

# **FCC Test Report**

Report No.: AGC03285210801FE02

FCC ID : 2AMW0FSC-BT986

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION: Bluetooth Module

**BRAND NAME**: Feasycom

**MODEL NAME** : FSC-BT986

**APPLICANT**: Shenzhen Feasycom Technology Co., LTD

**DATE OF ISSUE** : Oct. 21, 2021

**STANDARD(S)** : FCC Part 15.247

**REPORT VERSION**: V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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# REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/ /	Oct. 21, 2021	Valid	Initial Release

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# 1. VERIFICATION OF COMPLIANCE

Shenzhen Feasycom Technology Co., LTD	
Rm 508, Building A, Fenghuang Zhigu, No.50, Tiezai Road, Xixiang, Baoan District, Shenzhen, 518102, China	
Shenzhen Feasycom Technology Co., LTD	
Rm 508, Building A, Fenghuang Zhigu, No.50, Tiezai Road, Xixiang, Baoan District, Shenzhen, 518102, China	
Shenzhen Feasycom Technology Co., LTD	
Rm 508, Building A, Fenghuang Zhigu, No.50, Tiezai Road, Xixiang, Baoan District, Shenzhen, 518102, China	
Bluetooth Module	
Feasycom	
FSC-BT986	
te of test Sep. 23, 2021 to Oct. 21, 2021	
No any deviation from the test method	
Condition of Test Sample Normal	
Pass	
AGCRT-US-BLE/RF	

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC part 15.247.

Prepared By	kerny chang	
' CC	Kelly Cheng (Project Engineer)	Oct. 21, 2021
Reviewed By	Calin Lin	
Sec 10	Calvin Liu (Reviewer)	Oct. 21, 2021
Approved By	Max Zhang	
· AGO	Max Zhang (Authorized Officer)	Oct. 21, 2021

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# 2. GENERAL INFORMATION

#### 2.1. PRODUCT DESCRIPTION

The EUT is designed as a "Bluetooth Module". It is designed by way of utilizing the GFSK technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.402 GHz to 2.480GHz
RF Output Power	0.926dBm (Max)
Bluetooth Version	V5.2
Modulation	BR □GFSK, EDR □π /4-DQPSK, □8DPSK BLE ☑GFSK 1Mbps □GFSK 2Mbps
Number of channels 40 Channel	
Antenna Designation	PCB Antenna (Comply with requirements of the FCC part 15.203)
Antenna Gain	2dBi
Hardware Version	V1.3
Software Version	V1.3.1
Power Supply	DC 3.3V

#### 2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
	0	2402 MHz
100 CO	1	2404 MHz
2400~2483.5MHz	CO CO	100
cC c	38	2478 MHz
700	39	2480 MHz

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# 2.3. RELATED SUBMITTAL(S)/GRANT(S)

This submittal(s) (test report) is intended for **FCC ID: 2AMWOFSC-BT986** filing to comply with the FCC Part 15.247 requirements.

#### 2.4. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

#### 2.5. SPECIAL ACCESSORIES

Refer to section 5.2.

# 2.6. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

#### 2.7. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device. For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.

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# 3. MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ±U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Item	Measurement Uncertainty
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 3.1 \text{ dB}$
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 4.0 \text{ dB}$
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.8 \text{ dB}$
Uncertainty of total RF power, conducted	$U_c = \pm 0.8 \text{ dB}$
Uncertainty of RF power density, conducted	$U_c = \pm 2.6 \text{ dB}$
Uncertainty of spurious emissions, conducted	$U_c = \pm 2 \%$
Uncertainty of Occupied Channel Bandwidth	$U_c = \pm 2 \%$

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#### 4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION	
1	Low channel TX	
2	Middle channel TX	
3	High channel TX	

#### Note:

- 1. Only the result of the worst case was recorded in the report, if no other cases.
- 2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
- 3. For Conducted Test method, a temporary antenna connector is provided by the manufacture.

Software Setting BT98X FCC Tool V1.3 Serial Setting COM: 14:59:58.272] FCC Test Success Open 15:03:03.294] FCC Test Success 115200 Baud: 15:03:44.586] FCC Test Success [15:05:06.619] FCC Test Success FCC Config 15:05:40.848] FCC Test Success 15:06:16.634] FCC Test Success 2402Mhz 🔻 Frequency: [15:07:01.262] FCC Test Success ModulationRate: GFSK 15:08:35.413] FCC Test Success 15:09:03.587] FCC Test Success [15:12:49.427] FCC Test Success [15:16:54.758] FCC Test Success RX TX/RX: [15:20:46.095] FCC Test Success BLE BT/BLE: DATA Carrier/Data: DH5 Data Length: FIX Freq Fix/Hop: 7dbm Tx Power:

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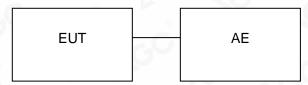


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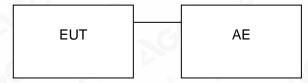
# 5. SYSTEM TEST CONFIGURATION

#### **5.1. CONFIGURATION OF TESTED SYSTEM**

Radiated Emission Configure:



# Conducted Emission Configure:



#### **5.2. EQUIPMENT USED IN TESTED SYSTEM**

Item	Equipment	Model No.	ID or Specification	Remark
1	Bluetooth Module	FSC-BT986	2AMWOFSC-BT986	EUT
2	PC	N/A	N/A	AE

# **5.3. SUMMARY OF TEST RESULTS**

FCC RULES	DESCRIPTION OF TEST	RESULT
15.247 (b)(3)	Peak Output Power	Compliant
15.247 (a)(2)	6 dB Bandwidth	Compliant
15.247 (d)	Conducted Spurious Emission	Compliant
15.247 (e)	Maximum Conducted Output Power Density	Compliant
15.209	Radiated Emission	Compliant
15.207	Conducted Emission	Compliant

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## 6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd	
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China	
Designation Number	CN1259	
FCC Test Firm Registration Number	975832	
A2LA Cert. No.	5054.02	
Description	Attestation of Global Compliance (Shenzhen) Co., Ltd is accredited by A2LA	

# TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due		
TEST RECEIVER	R&S	ESPI	101206	May 15, 2021	May 14, 2022		
LISN	R&S	ESH2-Z5	100086	May 15, 2021	May 14, 2022		
Test software	R&S	ES-K1(Ver.V1.71)	N/A	N/A	N/A		

#### **TEST EQUIPMENT OF RADIATED EMISSION TEST**

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	May 15, 2021	May 14, 2022
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 07, 2020	Dec. 06, 2021
2.4GHz Filter	EM Electronics	2400-2500MHz	N/A	Mar. 23, 2020	Mar. 22, 2022
Attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Oct. 09, 2020	Oct. 08, 2023
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	May 22, 2020	May 21, 2022
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Apr. 23, 2021	Apr. 22, 2023
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 03, 2020	Sep. 02, 2022
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 08, 2021	Jan. 07, 2023
Test software	Tonscend	JS32-RE (Ver.2.5)	N/A	N/A	N/A

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#### 7. PEAK OUTPUT POWER

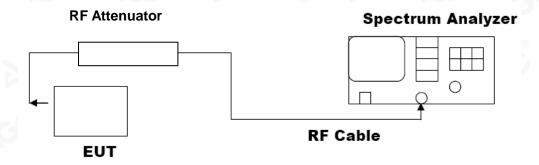
#### 7.1. MEASUREMENT PROCEDURE

For peak power test:

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. RBW ≥ DTS bandwidth
- 3. VBW≥3\*RBW.
- 4. SPAN≥VBW.
- 5. Sweep: Auto.
- 6. Detector function: Peak.
- 7. Trace: Max hold.

Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power, after any corrections for external attenuators and cables.

# 7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) PEAK POWER TEST SETUP



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g/Inspection he test results he test report.

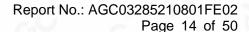
#### 7.3. LIMITS AND MEASUREMENT RESULT

Test Data of Conducted Output Power						
Test Mode	Test Channel (MHz)	Peak Power (dBm)	Limits (dBm)	Pass or Fail		
0	2402	0.926	≤30	Pass		
GFSK 1M	2440	0.560	≤30	Pass		
8	2480	-0.207	≤30	Pass		

**Test Graphs of Conducted Output Power** 



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#### 8. BANDWIDTH

#### 8.1. MEASUREMENT PROCEDURE

#### 6dB bandwidth:

- Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 kHz, VBW ≥3×RBW.
- 4. Set SPA Trace 1 Max hold, then View.

#### Occupied bandwidth:

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hoping channel
  The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video
  bandwidth (VBW) shall be approximately three times RBW; Sweep = auto; Detector function = peak
- 4. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

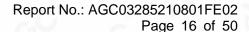
#### 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

#### 8.3. LIMITS AND MEASUREMENT RESULTS

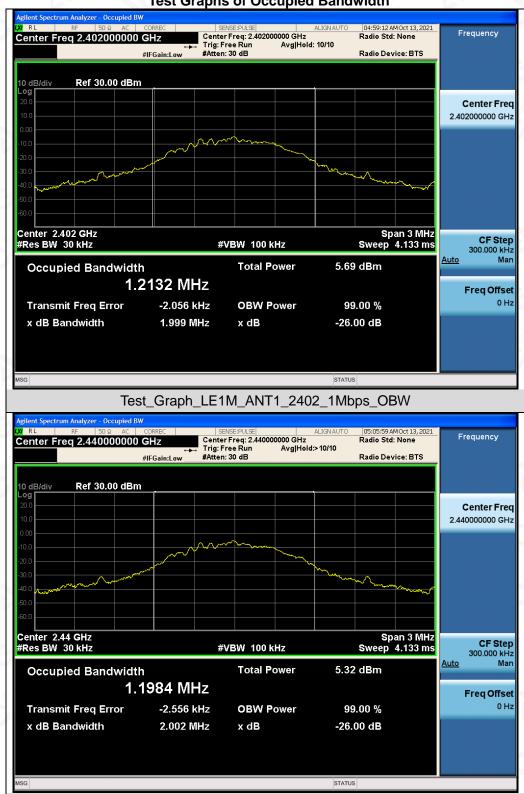
Test Data of Occupied Bandwidth and DTS Bandwidth							
Test Mode	Mode Test Channel 99% Occupied -6dB Limits Bandwidth (MHz) Bandwidth (MHz) Pass						
- 60	2402	1.213	0.678	≥0.5	Pass		
GFSK 1M	2440	1.198	0.665	≥0.5	Pass		
®	2480	1.199	0.653	≥0.5	Pass		

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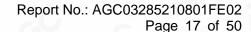


**Test Graphs of Occupied Bandwidth** 



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Test\_Graph\_LE1M\_ANT1\_2440\_1Mbps\_OBW



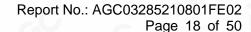






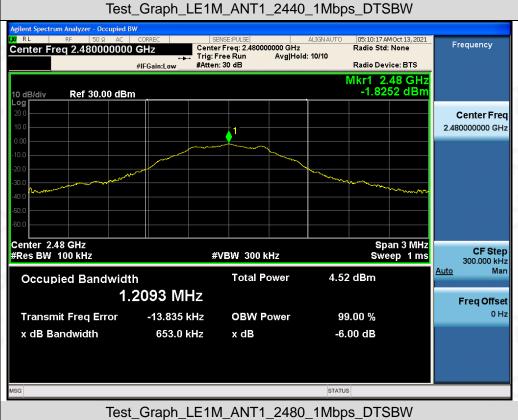


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## 9. CONDUCTED SPURIOUS EMISSION

#### 9.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

# 9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

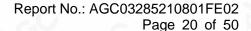
#### 9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

# 9.4. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT						
Annii alia i inii	Measurement Result					
Applicable Limits	Test Data	Criteria				
In any 100 kHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.	At least -20dBc than the reference level	PASS				

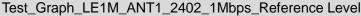
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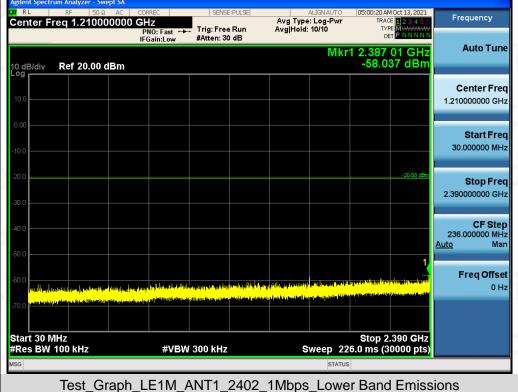




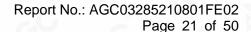
Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands







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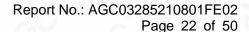
IM Analyzer - Swept SA

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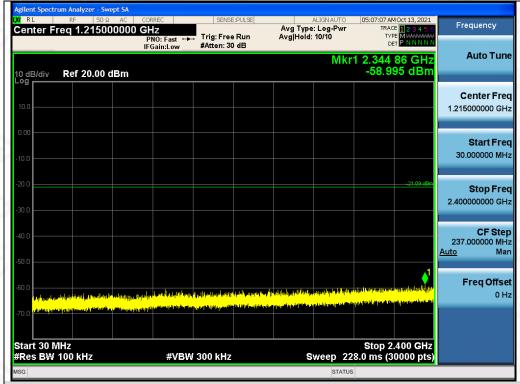


Test\_Graph\_LE1M\_ANT1\_2440\_1Mbps\_Reference Level

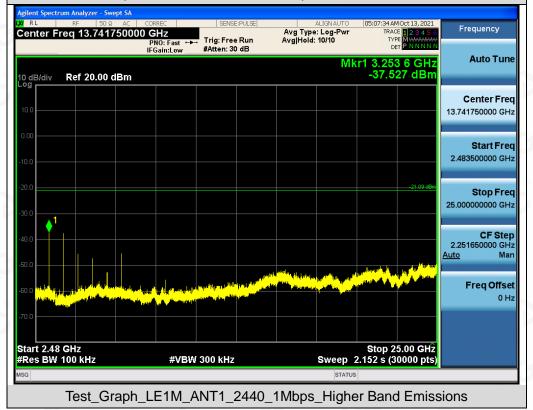
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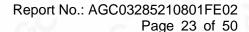




Test\_Graph\_LE1M\_ANT1\_2440\_1Mbps\_Lower Band Emissions



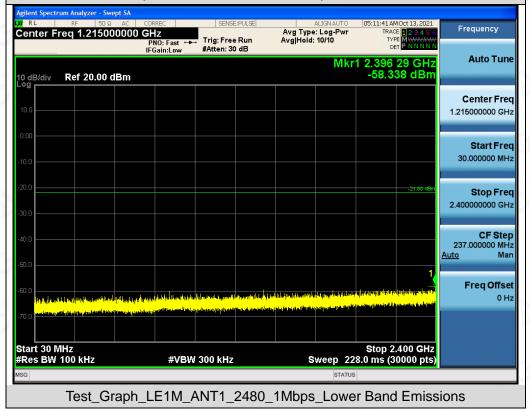
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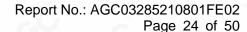




Test\_Graph\_LE1M\_ANT1\_2480\_1Mbps\_Reference Level

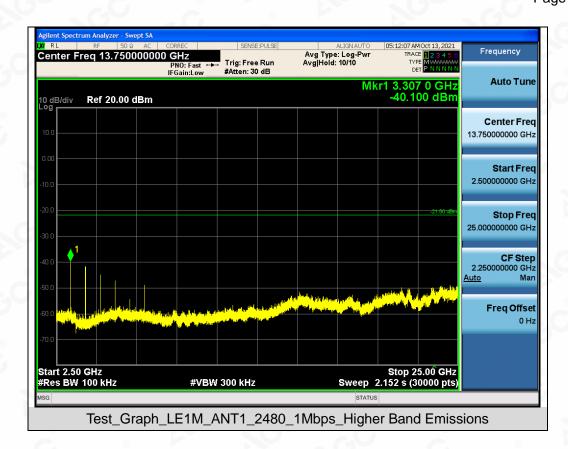


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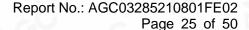


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The test results
the test report.





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Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands



Test\_Graph\_LE1M\_ANT1\_2402\_1Mbps\_Lower Band Edge Emissions



Test\_Graph\_LE1M\_ANT1\_2480\_1Mbps\_Higher Band Edge Emissions

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#### 10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

#### 10.1. MEASUREMENT PROCEDURE

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set the SPA Trace 1 Max hold, then View.

Note: The method of PKPSD in the KDB 558074 item 8.4 was used in this testing.

# 10.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer to Section 7.2.

#### 10.3. MEASUREMENT EQUIPMENT USED

Refer to Section 6.

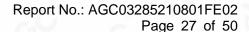
#### 10.4. LIMITS AND MEASUREMENT RESULT

Test Data of Conducted Output Power Spectral Density						
Test Mode	Test Mode Test Channel Power density Limit (MHz) (dBm/3kHz) Pass or Fair					
	2402	-12.161	≪8	Pass		
GFSK 1M	2440	-12.132	≪8	Pass		
	2480	-12.714	≪8	Pass		

**Test Graphs of Conducted Output Power Spectral Density** 

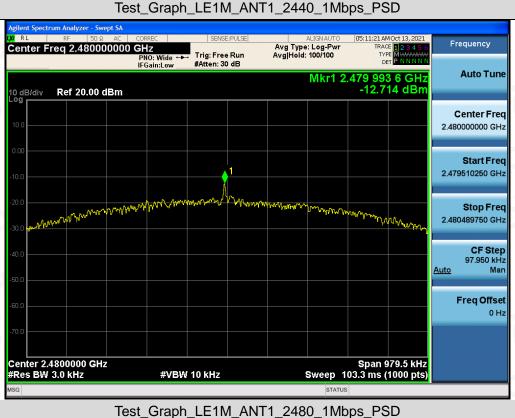


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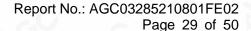
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#### 11. RADIATED EMISSION

#### 11.1. MEASUREMENT PROCEDURE

- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8.If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.

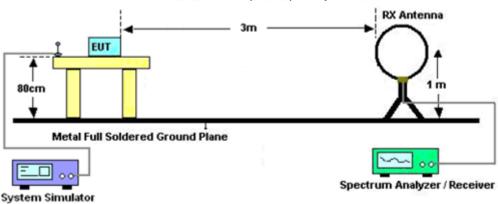
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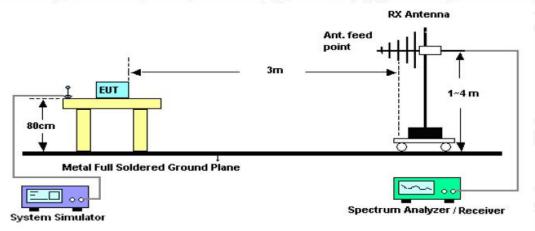


#### 11.2. TEST SETUP

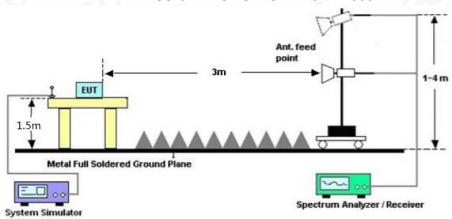
# Radiated Emission Test-Setup Frequency Below 30MHz



#### RADIATED EMISSION TEST SETUP 30MHz-1000MHz



#### RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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#### 11.3. LIMITS AND MEASUREMENT RESULT

15.209 Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)		
0.009~0.490	2400/F(kHz)	300		
0.490~1.705	24000/F(kHz)	30		
1.705~30.0	30	30		
30~88	100	3		
88~216	150	3		
216~960	200	3		
Above 960	500	3		

Note: All modes were tested for restricted band radiated emission, the test records reported below are the worst result compared to other modes.

#### 11.4. TEST RESULT

#### Radiated emission below 30MHz

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

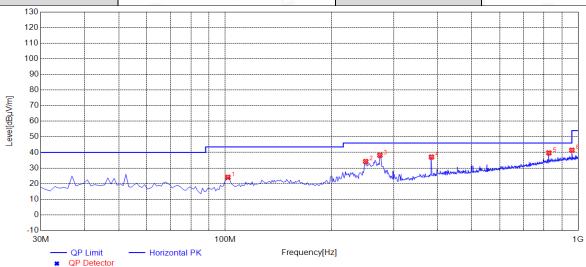
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# Radiated emission from 30MHz to 1000MHz

EUT	Bluetooth Module	Model Name	FSC-BT986
Temperature	25° C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	101.7800	24.10	11.56	43.50	19.40	200	1	Horizontal
2	250.1900	34.19	14.69	46.00	11.81	100	292	Horizontal
3	274.4400	38.18	15.79	46.00	7.82	100	298	Horizontal
4	384.0500	37.05	19.23	46.00	8.95	100	24	Horizontal
5	826.3700	39.71	28.90	46.00	6.29	200	261	Horizontal
6	960.2300	41.42	30.73	54.00	12.58	100	358	Horizontal

**RESULT: PASS** 

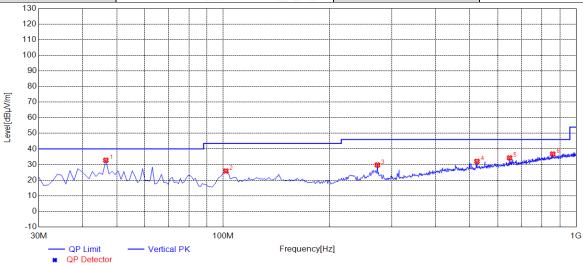
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/Inspection The test results

EUT	Bluetooth Module	Model Name	FSC-BT986
Temperature	25° C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	46.4900	32.78	11.77	40.00	7.22	100	200	Vertical
2	101.7800	25.84	11.56	43.50	17.66	100	231	Vertical
3	273.4700	29.73	15.71	46.00	16.27	100	2	Vertical
4	523.7300	32.05	22.69	46.00	13.95	100	163	Vertical
5	647.8900	34.31	25.12	46.00	11.69	100	122	Vertical
6	858.3800	36.76	29.49	46.00	9.24	100	217	Vertical

# RESULT: PASS Note:

1. Factor=Antenna Factor + Cable loss, Margin= Limit-Level.

2. All test modes had been tested. The mode 1 is the worst case and recorded in the report.

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# Radiated emission above 1GHz

EUT	Bluetooth Module	Model Name	FSC-BT986
Temperature	25° C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4804.000	43.42	0.08	43.5	74	-30.5	peak
4804.000	35.35	0.08	35.43	54	-18.57	AVG
7206.000	38.68	2.21	40.89	74	-33.11	peak
7206.000	31.27	2.21	33.48	54	-20.52	AVG
		8				8
			8			

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

EUT	Bluetooth Module	Model Name	FSC-BT986
Temperature	25° C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Tree
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	- Value Type
4804.000	44.37	0.08	44.45	74	-29.55	peak
4804.000	34.86	0.08	34.94	54 💿	-19.06	AVG
7206.000	38.29	2.21	40.5	74	-33.5	peak
7206.000	30.63	2.21 ®	32.84	54	-21.16	AVG
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Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

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g/Inspection he test results he test report.

EUT	Bluetooth Module	Model Name	FSC-BT986
Temperature	25° C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4880.000	44.66	0.14	44.8	74	-29.2	peak
4880.000	35.73	0.14	35.87	54	-18.13	AVG
7320.000	39.75	2.36	42.11	74	-31.89	peak
7320.000	31.52	2.36	33.88	54	-20.12	AVG
					· ·	

EUT	Bluetooth Module	Model Name	FSC-BT986
Temperature	25° C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin ©	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4880.000	45.14	0.14	45.28	74	-28.72	peak
4880.000	38.08	0.14	38.22	54 🌑	-15.78	AVG
7320.000	40.46	2.36	42.82	74	-31.18	peak
7320.000	32.44	2.36	34.8	54	-19.2	AVG
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Factor = Antenna Factor + Cable Loss - Pre-amplifier.

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EUT	Bluetooth Module	Model Name	FSC-BT986
Temperature	25° C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4960.000	44.69	0.22	44.91	74	-29.09	peak
4960.000	35.41	0.22	35.63	54	-18.37	AVG
7440.000	38.78	2.64	41.42	74	-32.58	peak
7440.000	29.43	2.64	32.07	54	-21.93	AVG
-0				-0		
emark:	6		6	100	. 40	

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

EUT	Bluetooth Module	Model Name	FSC-BT986
Temperature	25° C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4960.000	42.97	0.22	43.19	74	-30.81	peak
4960.000	34.04	0.22	34.26	54	-19.74	AVG
7440.000	38.65	2.64	41.29	74 🏻	-32.71	peak
7440.000	29.71	2.64	32.35	54	-21.65	AVG
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#### **RESULT: PASS**

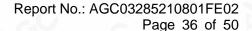
#### Note:

The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin=Level-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

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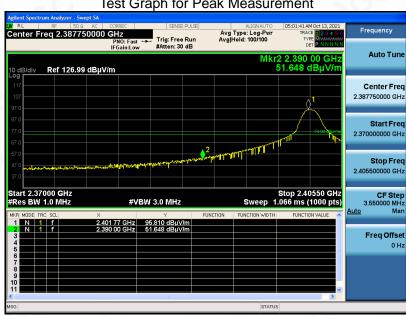




Test result for band edge emission at restricted bands

EUT	Bluetooth Module	Model Name	FSC-BT986
Temperature	25° C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Test Graph for Peak Measurement

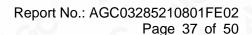


Test Graph for Average Measurement



**RESULT: PASS** 

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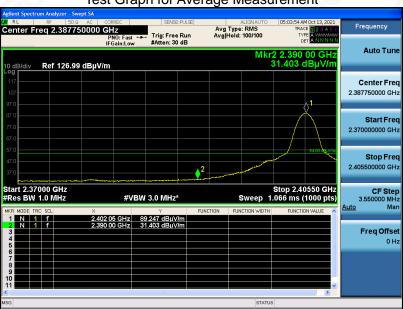


**EUT** Bluetooth Module FSC-BT986 **Model Name** 25° C **Temperature Relative Humidity** 60% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 1 **Antenna** Vertical

Test Graph for Peak Measurement

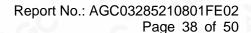


Test Graph for Average Measurement



**RESULT: PASS** 

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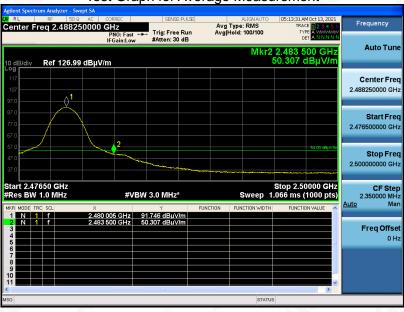


**EUT** Bluetooth Module FSC-BT986 **Model Name** 25° C **Temperature Relative Humidity** 60% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 3 **Antenna** Horizontal

Test Graph for Peak Measurement

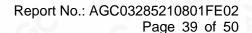


Test Graph for Average Measurement



**RESULT: PASS** 

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The test results

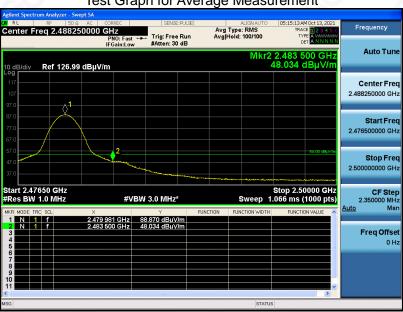


**EUT** Bluetooth Module FSC-BT986 **Model Name** 25° C **Temperature Relative Humidity** 60% 960hPa Normal Voltage **Pressure Test Voltage Test Mode** Mode 3 **Antenna** Vertical

Test Graph for Peak Measurement







#### **RESULT: PASS**

Note: The factor had been edited in the "Input Correction" of the Spectrum Analyzer.

Compliance Dedicated Festi Any report having not been signed by authorized approver, or having been altered without authorization, or naving not been signed by authorized approver, or having been altered without authorization, or naving not been signed by according to be signed by according to the test results are not permitted without the written authorization of AGC. The test results are not permitted to AGC within 15day after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.



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/Inspection The test results

he test report.

# 12. LINE CONDUCTED EMISSION TEST

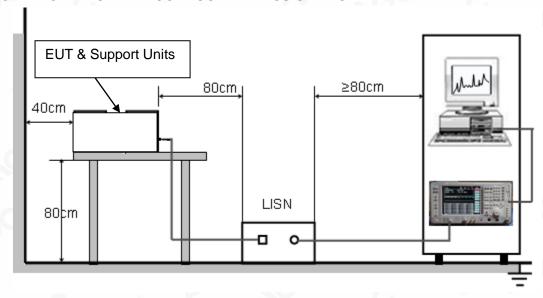
#### 12.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage					
	Q.P.( dBuV)	Average( dBuV)				
150kHz~500kHz	66-56	56-46				
500kHz~5MHz	56	46				
5MHz~30MHz	60	50				

#### Note:

- 1. The lower limit shall apply at the transition frequency.
- 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

# 12.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



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#### 12.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipment received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received DC 5V power from adapter which received AC120V/60Hz power from a LISN.
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

#### 12.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

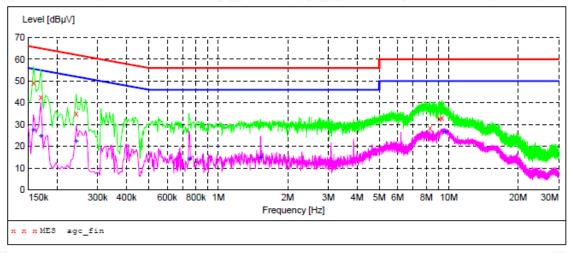
- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- 2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less 2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case condition(s) was reported on the Summary Data page.

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#### 12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

#### Line Conducted Emission Test Line 1-L



#### MEASUREMENT RESULT: "agc fin"

2021/9/3 18:58 Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.158000 0.170000 0.242000 8.298000 9.126000 9.338000	49.00 42.40 35.20 28.40 32.60 33.00	7.6 7.6 7.7 9.5 9.7 9.7	66 65 62 60 60	16.6 22.6 26.8 31.6 27.4 27.0	QP QP	L1 L1 L1 L1 L1

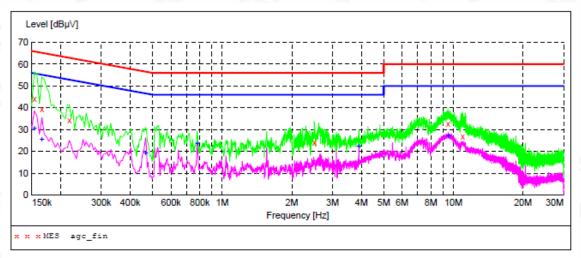
# MEASUREMENT RESULT: "agc fin2"

2021/9/3 18:58 Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.242000 0.750000	27.60 25.00 22.40 14.20 15.00 27.00	7.6 7.6 7.7 8.1 8.2 9.7	56 55 52 46 46 50	30.0 29.6 31.8 31.0	AV AV	L1 L1 L1 L1 L1

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#### Line Conducted Emission Test Line 2-N



# MEASUREMENT RESULT: "agc fin"

2021/9/3 19:03 Frequency MHz		Transd dB	Limit dBµV	Margin dB	Detector	Line
0.154000	44.20	7.6	66	21.6	QP	N
0.166000	39.50	7.6	65	25.7	QP	N
0.218000	34.10	7.7	63	28.8	QP	N
2.502000	23.90	8.4	56	32.1	QP	N
9.470000	32.90	9.7	60	27.1	QP	N
10.974000	26.80	10.0	60	33.2	QP	N

# MEASUREMENT RESULT: "agc\_fin2"

	/3 19:03 quency MHz		Transd dB	Limit dBµV	Margin dB	Detector	Line
0.	154000	30.70	7.6	56	25.1	AV	N
0.	166000	25.70	7.6	55	29.5	AV	N
0.	466000	19.40	8.0	47	27.2	AV	N
0.	782000	23.80	8.1	46	22.2	AV	N
3.	898000	22.70	8.6	46	23.3	AV	N
9.	494000	27.10	9.7	50	22.9	AV	N

# **RESULT: PASS**

Note: All the test modes had been tested, the mode 1 was the worst case. Only the data of the worst case would be record in this test report.

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