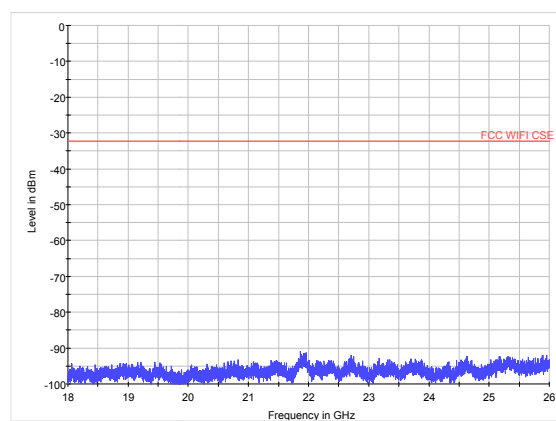
GFSK-CH0 18GHz to 26.5GHz



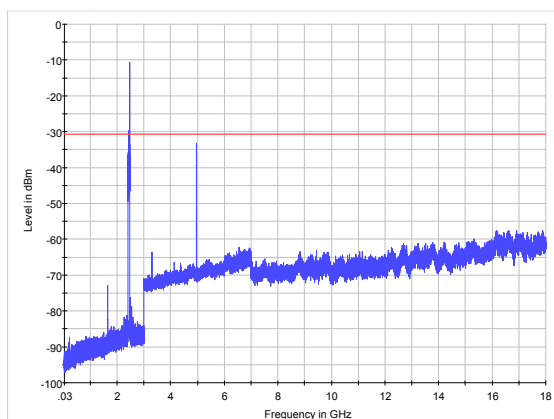
GFSK-CH39 30MHz to 18GHz



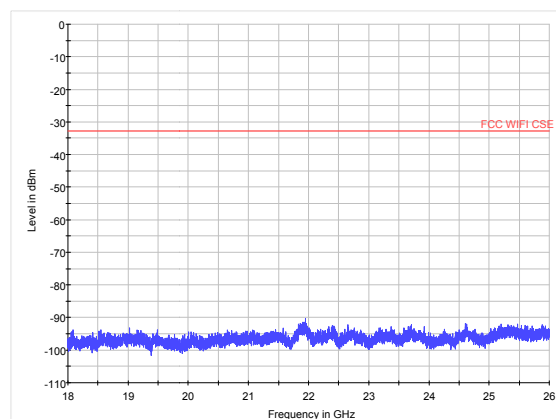
GFSK-CH39 18GHz to 26.5GHz



GFSK-CH78 30MHz to 18GHz

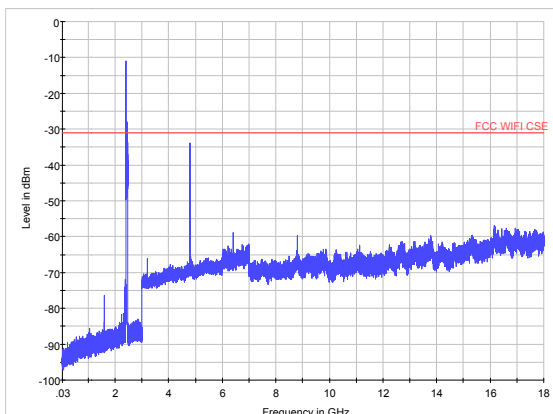


GFSK-CH78 18GHz to 26.5GHz

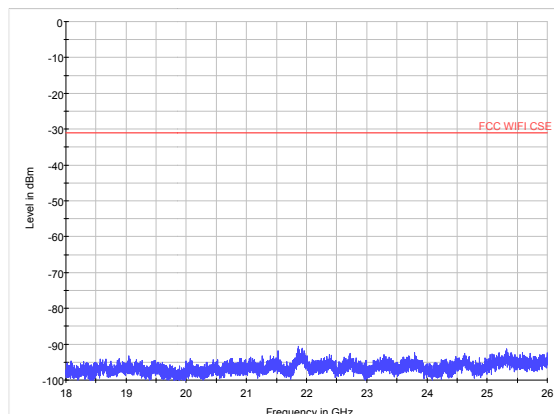




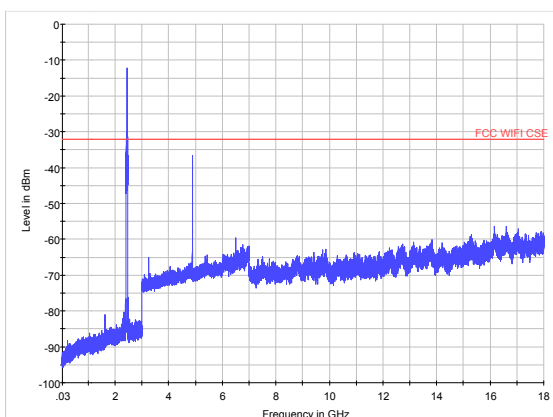
EDR-CH0 30MHz to 18GHz



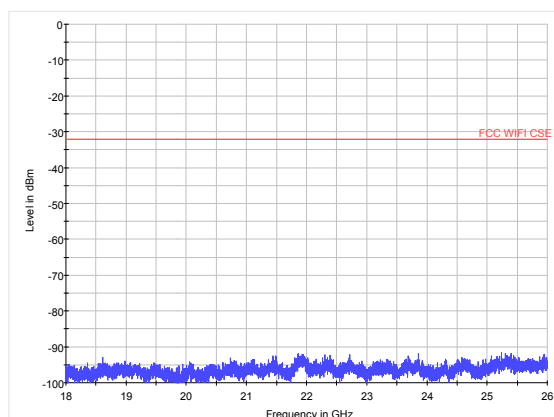
EDR-CH0 18GHz to 26.5GHz



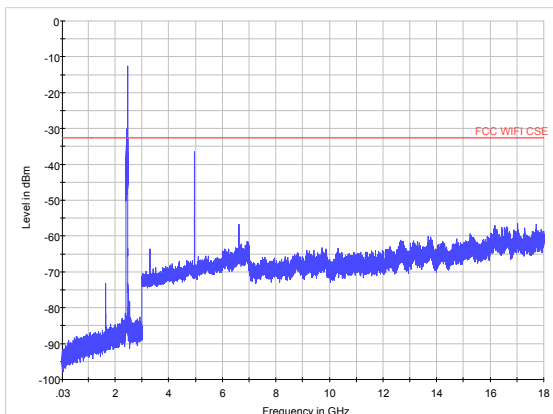
EDR-CH39 30MHz to 18GHz



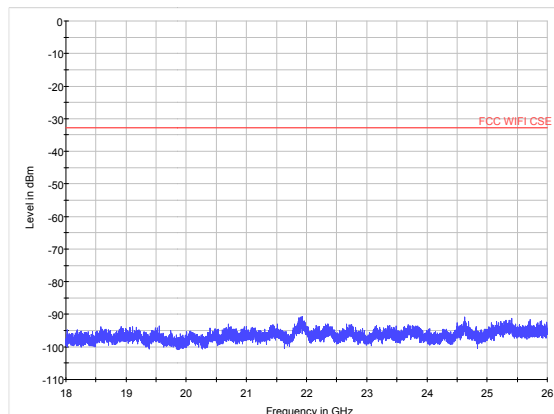
EDR-CH39 18GHz to 26.5GHz



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

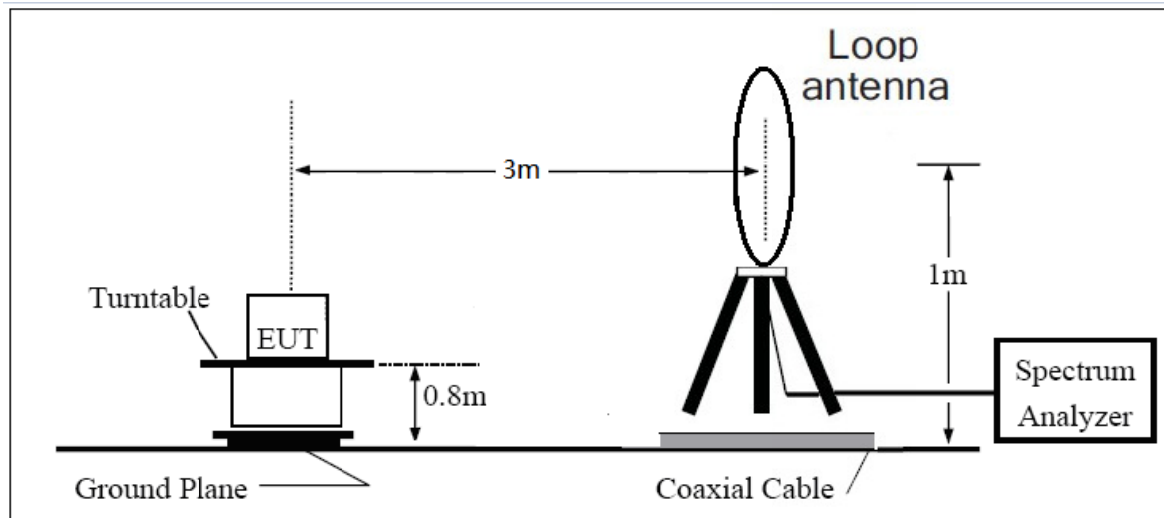
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

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.

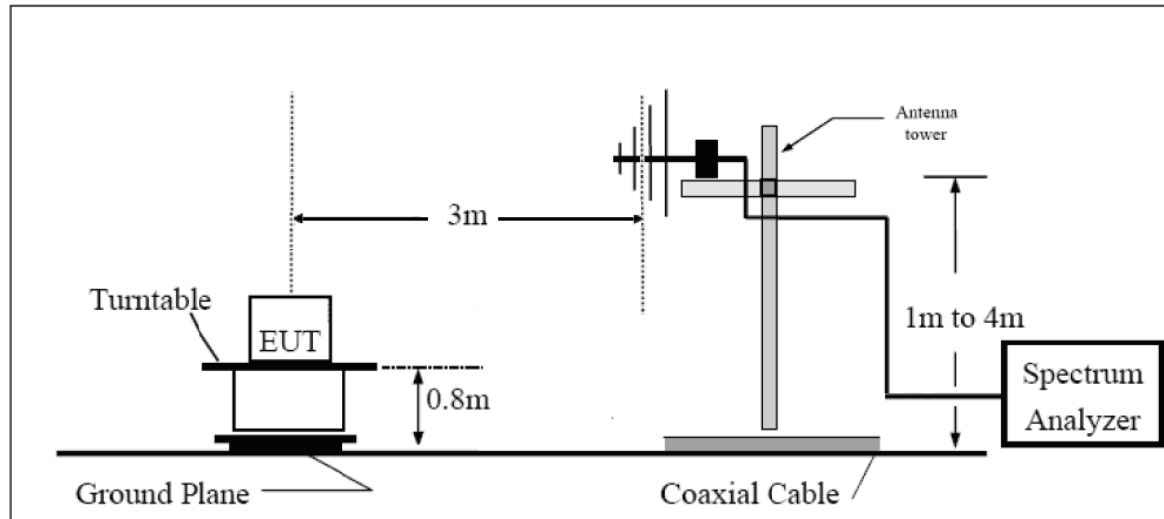
The test is in transmitting mode.

Test setup

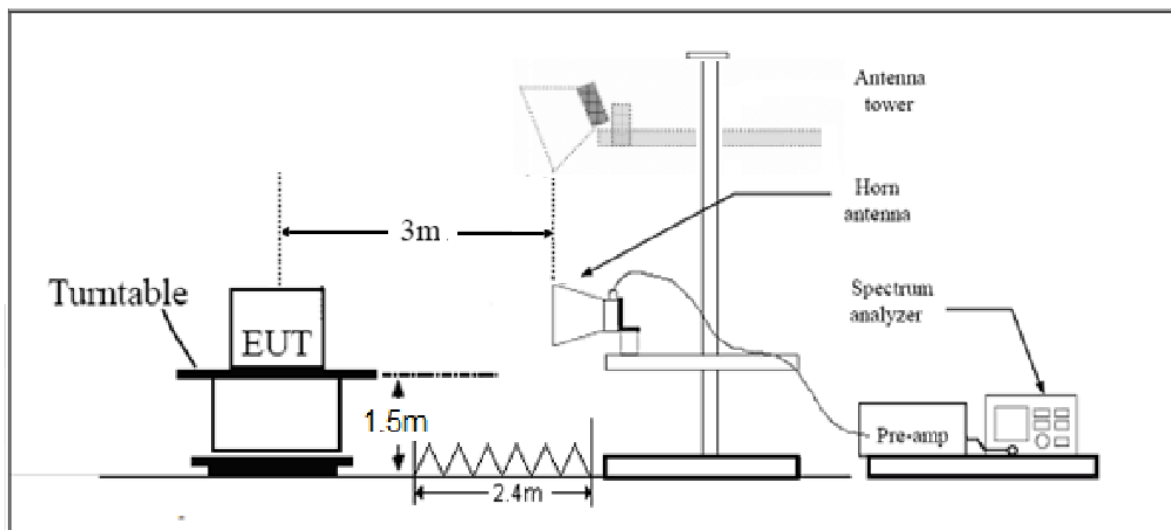
9KHz~~~ 30MHz



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

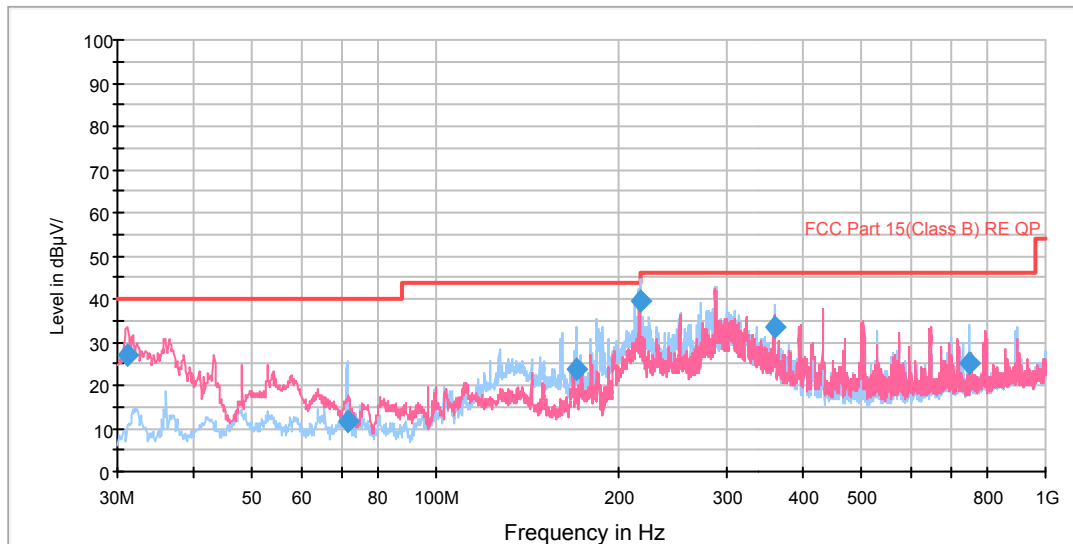
Sweep from 9 kHz to 30MHz, and the emissions more than 20 dB below the permissible value are not reported.

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

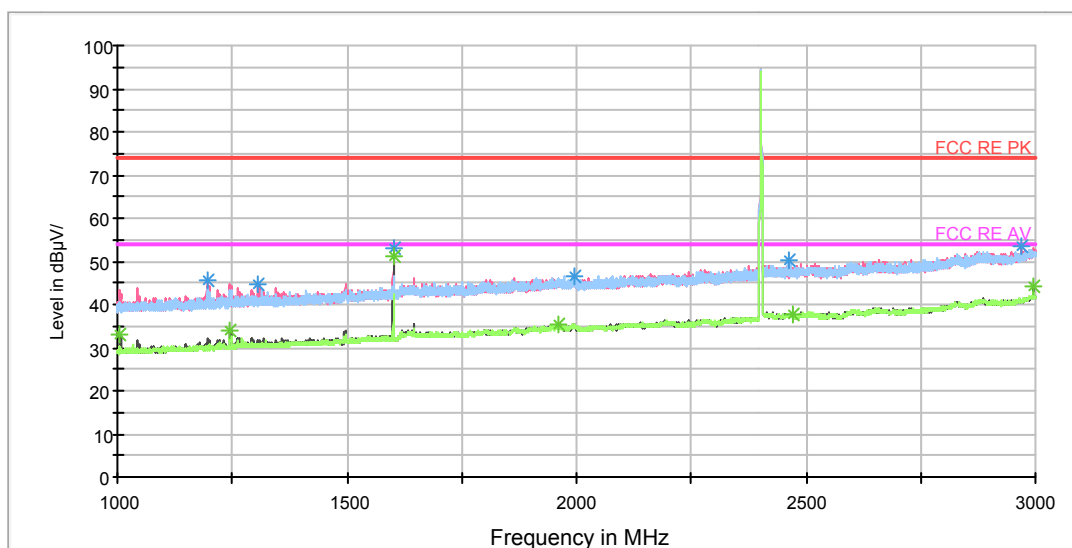


Radiates Emission from 30MHz to 1GHz

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)
31.174469	27.1	104.0	V	178.0	49.6	-22.5	12.9	40.0
71.488831	11.5	121.0	H	358.0	38.8	-27.3	28.5	40.0
169.614853	23.9	130.0	H	22.0	52.2	-28.3	19.6	43.5
215.856750	39.4	130.0	H	282.0	65.1	-25.7	4.1	43.5
358.571750	33.6	104.0	H	288.0	55.8	-22.2	12.4	46.0
748.697250	25.0	130.0	H	202.0	40.4	-15.4	21.0	46.0

RE 1G-3GHz PK+AV



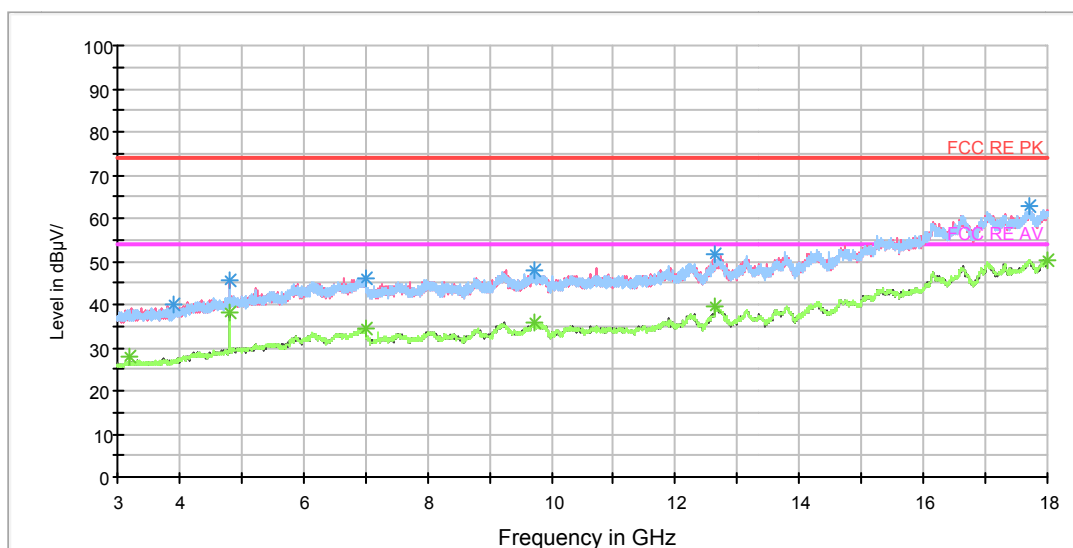
Radiates Emission from 1GHz to 3GHz
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1198.250000	45.5	105.0	V	309.0	53.7	-8.2	28.5	74
1306.750000	44.9	105.0	V	317.0	52.6	-7.7	29.1	74
1601.250000	53.0	105.0	V	93.0	59.4	-6.4	21.0	74
1993.500000	46.5	105.0	H	259.0	49.8	-3.3	27.5	74
2460.750000	50.2	205.0	H	184.0	50.7	-0.5	23.8	74
2970.000000	53.3	105.0	V	0.0	55.5	-2.2	20.7	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1005.250000	33.2	105.0	V	203.0	42.5	-9.3	20.8	54
1246.500000	34.1	105.0	V	176.0	42.1	-8.0	19.9	54
1601.250000	51.3	105.0	V	93.0	57.7	-6.4	2.7	54
1959.000000	35.4	205.0	H	0.0	38.6	-3.2	18.6	54
2470.250000	37.9	105.0	H	141.0	38.3	-0.4	16.1	54
2994.750000	44.3	105.0	V	158.0	46.6	-2.3	9.7	54

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

RE 3-18GHz PK+AV(YIPU)



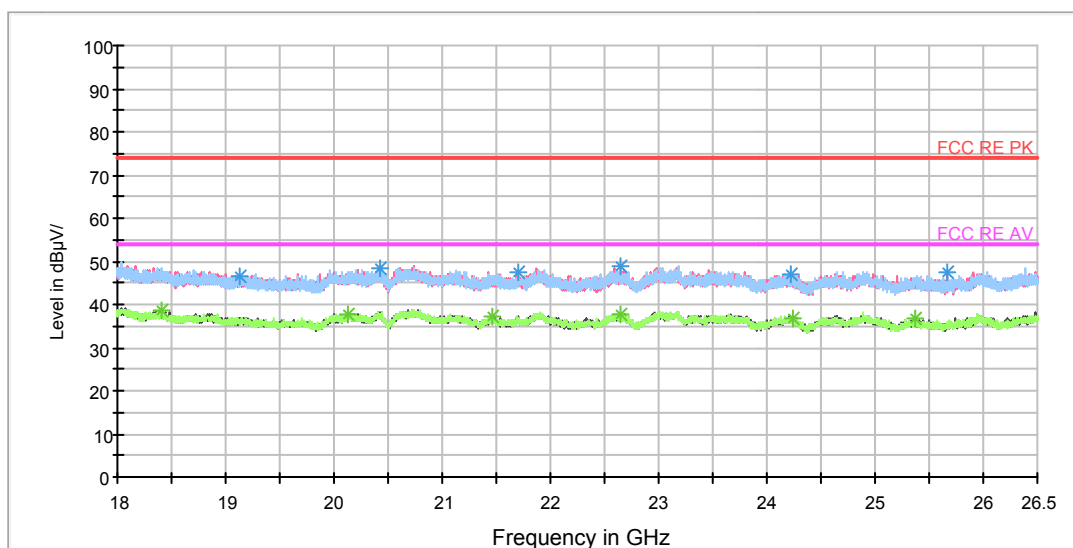
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3915.000000	40.0	205.0	V	162.0	41.2	-1.2	34.0	74
4803.750000	45.5	205.0	V	28.0	46.8	-1.3	28.5	74
6993.750000	46.1	105.0	H	105.0	52.6	-6.5	27.9	74
9736.875000	47.9	205.0	H	269.0	57.8	-9.9	26.1	74
12639.375000	51.7	205.0	V	0.0	66.2	-14.5	22.3	74
17711.250000	62.6	205.0	H	350.0	87.3	-24.7	11.4	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3202.500000	28.1	205.0	V	0.0	30.9	-2.8	25.9	54
4803.750000	38.4	205.0	V	28.0	39.7	-1.3	15.6	54
6995.625000	34.3	105.0	V	188.0	40.8	-6.5	19.7	54
9736.875000	35.9	205.0	H	269.0	45.8	-9.9	18.1	54
12641.250000	39.6	205.0	H	350.0	54.1	-14.5	14.4	54
18000.000000	50.3	105.0	V	350.0	75.8	-25.5	3.7	54

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

RE 18-26.5GHz PK+AV



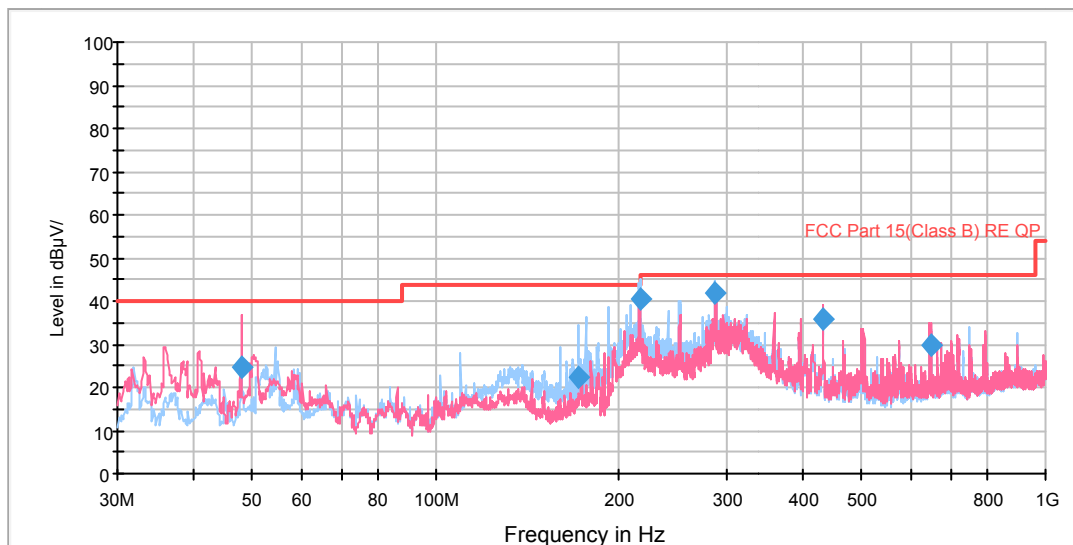
Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
19125.187500	46.6	V	351.0	51.9	-5.3	27.4	74
20419.312500	48.2	H	121.0	54.3	-6.1	25.8	74
21702.812500	47.6	H	189.0	55.6	-8.0	26.4	74
22653.750000	49.1	H	227.0	55.7	-6.6	24.9	74
24213.500000	47.2	V	290.0	53.1	-5.9	26.8	74
25670.187500	47.3	V	178.0	52.9	-5.6	26.7	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18400.562500	38.6	H	160.0	42.1	-3.5	15.4	54
20120.750000	37.7	V	253.0	43.5	-5.8	16.3	54
21454.187500	37.1	V	339.0	45.1	-8.0	16.9	54
22645.250000	37.9	H	97.0	44.6	-6.7	16.1	54
24237.937500	36.9	H	292.0	42.8	-5.9	17.1	54
25369.500000	36.9	H	110.0	42.7	-5.8	17.1	54

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

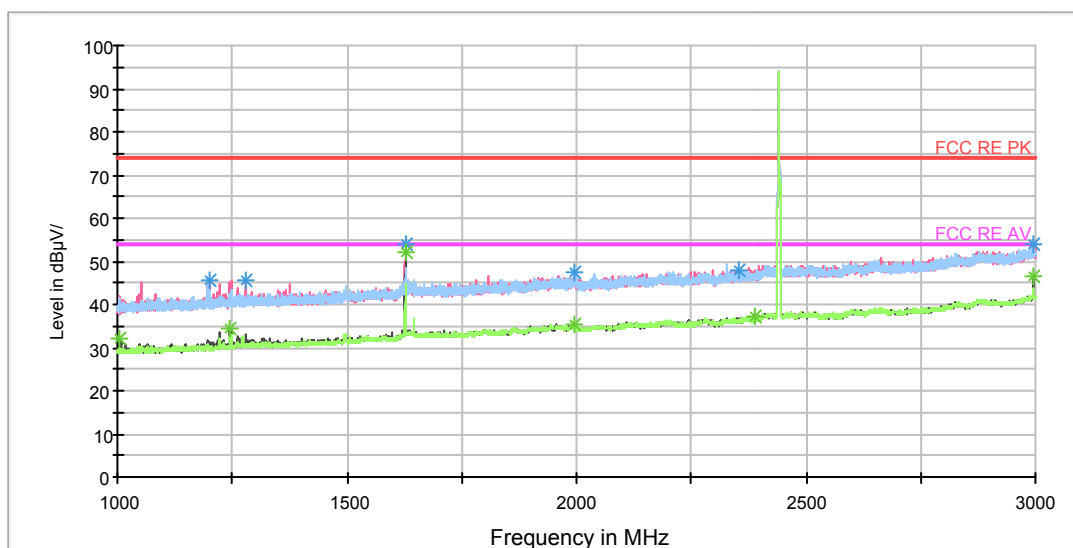
RE 30M-1GHz QP



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)
47.985138	24.5	129.0	V	332.0	44.7	-20.2	15.5	40.0
171.751897	22.4	129.0	H	26.0	50.8	-28.4	21.1	43.5
215.856750	40.3	129.0	H	117.0	66.0	-25.7	3.2	43.5
286.807500	41.8	129.0	H	22.0	62.8	-21.0	4.2	46.0
430.289500	35.8	129.0	V	197.0	56.7	-20.9	10.2	46.0
647.749250	29.6	102.0	V	0.0	45.9	-16.3	16.4	46.0

RE 1G-3GHz PK+AV



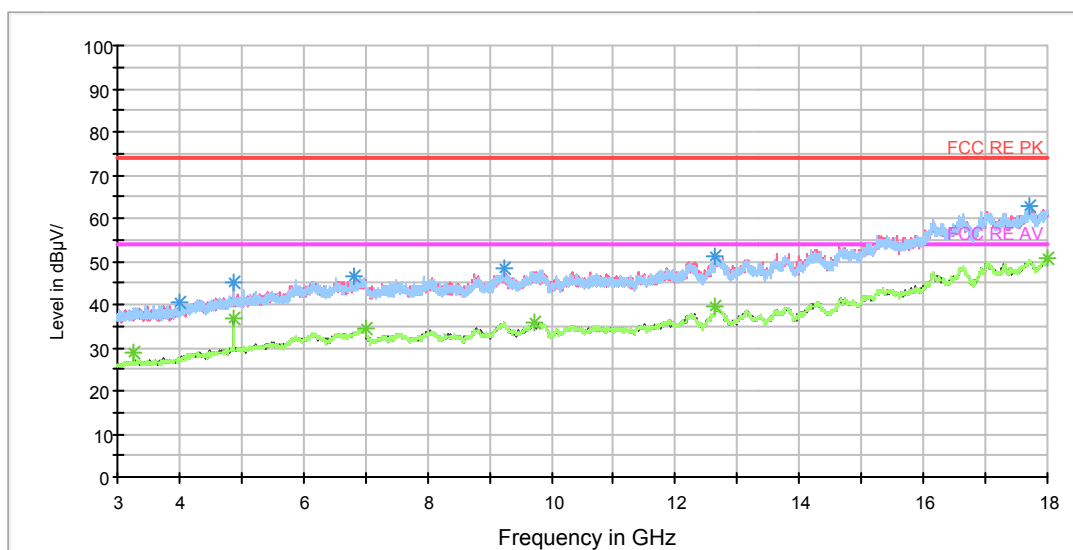
Radiates Emission from 1GHz to 3GHz
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1199.000000	45.5	105.0	V	307.0	53.7	-8.2	28.5	74
1278.000000	45.5	105.0	V	155.0	53.1	-7.6	28.5	74
1627.250000	53.8	105.0	V	91.0	58.6	-4.8	20.2	74
1993.750000	47.4	105.0	H	169.0	50.7	-3.3	26.6	74
2355.000000	47.8	205.0	V	7.0	49.2	-1.4	26.2	74
2995.250000	53.8	105.0	V	164.0	56.1	-2.3	20.2	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1006.000000	31.9	105.0	V	201.0	41.2	-9.3	22.1	54
1245.500000	34.3	105.0	V	138.0	42.3	-8.0	19.7	54
1627.250000	52.1	105.0	V	91.0	56.9	-4.8	1.9	54
1994.500000	35.3	205.0	H	157.0	38.5	-3.2	18.7	54
2390.000000	37.0	105.0	V	174.0	38.4	-1.4	17.0	54
2994.750000	46.6	105.0	V	155.0	48.9	-2.3	7.4	54

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

RE 3-18GHz PK+AV(YIPU)



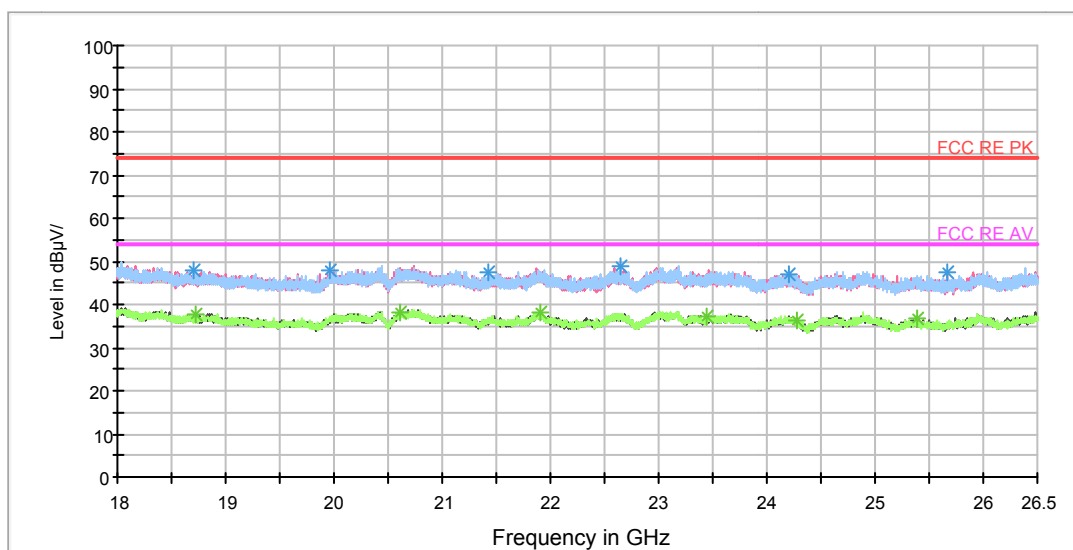
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3991.875000	40.5	105.0	V	107.0	41.5	-1.0	33.5	74
4880.625000	45.2	205.0	V	157.0	47.0	-1.8	28.8	74
6826.875000	46.4	105.0	V	350.0	52.2	-5.8	27.6	74
9249.375000	48.5	205.0	V	76.0	58.2	-9.7	25.5	74
12646.875000	51.4	105.0	H	0.0	65.7	-14.3	22.6	74
17715.000000	62.9	205.0	H	298.0	87.5	-24.6	11.1	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3253.125000	28.7	105.0	H	328.0	31.2	-2.5	25.3	54
4880.625000	37.0	205.0	V	157.0	38.8	-1.8	17.0	54
6993.750000	34.4	205.0	V	0.0	40.9	-6.5	19.6	54
9738.750000	35.8	105.0	V	215.0	45.8	-10.0	18.2	54
12641.250000	39.6	205.0	V	0.0	54.1	-14.5	14.4	54
17998.125000	50.5	205.0	H	298.0	75.9	-25.4	3.5	54

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

RE 18-26.5GHz PK+AV



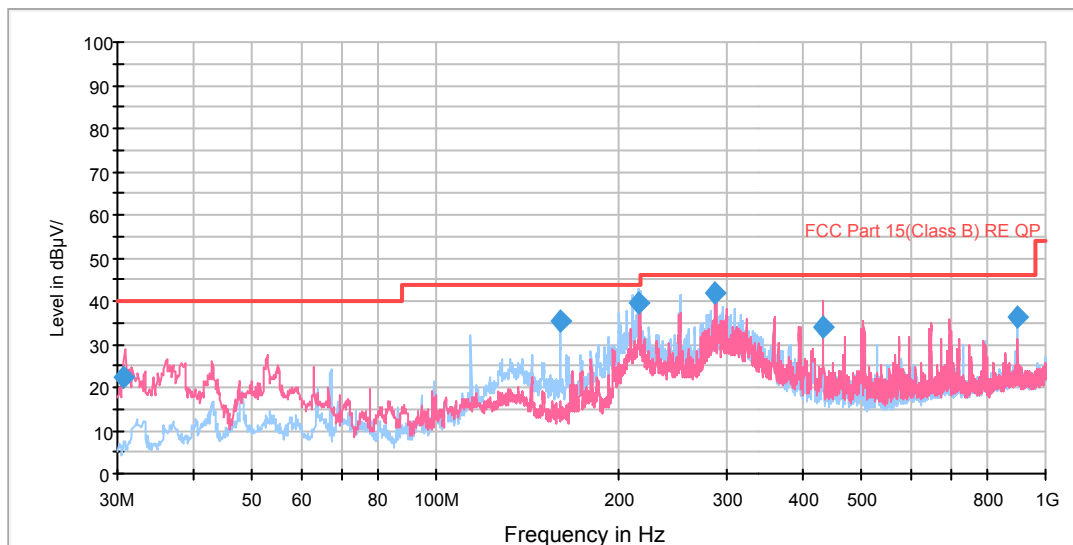
Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18708.687500	47.8	H	85.0	52.2	-4.4	26.2	74
19966.687500	47.7	H	110.0	53.4	-5.7	26.3	74
21431.875000	47.5	V	314.0	55.5	-8.0	26.5	74
22653.750000	49.1	H	227.0	55.7	-6.6	24.9	74
24197.562500	46.9	V	228.0	52.8	-5.9	27.1	74
25670.187500	47.3	V	178.0	52.9	-5.6	26.7	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18717.187500	37.8	V	339.0	42.2	-4.4	16.2	54
20606.312500	38.2	H	23.0	44.7	-6.5	15.8	54
21906.812500	37.9	H	23.0	45.9	-8.0	16.1	54
23451.687500	37.3	V	314.0	43.2	-5.9	16.7	54
24286.812500	36.4	H	201.0	42.4	-6.0	17.6	54
25382.250000	36.7	H	72.0	42.5	-5.8	17.3	54

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

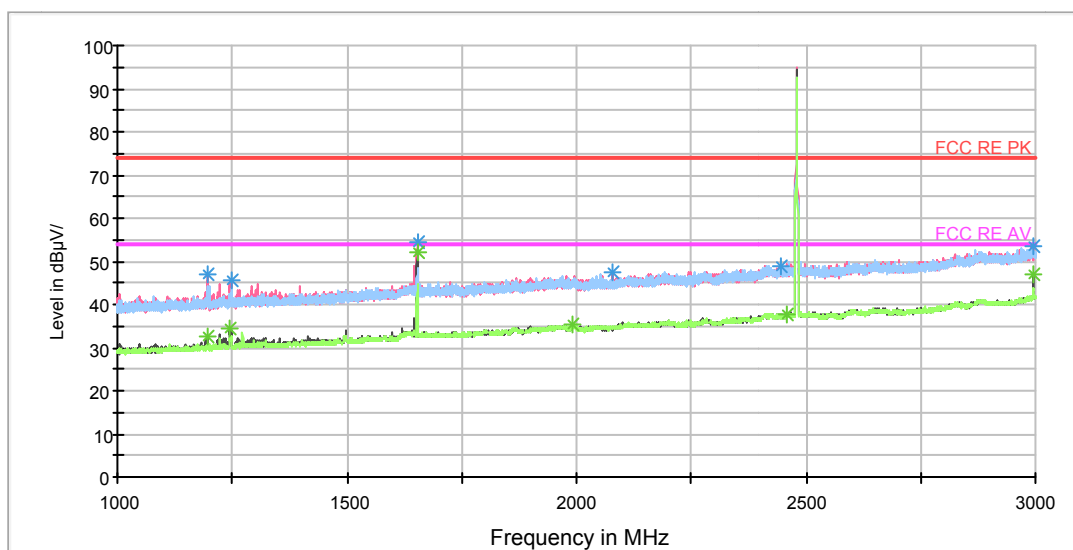
RE 30M-1GHz QP



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)
30.771628	22.2	101.0	V	107.0	44.7	-22.5	17.8	40.0
159.980050	35.4	130.0	H	0.0	64.1	-28.7	8.1	43.5
215.173500	39.5	130.0	H	61.0	65.1	-25.6	4.0	43.5
287.656250	42.1	101.0	V	174.0	63.2	-21.1	3.9	46.0
431.823000	34.1	130.0	V	194.0	55.0	-20.9	11.9	46.0
898.427250	36.2	120.0	H	264.0	49.1	-12.9	9.8	46.0

RE 1G-3GHz PK+AV



Radiates Emission from 1GHz to 3GHz

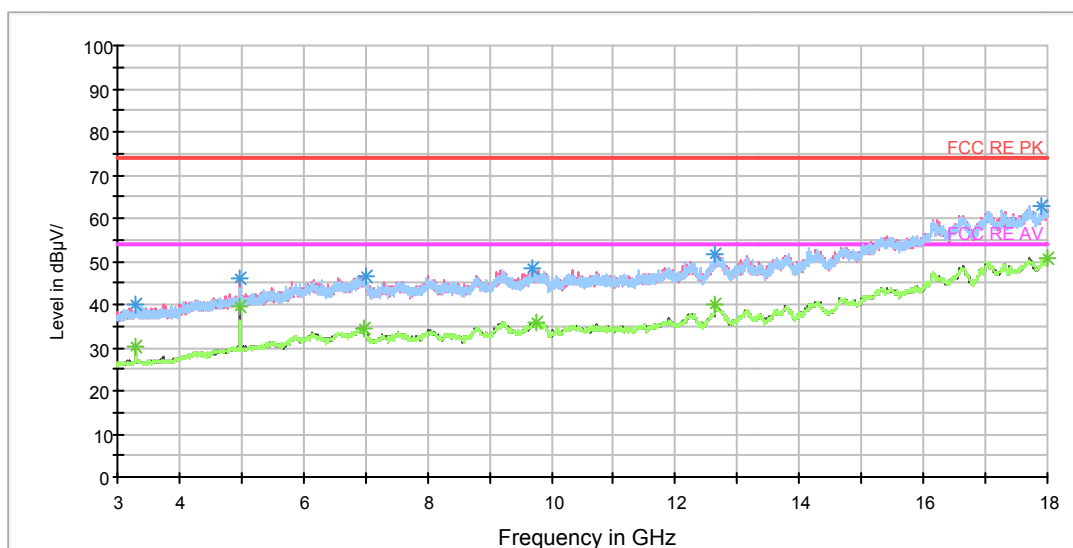
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1195.250000	47.1	105.0	V	121.0	55.3	-8.2	26.9	74
1246.750000	45.4	105.0	V	337.0	53.4	-8.0	28.6	74
1653.250000	54.4	105.0	V	82.0	59.5	-5.1	19.6	74
2077.250000	47.3	205.0	V	309.0	50.3	-3.0	26.7	74
2443.250000	48.7	105.0	H	175.0	49.1	-0.4	25.3	74
2994.750000	53.6	205.0	V	45.0	55.9	-2.3	20.4	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1195.250000	32.3	105.0	V	121.0	40.5	-8.2	21.7	54
1245.250000	34.4	105.0	V	130.0	42.4	-8.0	19.6	54
1653.250000	52.3	105.0	V	82.0	57.4	-5.1	1.7	54
1993.250000	35.4	205.0	V	151.0	38.7	-3.3	18.6	54
2458.000000	37.8	205.0	H	322.0	38.3	-0.5	16.2	54
2994.750000	47.0	105.0	V	158.0	49.3	-2.3	7.0	54

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

RE 3-18GHz PK+AV(YIPU)



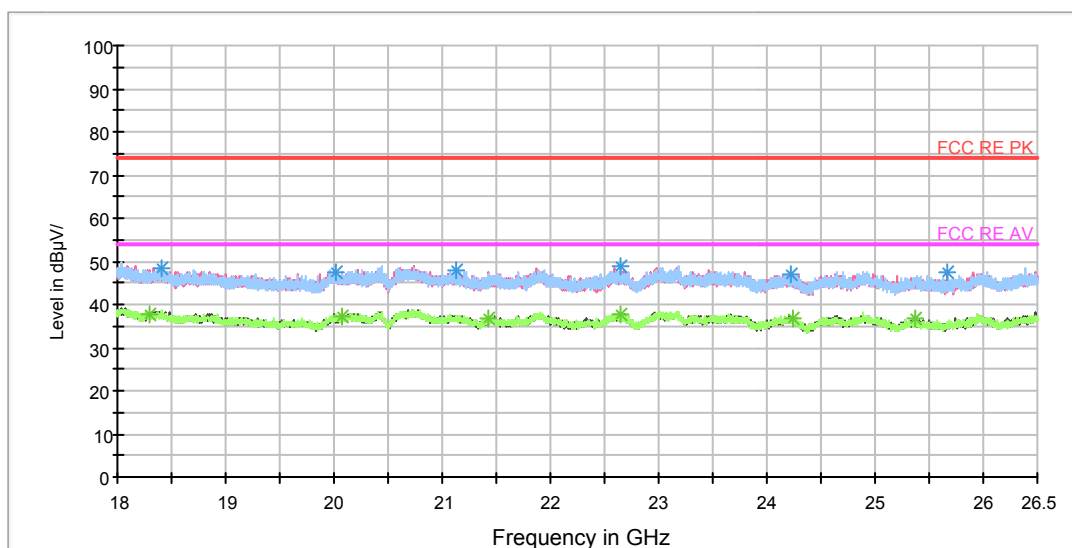
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3305.625000	40.2	105.0	H	350.0	42.3	-2.1	33.8	74
4959.375000	46.0	105.0	V	107.0	47.8	-1.8	28.0	74
6997.500000	46.5	205.0	V	0.0	53.0	-6.5	27.5	74
9688.125000	48.4	205.0	V	0.0	57.9	-9.5	25.6	74
12641.250000	51.6	205.0	V	298.0	66.1	-14.5	22.4	74
17911.875000	63.0	105.0	H	162.0	88.5	-25.5	11.0	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3305.625000	30.4	105.0	H	350.0	32.5	-2.1	23.6	54
4959.375000	39.4	105.0	V	107.0	41.2	-1.8	14.6	54
6991.875000	34.5	105.0	V	330.0	41.0	-6.5	19.5	54
9742.500000	36.0	105.0	H	162.0	46.0	-10.0	18.0	54
12639.375000	39.9	105.0	V	275.0	54.4	-14.5	14.1	54
18000.000000	50.7	105.0	H	1.0	76.2	-25.5	3.3	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

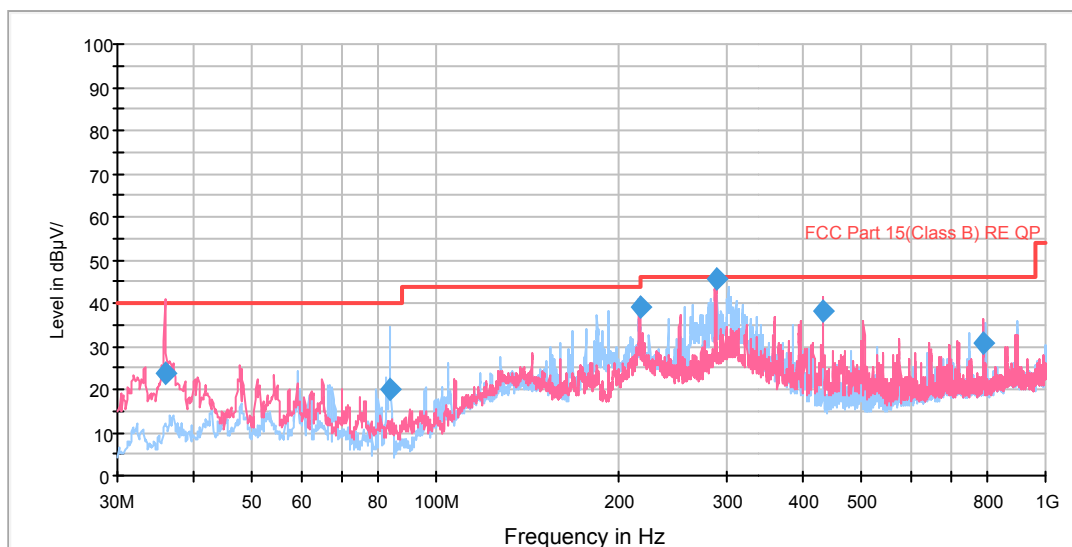
Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18404.812500	48.3	H	85.0	51.8	-3.5	25.7	74
20013.437500	47.5	H	35.0	53.2	-5.7	26.5	74
21120.562500	47.8	H	35.0	55.4	-7.6	26.2	74
22653.750000	49.1	H	227.0	55.7	-6.6	24.9	74
24213.500000	47.2	V	290.0	53.1	-5.9	26.8	74
25670.187500	47.3	V	178.0	52.9	-5.6	26.7	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18299.625000	37.8	V	314.0	40.9	-3.1	16.2	54
20069.750000	37.2	V	71.0	42.9	-5.7	16.8	54
21431.875000	36.9	V	314.0	44.9	-8.0	17.1	54
22647.375000	37.8	H	214.0	44.5	-6.7	16.2	54
24237.937500	36.9	H	292.0	42.8	-5.9	17.1	54
25369.500000	36.9	H	110.0	42.7	-5.8	17.1	54

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



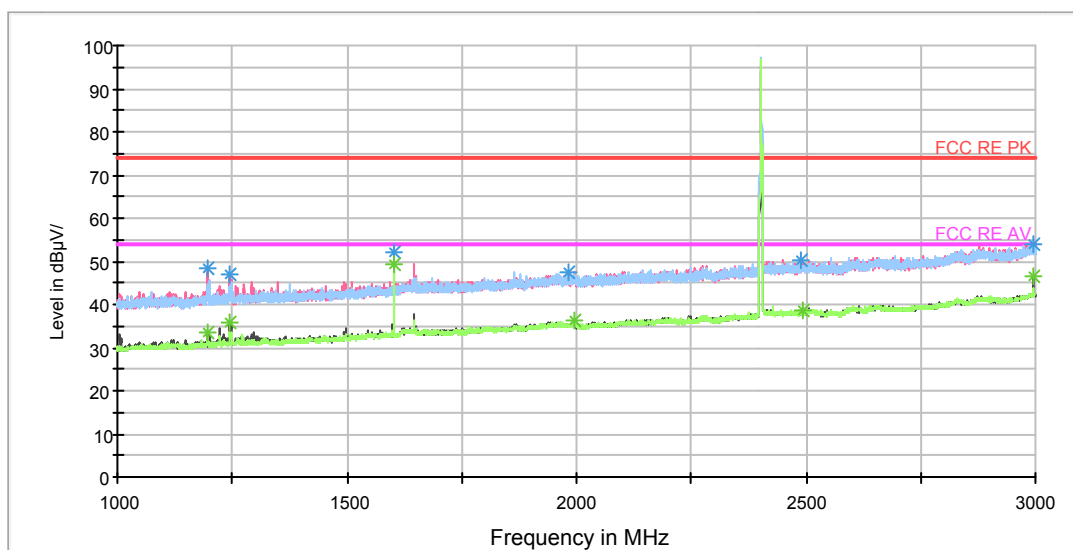
RE 30M-1GHz QP



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)
33.189618	28.3	121.0	V	0.0	50.9	-22.6	11.7	40.0
83.019731	17.0	130.0	V	0.0	45.1	-28.1	23.0	40.0
215.170750	38.2	105.0	V	161.0	63.8	-25.6	5.3	43.5
286.891250	43.4	130.0	V	352.0	66.8	-23.4	2.6	46.0
430.290750	36.8	101.0	V	22.0	57.7	-20.9	9.2	46.0
799.531250	28.2	121.0	H	276.0	43.0	-14.8	17.8	46.0

RE 1G-3GHz PK+AV



Radiates Emission from 1GHz to 3GHz

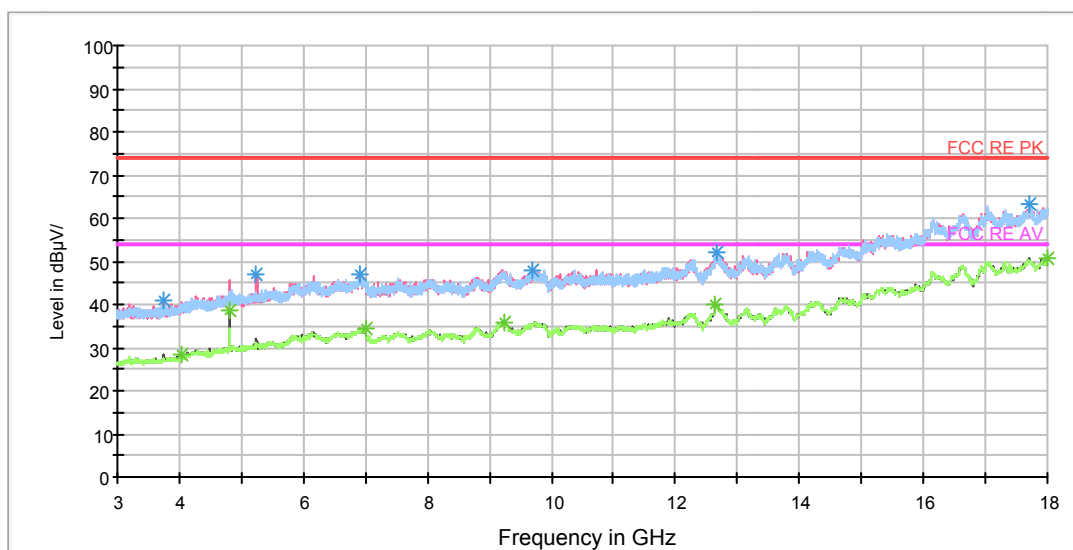
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1195.750000	48.3	105.0	V	100.0	56.5	-8.2	25.7	74
1244.250000	47.0	105.0	V	180.0	55.0	-8.0	27.0	74
1602.000000	52.2	105.0	V	150.0	58.5	-6.3	21.8	74
1981.000000	47.6	305.0	V	304.0	51.3	-3.7	26.4	74
2491.000000	50.0	305.0	H	132.0	50.3	-0.3	24.0	74
2994.500000	53.9	105.0	V	189.0	56.2	-2.3	20.1	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1196.750000	33.6	105.0	V	317.0	41.8	-8.2	20.4	54
1246.000000	35.6	105.0	V	180.0	43.6	-8.0	18.4	54
1602.000000	49.5	105.0	V	150.0	55.8	-6.3	4.5	54
1996.500000	36.1	305.0	V	315.0	39.4	-3.3	17.9	54
2493.500000	38.6	205.0	H	292.0	38.8	-0.2	15.4	54
2994.750000	46.4	105.0	V	168.0	48.7	-2.3	7.6	54

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

RE 3-18GHz PK+AV(YIPU)



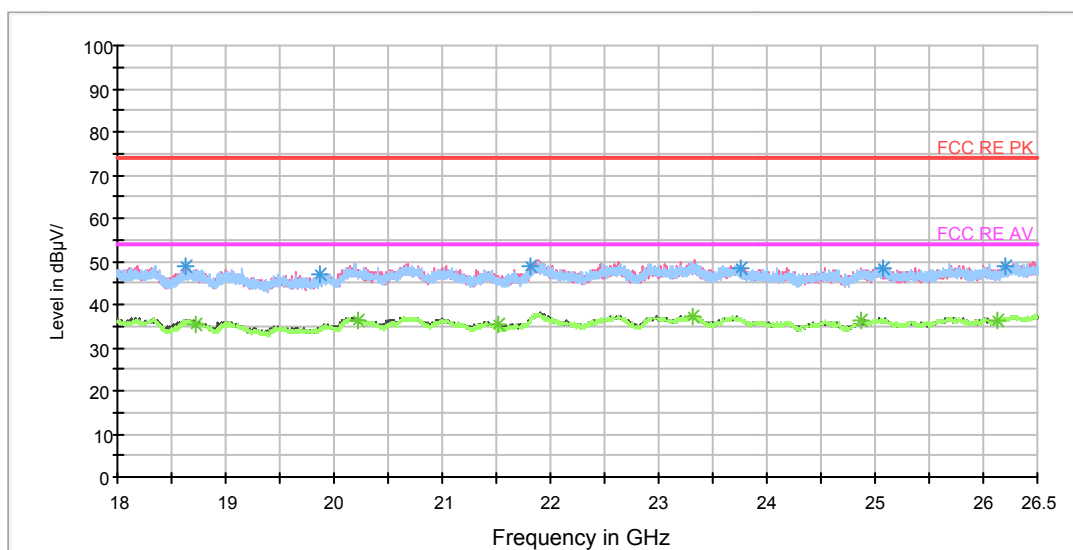
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3744.375000	40.8	105.0	V	192.0	42.5	-1.7	33.2	74
5244.375000	47.1	105.0	V	221.0	49.2	-2.1	26.9	74
6898.125000	46.8	305.0	H	0.0	53.0	-6.2	27.2	74
9686.250000	48.0	305.0	V	246.0	57.5	-9.5	26.0	74
12667.500000	52.0	105.0	V	350.0	66.0	-14.0	22.0	74
17722.500000	63.4	105.0	V	221.0	87.9	-24.5	10.6	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4040.625000	28.4	105.0	V	192.0	29.4	-1.0	25.6	54
4803.750000	38.8	205.0	V	0.0	40.1	-1.3	15.2	54
6997.500000	34.4	305.0	V	350.0	40.9	-6.5	19.6	54
9232.500000	35.9	305.0	H	51.0	45.8	-9.9	18.1	54
12639.375000	40.0	205.0	H	245.0	54.5	-14.5	14.0	54
18000.000000	50.7	105.0	V	329.0	76.2	-25.5	3.3	54

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

RE 18-26.5GHz PK+AV



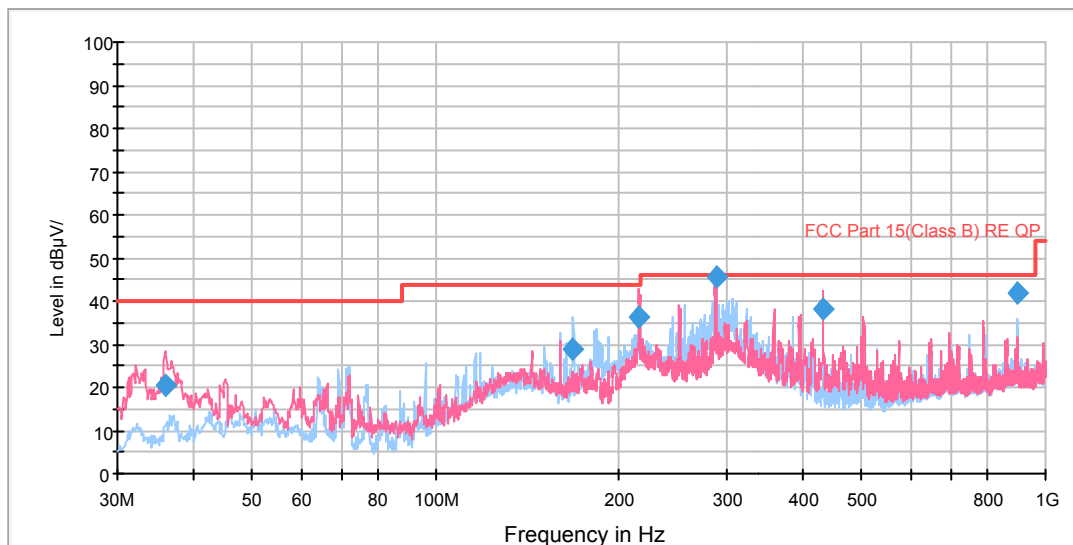
Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18631.125000	48.7	H	166.0	52.9	-4.2	25.3	74
19878.500000	47.2	V	0.0	53.0	-5.8	26.8	74
21809.062500	48.8	V	190.0	56.8	-8.0	25.2	74
23753.437500	48.5	H	85.0	54.4	-5.9	25.5	74
25077.312500	48.5	H	5.0	54.4	-5.9	25.5	74
26195.062500	48.8	H	72.0	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)
18714.000000	35.3	V	0.0	39.7	-4.4	18.7	54
20216.375000	36.1	H	72.0	42.0	-5.9	17.9	54
21516.875000	35.2	V	204.0	43.3	-8.1	18.8	54
23323.125000	37.4	H	85.0	43.4	-6.0	16.6	54
24873.312500	36.1	H	194.0	42.0	-5.9	17.9	54
26138.750000	36.1	H	5.0	41.5	-5.4	17.9	54

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

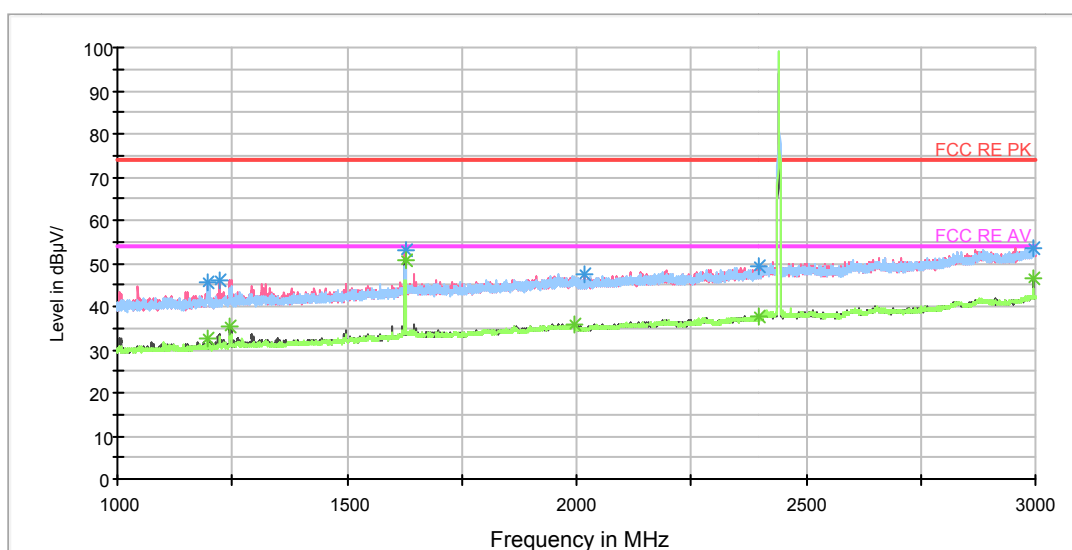
RE 30M-1GHz QP



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)
33.190566	28.6	101.0	V	0.0	51.2	-22.6	11.4	40.0
54.233428	17.1	105.0	V	298.0	38.0	-20.9	22.9	40.0
165.986447	33.6	130.0	H	353.0	61.9	-28.3	9.9	43.5
243.996250	26.9	120.0	H	179.0	52.0	-25.1	19.1	46.0
287.818000	43.9	130.0	V	0.0	67.3	-23.4	2.1	46.0
796.553000	29.0	121.0	H	273.0	43.8	-14.8	17.0	46.0

RE 1G-3GHz PK+AV



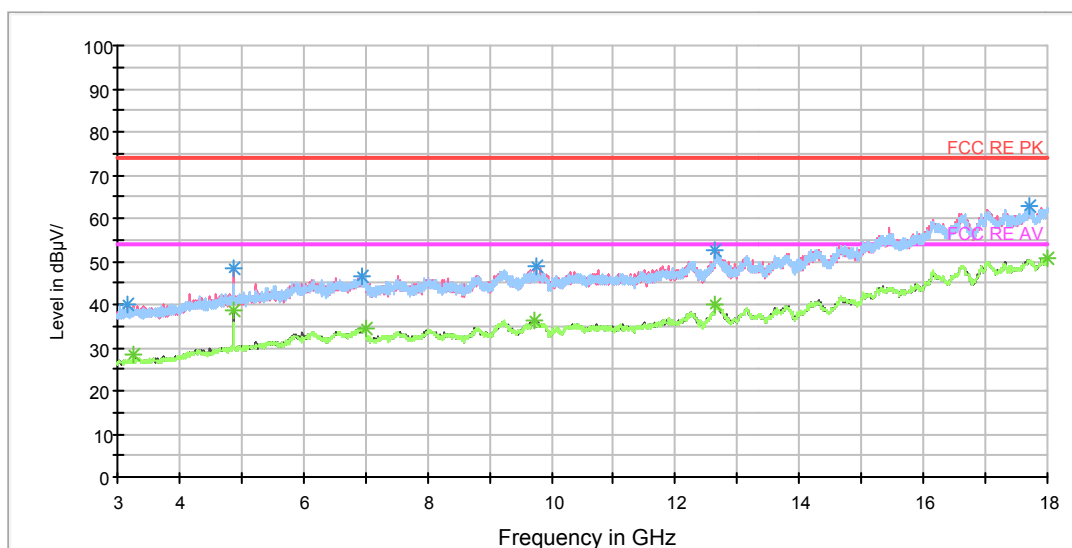
Radiates Emission from 1GHz to 3GHz
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1197.000000	45.7	105.0	V	242.0	53.9	-8.2	28.3	74
1221.750000	46.0	105.0	V	217.0	53.8	-7.8	28.0	74
1626.750000	52.8	105.0	V	69.0	57.6	-4.8	21.2	74
2017.000000	47.6	305.0	V	316.0	51.2	-3.6	26.4	74
2396.500000	49.1	305.0	V	110.0	50.4	-1.3	24.9	74
2994.250000	53.7	105.0	V	164.0	56.0	-2.3	20.3	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1197.500000	32.7	105.0	H	221.0	40.9	-8.2	21.3	54
1245.250000	35.2	105.0	V	181.0	43.2	-8.0	18.8	54
1626.750000	50.7	105.0	V	69.0	55.5	-4.8	3.3	54
1997.750000	36.0	206.0	H	0.0	39.3	-3.3	18.0	54
2395.750000	37.6	305.0	H	52.0	38.9	-1.3	16.4	54
2994.750000	46.6	105.0	V	164.0	48.9	-2.3	7.4	54

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

RE 3-18GHz PK+AV(YIPU)



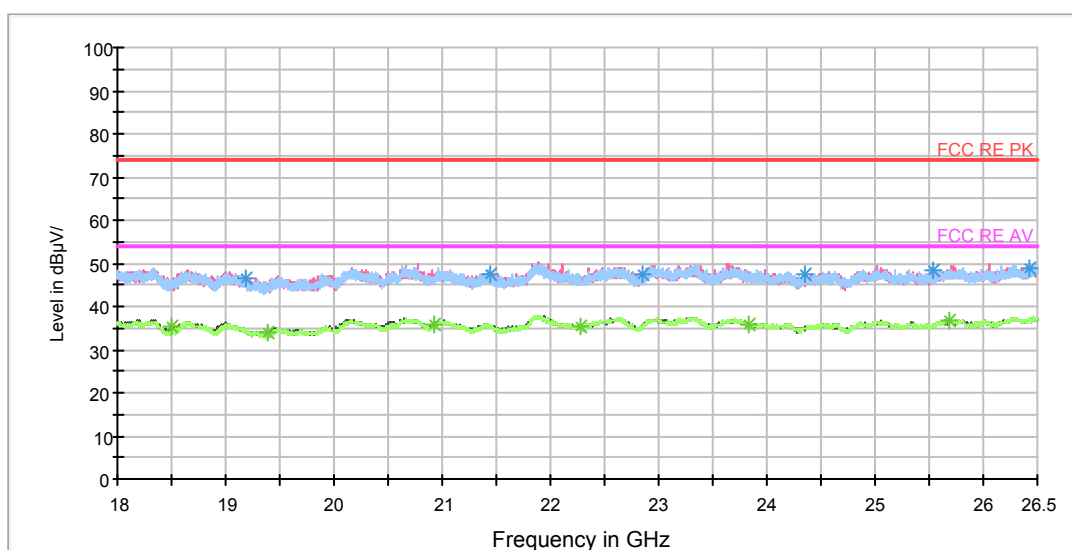
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3174.375000	40.2	105.0	V	350.0	43.1	-2.9	33.8	74
4880.625000	48.4	305.0	V	168.0	50.2	-1.8	25.6	74
6943.125000	46.5	105.0	V	174.0	52.6	-6.1	27.5	74
9742.500000	48.9	305.0	H	0.0	58.9	-10.0	25.1	74
12639.375000	52.4	205.0	V	0.0	66.9	-14.5	21.6	74
17700.000000	62.9	105.0	V	312.0	87.6	-24.7	11.1	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3253.125000	28.5	206.0	H	136.0	31.0	-2.5	25.5	54
4880.625000	38.6	305.0	V	168.0	40.4	-1.8	15.4	54
6997.500000	34.6	305.0	V	279.0	41.1	-6.5	19.4	54
9738.750000	36.2	206.0	H	300.0	46.2	-10.0	17.8	54
12639.375000	40.1	206.0	H	350.0	54.6	-14.5	13.9	54
18000.000000	50.9	205.0	V	48.0	76.4	-25.5	3.1	54

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

RE 18-26.5GHz PK+AV



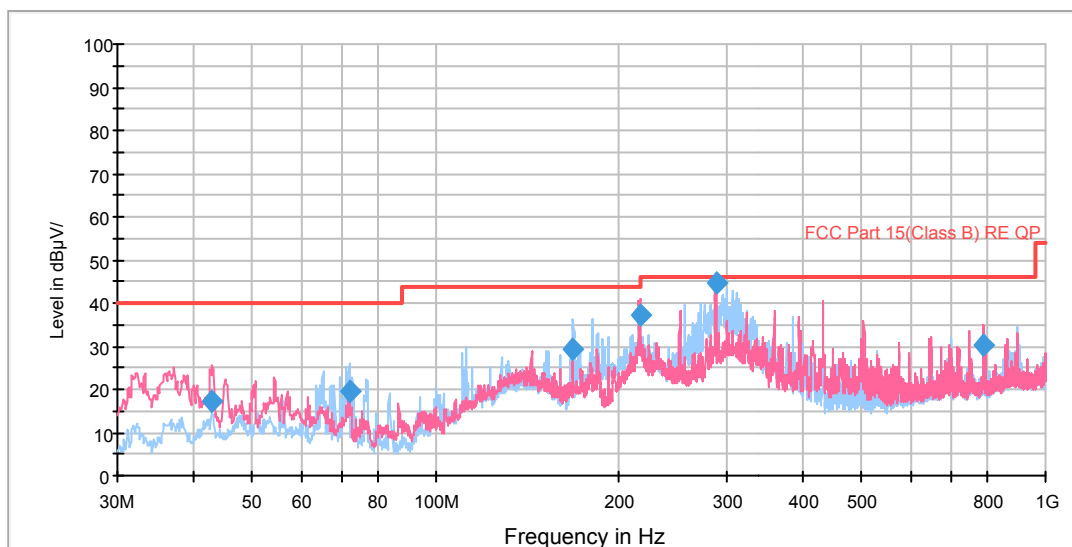
Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
19187.875000	46.7	H	33.0	52.2	-5.5	27.3	74
21445.687500	47.3	V	0.0	55.3	-8.0	26.7	74
22850.312500	47.6	H	46.0	54.0	-6.4	26.4	74
24356.937500	47.4	H	100.0	53.4	-6.0	26.6	74
25543.750000	48.2	V	56.0	53.9	-5.7	25.8	74
26433.062500	48.9	H	6.0	54.3	-5.4	25.1	74

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18504.687500	35.1	V	234.0	39.0	-3.9	18.9	54
19385.500000	33.8	V	0.0	39.7	-5.9	20.2	54
20929.312500	35.9	V	126.0	43.1	-7.2	18.1	54
22270.187500	35.3	V	98.0	42.7	-7.4	18.7	54
23835.250000	35.8	V	167.0	41.7	-5.9	18.2	54
25692.500000	36.7	V	0.0	42.3	-5.6	17.3	54

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

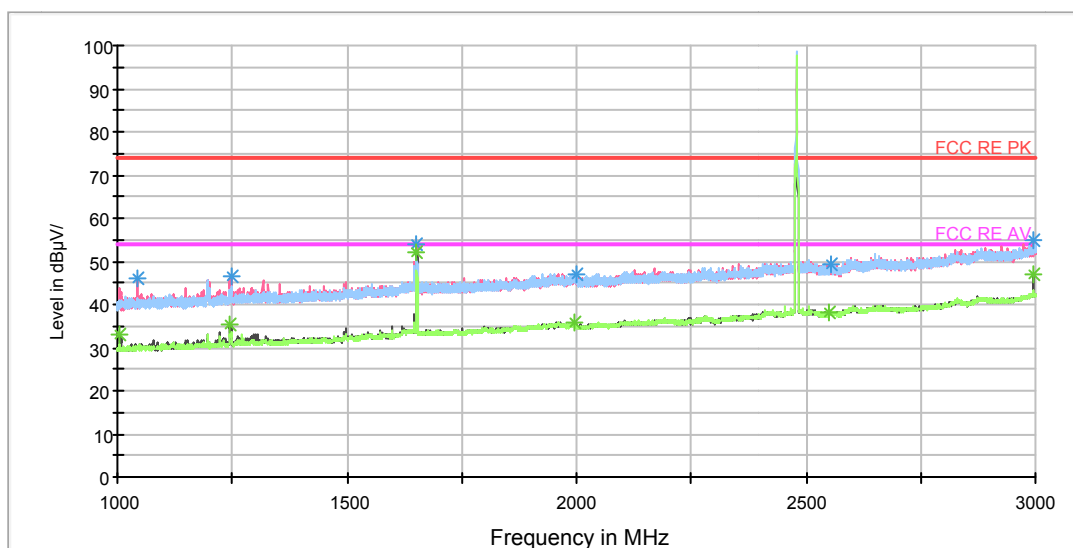
RE 30M-1GHz QP



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)
33.189618	28.7	105.0	V	346.0	51.3	-22.6	11.3	40.0
64.717641	17.3	101.0	V	145.0	41.0	-23.7	22.7	40.0
166.511181	34.0	130.0	H	0.0	62.3	-28.3	9.5	43.5
287.819250	43.2	130.0	V	0.0	66.6	-23.4	2.8	46.0
314.549250	33.8	105.0	H	22.0	57.0	-23.2	12.2	46.0
898.386500	33.2	121.0	H	70.0	46.1	-12.9	12.8	46.0

RE 1G-3GHz PK+AV



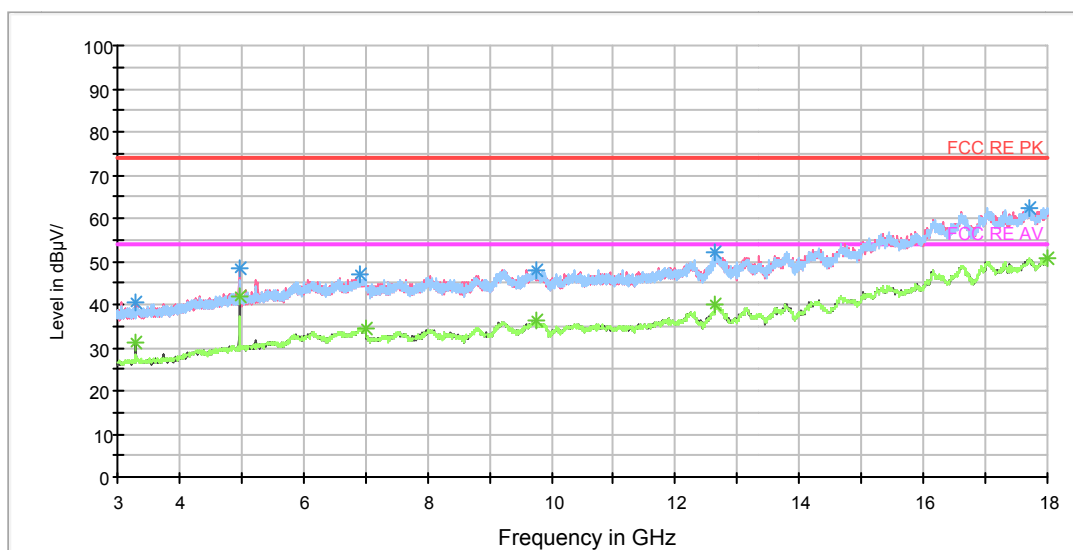
Radiates Emission from 1GHz to 3GHz
Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1042.250000	46.1	205.0	V	191.0	55.1	-9.0	27.9	74
1248.000000	46.5	105.0	V	237.0	54.5	-8.0	27.5	74
1652.500000	54.1	105.0	V	42.0	59.2	-5.1	19.9	74
1999.750000	47.2	206.0	H	0.0	50.6	-3.4	26.8	74
2555.250000	49.1	305.0	V	79.0	49.6	-0.5	24.9	74
2994.750000	54.8	105.0	V	192.0	57.1	-2.3	19.2	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1006.250000	32.9	105.0	V	228.0	42.2	-9.3	21.1	54
1245.250000	35.2	105.0	V	182.0	43.2	-8.0	18.8	54
1652.500000	52.0	105.0	V	42.0	57.1	-5.1	2.0	54
1997.500000	35.9	206.0	H	337.0	39.2	-3.3	18.1	54
2552.000000	38.3	206.0	H	0.0	38.8	-0.5	15.7	54
2994.750000	47.0	105.0	V	192.0	49.3	-2.3	7.0	54

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

RE 3-18GHz PK+AV(YIPU)



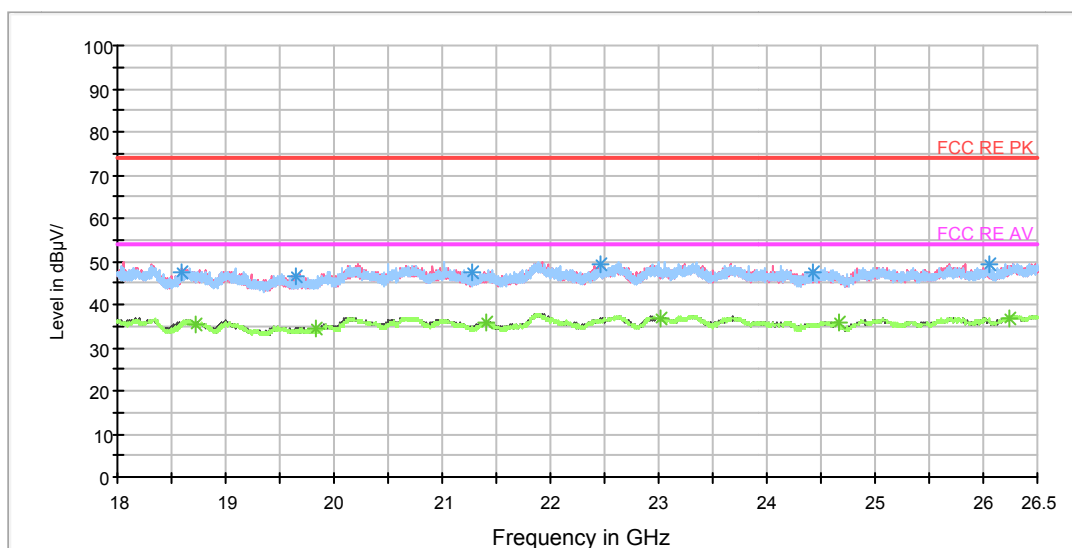
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3303.750000	40.6	205.0	V	20.0	42.8	-2.2	33.4	74
4959.375000	48.4	205.0	V	20.0	50.2	-1.8	25.6	74
6903.750000	46.9	105.0	V	350.0	53.2	-6.3	27.1	74
9761.250000	48.1	105.0	H	0.0	57.7	-9.6	25.9	74
12645.000000	52.1	205.0	V	298.0	66.5	-14.4	21.9	74
17711.250000	62.4	206.0	H	350.0	87.1	-24.7	11.6	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3303.750000	31.3	205.0	V	20.0	33.5	-2.2	22.7	54
4959.375000	41.7	305.0	V	81.0	43.5	-1.8	12.3	54
6993.750000	34.4	305.0	H	0.0	40.9	-6.5	19.6	54
9740.625000	36.2	305.0	V	138.0	46.2	-10.0	17.8	54
12637.500000	40.1	105.0	V	302.0	54.4	-14.3	13.9	54
17998.125000	50.7	305.0	V	350.0	76.1	-25.4	3.3	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)
18585.437500	47.4	V	286.0	51.5	-4.1	26.6	74
19654.312500	46.6	V	191.0	52.6	-6.0	27.4	74
21281.000000	47.2	V	0.0	55.0	-7.8	26.8	74
22462.500000	49.4	H	58.0	56.3	-6.9	24.6	74
24417.500000	47.6	V	12.0	53.6	-6.0	26.4	74
26054.812500	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)
18729.937500	35.5	V	286.0	39.9	-4.4	18.5	54
19842.375000	34.4	V	69.0	40.2	-5.8	19.6	54
21411.687500	36.0	V	232.0	43.9	-7.9	18.0	54
23026.687500	36.8	V	286.0	42.9	-6.1	17.2	54
24662.937500	35.8	V	69.0	41.8	-6.0	18.2	54
26236.500000	36.7	V	0.0	42.1	-5.4	17.3	54

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

4.11 Conducted Emission

Ambient condition

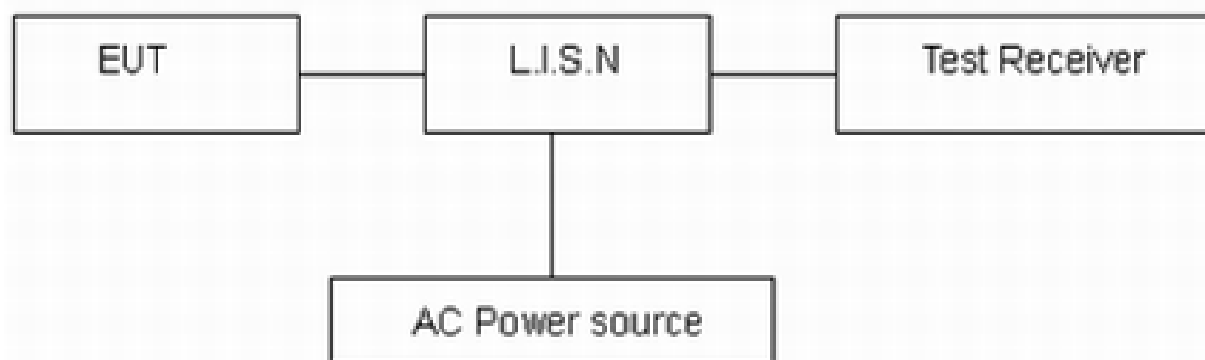
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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

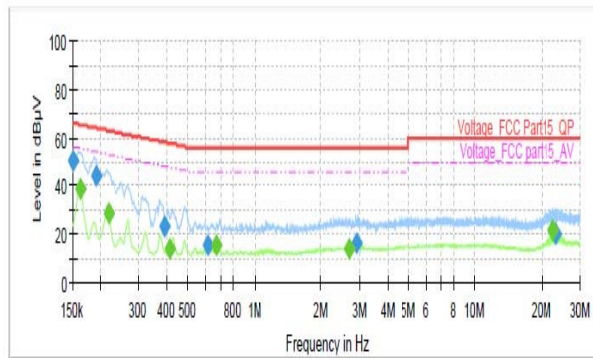
Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

Measurement Uncertainty

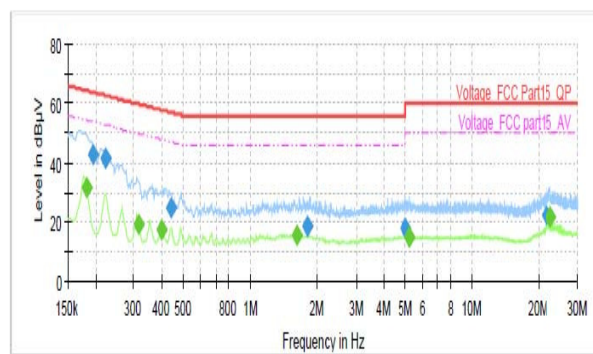
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U=2.69$ dB.

**Test Results:**

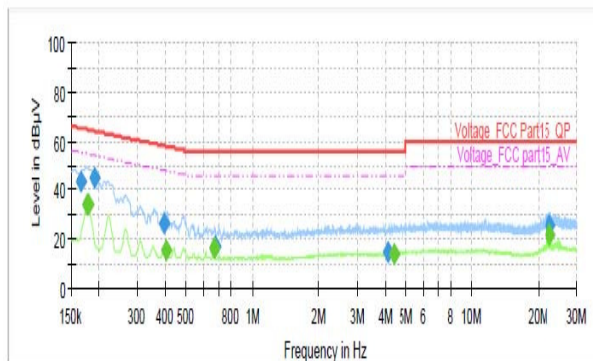
Following plots, Blue trace uses the peak detection, Green trace uses the average detection.

Basic Rate-CH0 L Line**Final Result**

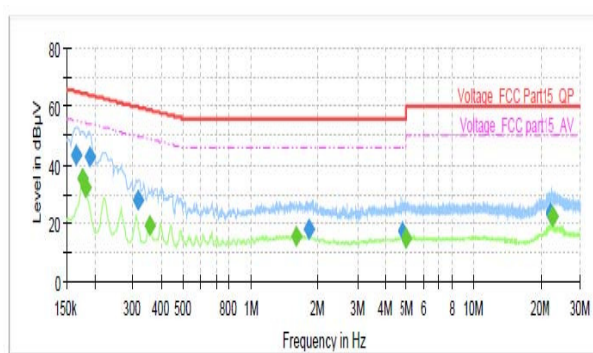
Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	50.50	---	66.00	15.50	1000.0	9.000	L1	ON	19.1
0.161250	---	38.66	55.40	16.74	1000.0	9.000	L1	ON	19.1
0.190500	43.83	---	64.02	20.18	1000.0	9.000	L1	ON	19.2
0.217500	---	28.68	52.91	24.23	1000.0	9.000	L1	ON	19.2
0.393000	23.62	---	58.00	34.38	1000.0	9.000	L1	ON	19.2
0.415500	---	13.67	47.54	33.87	1000.0	9.000	L1	ON	19.2
0.613500	15.70	---	56.00	40.30	1000.0	9.000	L1	ON	19.3
0.672000	---	15.89	46.00	30.11	1000.0	9.000	L1	ON	19.3
2.681250	---	13.87	46.00	32.13	1000.0	9.000	L1	ON	19.0
2.883750	16.65	---	56.00	39.35	1000.0	9.000	L1	ON	19.1
22.578000	---	21.71	50.00	28.29	1000.0	9.000	L1	ON	19.5
23.309250	19.85	---	60.00	40.15	1000.0	9.000	L1	ON	19.6

Basic Rate-CH0 N Line**Final Result**

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.181500	---	31.49	54.42	22.93	1000.0	9.000	N	ON	19.2
0.195000	42.74	---	63.82	21.08	1000.0	9.000	N	ON	19.2
0.222000	41.85	---	62.74	20.89	1000.0	9.000	N	ON	19.1
0.314250	---	19.53	49.86	30.33	1000.0	9.000	N	ON	19.2
0.402000	---	17.49	47.81	30.33	1000.0	9.000	N	ON	19.2
0.440250	25.03	---	57.06	32.03	1000.0	9.000	N	ON	19.2
1.630500	---	15.58	46.00	30.42	1000.0	9.000	N	ON	19.2
1.808250	18.42	---	56.00	37.58	1000.0	9.000	N	ON	19.2
5.001000	17.88	---	60.00	42.12	1000.0	9.000	N	ON	19.1
5.237250	---	14.94	50.00	35.06	1000.0	9.000	N	ON	19.1
21.783750	22.38	---	60.00	37.62	1000.0	9.000	N	ON	19.4
22.710750	---	21.64	50.00	28.36	1000.0	9.000	N	ON	19.5

Basic Rate-CH39 L Line**Final Result**

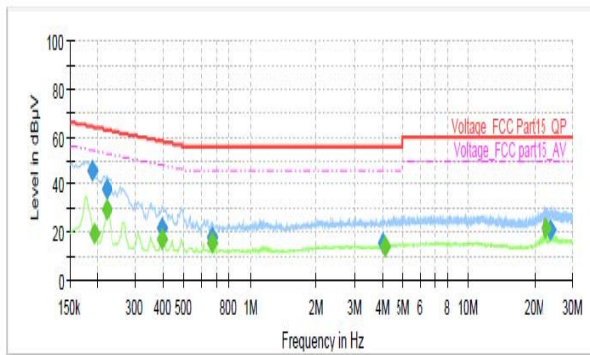
Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.165750	43.52	---	65.17	21.65	1000.0	9.000	L1	ON	19.1
0.177000	---	33.92	54.63	20.71	1000.0	9.000	L1	ON	19.2
0.179250	---	33.84	54.52	20.68	1000.0	9.000	L1	ON	19.2
0.190500	44.83	---	64.02	19.19	1000.0	9.000	L1	ON	19.2
0.395250	25.97	---	57.95	31.98	1000.0	9.000	L1	ON	19.2
0.404250	---	15.44	47.77	32.33	1000.0	9.000	L1	ON	19.2
0.672000	---	16.13	46.00	29.87	1000.0	9.000	L1	ON	19.3
0.674250	17.18	---	56.00	38.82	1000.0	9.000	L1	ON	19.3
4.112250	14.96	---	56.00	41.04	1000.0	9.000	L1	ON	19.1
4.386750	---	13.93	46.00	32.07	1000.0	9.000	L1	ON	19.1
22.578000	25.37	---	60.00	34.63	1000.0	9.000	L1	ON	19.5
22.578000	---	21.89	50.00	28.11	1000.0	9.000	L1	ON	19.5

Basic Rate-CH39 N Line**Final Result**

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.165750	43.55	---	65.17	21.62	1000.0	9.000	N	ON	19.2
0.177000	---	35.05	54.63	19.58	1000.0	9.000	N	ON	19.2
0.181500	---	31.96	54.42	22.46	1000.0	9.000	N	ON	19.2
0.190500	42.60	---	64.02	21.42	1000.0	9.000	N	ON	19.2
0.316500	27.72	---	59.80	32.08	1000.0	9.000	N	ON	19.2
0.354750	---	19.40	48.85	29.45	1000.0	9.000	N	ON	19.2
1.617000	---	15.47	46.00	30.53	1000.0	9.000	N	ON	19.2
1.826250	18.00	---	56.00	38.00	1000.0	9.000	N	ON	19.2
4.773750	17.17	---	56.00	38.83	1000.0	9.000	N	ON	19.1
4.996500	---	15.07	46.00	30.93	1000.0	9.000	N	ON	19.1
22.242750	23.48	---	60.00	36.52	1000.0	9.000	N	ON	19.4
22.578000	---	22.29	50.00	27.71	1000.0	9.000	N	ON	19.5



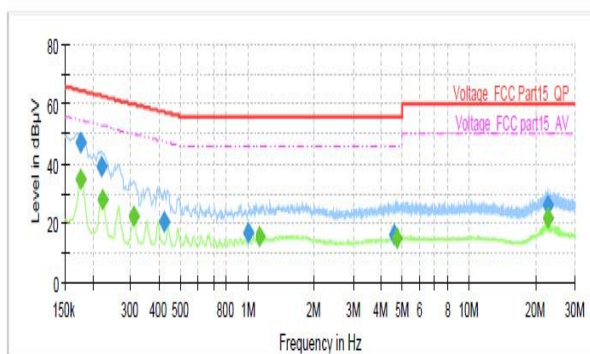
Basic Rate-CH78 L Line



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.188250	45.92	---	64.11	18.20	1000.0	9.000	L1	ON	19.2
0.192750	---	18.99	53.92	34.93	1000.0	9.000	L1	ON	19.2
0.219750	---	29.19	52.83	23.64	1000.0	9.000	L1	ON	19.1
0.219750	38.31	---	62.83	24.52	1000.0	9.000	L1	ON	19.1
0.395250	21.96	---	57.95	35.99	1000.0	9.000	L1	ON	19.2
0.397500	---	17.09	47.91	30.82	1000.0	9.000	L1	ON	19.2
0.672000	18.07	---	56.00	37.93	1000.0	9.000	L1	ON	19.3
0.672000	---	15.76	46.00	30.24	1000.0	9.000	L1	ON	19.3
4.033500	15.18	---	56.00	40.82	1000.0	9.000	L1	ON	19.1
4.105500	---	13.63	46.00	32.37	1000.0	9.000	L1	ON	19.1
22.578000	---	21.92	50.00	28.08	1000.0	9.000	L1	ON	19.5
23.961750	20.62	---	60.00	39.38	1000.0	9.000	L1	ON	19.7

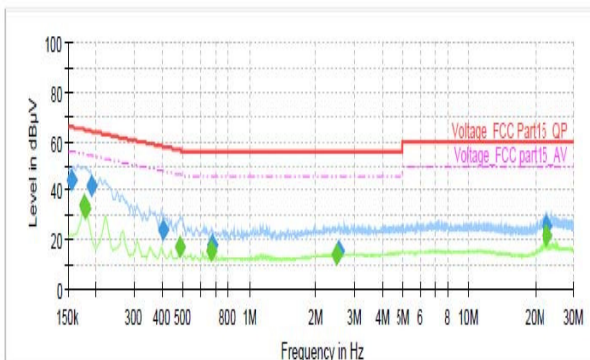
Basic Rate-CH78 N Line



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.177000	---	35.03	54.63	19.60	1000.0	9.000	N	ON	19.2
0.177000	47.19	---	64.63	17.43	1000.0	9.000	N	ON	19.2
0.219750	39.21	---	62.83	23.62	1000.0	9.000	N	ON	19.1
0.222000	---	27.88	52.74	24.87	1000.0	9.000	N	ON	19.1
0.397500	---	22.24	49.98	27.74	1000.0	9.000	N	ON	19.2
0.422250	20.55	---	57.40	36.86	1000.0	9.000	N	ON	19.2
1.005000	16.65	---	56.00	39.35	1000.0	9.000	N	ON	19.2
1.137750	---	15.66	46.00	30.34	1000.0	9.000	N	ON	19.2
4.996000	16.35	---	56.00	39.65	1000.0	9.000	N	ON	19.1
4.753500	---	14.58	46.00	31.42	1000.0	9.000	N	ON	19.1
22.575750	---	21.97	50.00	28.03	1000.0	9.000	N	ON	19.5
22.575750	25.89	---	60.00	34.11	1000.0	9.000	N	ON	19.5

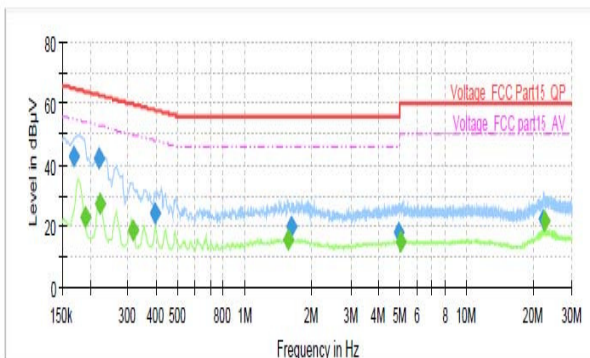
EDR-CH0 L Line



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.154500	43.84	---	65.75	21.91	1000.0	9.000	L1	ON	19.1
0.177000	---	34.23	54.63	20.39	1000.0	9.000	L1	ON	19.2
0.179250	---	32.58	54.52	21.94	1000.0	9.000	L1	ON	19.2
0.190500	41.90	---	64.02	22.11	1000.0	9.000	L1	ON	19.2
0.404250	23.94	---	57.77	33.83	1000.0	9.000	L1	ON	19.2
0.485250	---	16.84	46.25	29.41	1000.0	9.000	L1	ON	19.2
0.672000	---	15.83	46.00	30.17	1000.0	9.000	L1	ON	19.3
0.674250	17.60	---	56.00	38.40	1000.0	9.000	L1	ON	19.3
2.474250	---	13.88	46.00	32.12	1000.0	9.000	L1	ON	19.0
2.544000	15.74	---	56.00	40.26	1000.0	9.000	L1	ON	19.0
22.578000	---	21.71	50.00	28.29	1000.0	9.000	L1	ON	19.5
22.578000	25.31	---	60.00	34.69	1000.0	9.000	L1	ON	19.5

EDR-CH0 N Line

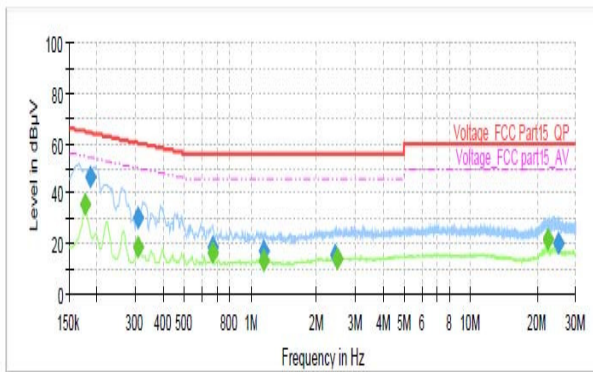


Final Result

Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.168000	43.02	---	65.06	22.03	1000.0	9.000	N	ON	19.2
0.190500	---	23.02	54.02	31.00	1000.0	9.000	N	ON	19.2
0.219750	42.20	---	62.83	20.63	1000.0	9.000	N	ON	19.1
0.222000	---	27.06	52.74	25.68	1000.0	9.000	N	ON	19.1
0.314250	---	18.67	49.86	31.18	1000.0	9.000	N	ON	19.2
0.397500	23.91	---	57.91	33.99	1000.0	9.000	N	ON	19.2
1.578750	---	15.81	46.00	30.19	1000.0	9.000	N	ON	19.2
1.632750	19.72	---	56.00	36.28	1000.0	9.000	N	ON	19.2
4.874000	17.68	---	56.00	38.32	1000.0	9.000	N	ON	19.1
5.668250	---	14.65	50.00	35.35	1000.0	9.000	N	ON	19.1
22.204500	22.03	---	60.00	37.97	1000.0	9.000	N	ON	19.4
22.578000	---	21.96	50.00	28.04	1000.0	9.000	N	ON	19.5



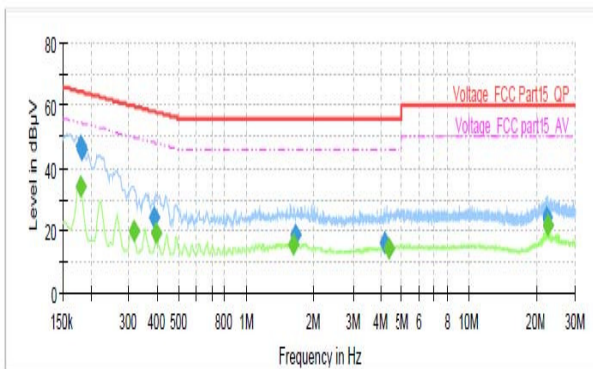
EDR-CH39 L Line



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.177000	---	35.29	54.63	19.33	1000.0	9.000	L1	ON	19.2
0.186000	46.29	---	64.21	17.92	1000.0	9.000	L1	ON	19.2
0.309750	29.89	---	59.98	30.09	1000.0	9.000	L1	ON	19.2
0.309750	---	18.95	49.98	31.03	1000.0	9.000	L1	ON	19.2
0.672000	---	15.97	46.00	30.03	1000.0	9.000	L1	ON	19.3
0.672000	18.23	---	56.00	37.77	1000.0	9.000	L1	ON	19.3
1.151250	16.83	---	56.00	39.17	1000.0	9.000	L1	ON	19.2
1.153500	---	13.48	46.00	32.52	1000.0	9.000	L1	ON	19.2
2.429250	15.81	---	56.00	40.19	1000.0	9.000	L1	ON	19.0
2.476500	---	13.81	46.00	32.19	1000.0	9.000	L1	ON	19.0
22.578000	---	21.73	50.00	28.27	1000.0	9.000	L1	ON	19.5
25.314000	20.04	---	60.00	39.96	1000.0	9.000	L1	ON	19.8

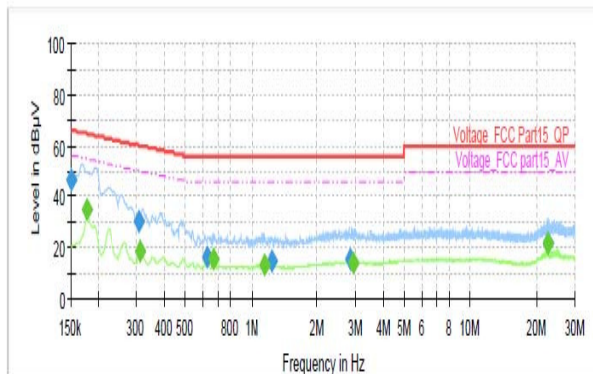
EDR-CH39 N Line



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.179250	47.26	---	64.52	17.26	1000.0	9.000	N	ON	19.2
0.179250	---	33.97	54.52	20.55	1000.0	9.000	N	ON	19.2
0.181500	45.66	---	64.42	18.75	1000.0	9.000	N	ON	19.2
0.314250	---	19.70	49.86	30.15	1000.0	9.000	N	ON	19.2
0.386250	24.18	---	58.14	33.96	1000.0	9.000	N	ON	19.2
0.397500	---	19.50	47.91	28.40	1000.0	9.000	N	ON	19.2
1.621500	---	15.64	46.00	30.36	1000.0	9.000	N	ON	19.2
1.655250	18.43	---	56.00	37.57	1000.0	9.000	N	ON	19.2
4.164000	15.87	---	56.00	40.13	1000.0	9.000	N	ON	19.1
4.332750	---	13.96	46.00	32.04	1000.0	9.000	N	ON	19.1
22.375500	24.42	---	60.00	35.58	1000.0	9.000	N	ON	19.4
22.578000	---	21.59	50.00	28.41	1000.0	9.000	N	ON	19.5

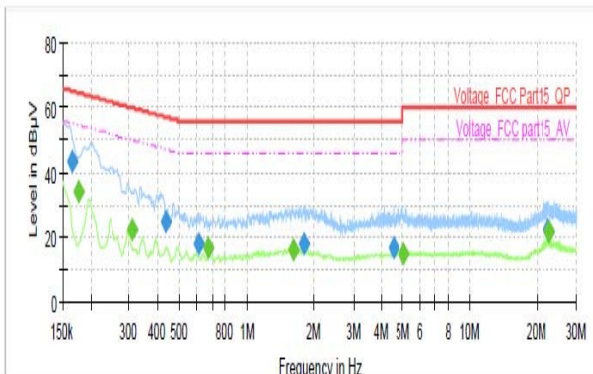
EDR-CH78 L Line



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	46.56	---	66.00	19.44	1000.0	9.000	L1	ON	19.1
0.177000	---	35.12	54.63	19.51	1000.0	9.000	L1	ON	19.2
0.309750	30.02	---	59.98	29.96	1000.0	9.000	L1	ON	19.2
0.312000	---	18.91	49.92	31.00	1000.0	9.000	L1	ON	19.2
0.629250	16.03	---	56.00	39.97	1000.0	9.000	L1	ON	19.3
0.672000	---	15.84	46.00	30.16	1000.0	9.000	L1	ON	19.3
1.153500	---	13.48	46.00	32.52	1000.0	9.000	L1	ON	19.2
1.243500	15.11	---	56.00	40.89	1000.0	9.000	L1	ON	19.2
2.838750	15.51	---	56.00	40.49	1000.0	9.000	L1	ON	19.0
2.942250	---	13.87	46.00	32.13	1000.0	9.000	L1	ON	19.1
22.578000	---	21.76	50.00	28.24	1000.0	9.000	L1	ON	19.5
22.611750	21.62	---	60.00	38.38	1000.0	9.000	L1	ON	19.5

EDR-CH78 N Line



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.165750	43.38	---	65.17	21.79	1000.0	9.000	N	ON	19.2
0.177000	---	33.85	54.63	20.78	1000.0	9.000	N	ON	19.2
0.309750	---	22.10	49.98	27.88	1000.0	9.000	N	ON	19.2
0.438000	24.50	---	57.10	32.60	1000.0	9.000	N	ON	19.2
0.609000	18.19	---	56.00	37.81	1000.0	9.000	N	ON	19.3
0.672000	---	16.59	46.00	29.41	1000.0	9.000	N	ON	19.3
1.630500	---	15.86	46.00	30.14	1000.0	9.000	N	ON	19.2
1.682250	18.25	---	56.00	37.75	1000.0	9.000	N	ON	19.2
4.548750	16.56	---	56.00	39.44	1000.0	9.000	N	ON	19.1
5.070750	---	15.02	50.00	34.98	1000.0	9.000	N	ON	19.1
22.431750	22.06	---	60.00	37.94	1000.0	9.000	N	ON	19.4
22.578000	---	21.70	50.00	28.30	1000.0	9.000	N	ON	19.5

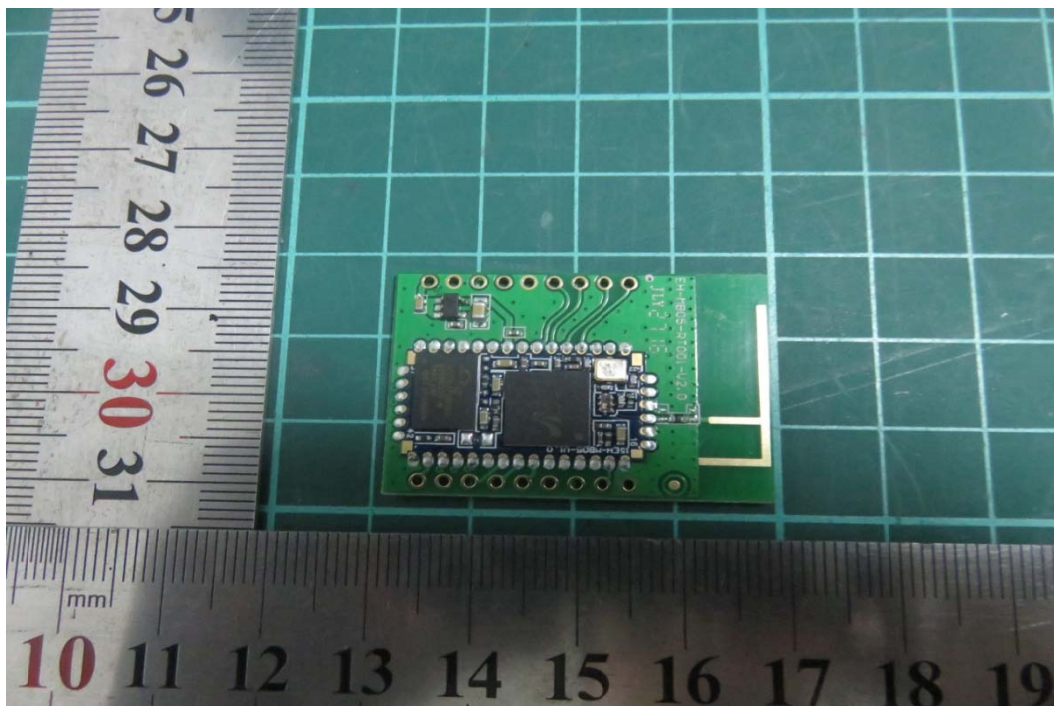
5 Main Test Instruments

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	SCHWARZBEC K	1519-047	2014-02-29	2017-02-28
Loop Antenna	FMZB1519	SCHWARZBEC K	1519-047	2017-02-27	2018-02-26
EMI Test Receiver	ESCS30	R&S	100138	2016-12-16	2017-12-15
Artificial main network	ENV216	R&S	101171	2016-12-17	2019-12-16
Signal Analyzer	FSV30	R&S	100815	2016-12-16	2017-12-15
EMI Test Receiver	ESCI	R&S	100948	2016-06-01	2017-05-31
TRILOG Broadband Antenna	VULB 9163	Schwarzbeck	9163-201	2014-12-06	2017-12-05
Double Ridged Waveguide Horn Antenna	HF907	R&S	100126	2014-12-06	2017-12-05
Power Splitter	SHX-GF2-2-13	Hua Xiang	10120101	NA	NA
Spectrum Analyzer	N9010A	Agilent	MY47191109	2016-05-21	2017-05-20
Standard Gain Horn	3160-09	ETS-Lindgren	00102644	2015-01-30	2018-01-29
RF Cable	SMA 15cm	Agilent	0001	2017-02-06	2017-08-05

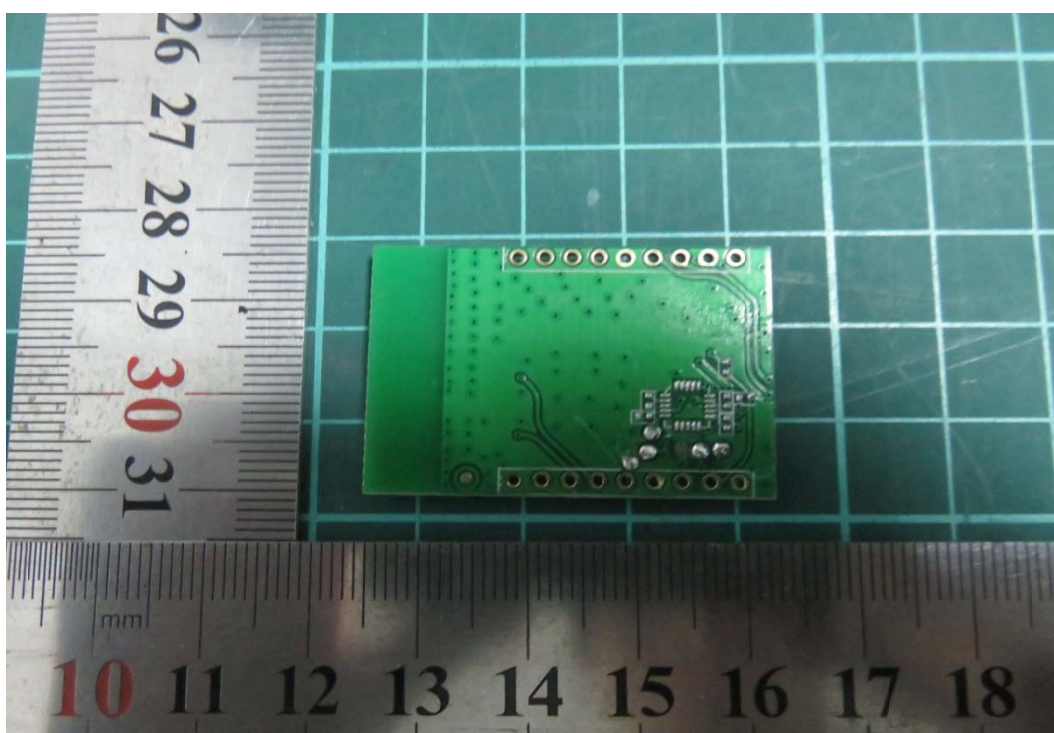
*****END OF REPORT *****

ANNEX A: EUT Appearance and Test Setup

A.1 EUT Appearance



Front Side



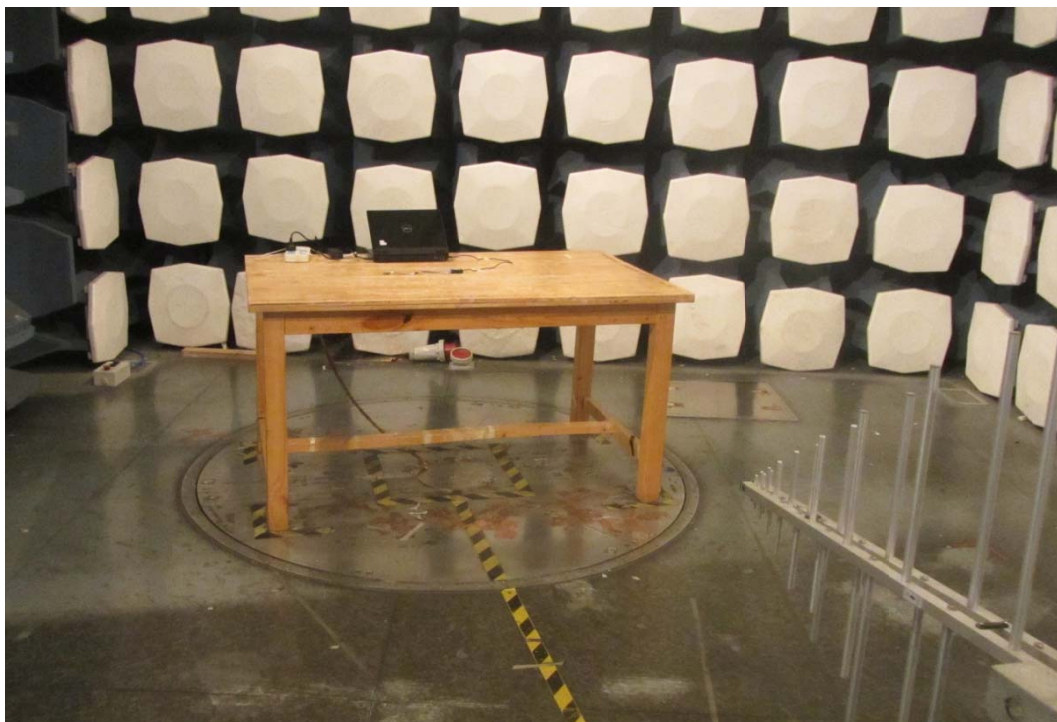
Back Side
a: EUT



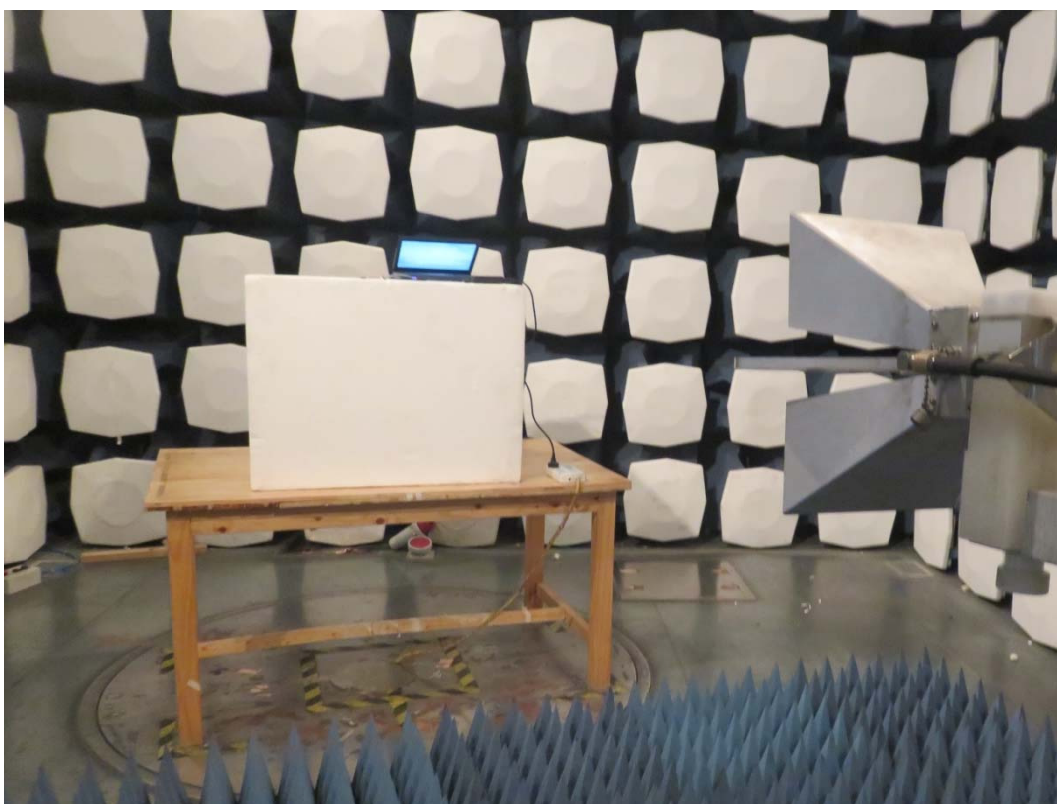
b: USB Cable

Picture 1 EUT and Accessory

A.2 Test Setup



Below 1GHz



Above 1GHz

Picture 2 Radiated Emission Test Setup



Picture 3 Conducted Emission Test Setup