RADIO PRE-TEST REPORT

Product	:	5.8 GHz Radar Sensor Module
Model Name	:	BM22S4421-1
Test Regulation	:	FCC 47 CFR Part 15 Subpart C (Section 15.245)
Received Date	:	2023/6/15
Test Date	:	2023/6/15
Issued Date	:	2023/9/13
Issued By	:	Underwriters Laboratories Taiwan Co., Ltd. Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

PRE-TEST REPORT

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PRE-TEST REPORT

1. Attestation of Test Results

APPLICANT:	Holtek Semiconductor Inc No.3, Creation Rd. II, Science park, Hsinchu 300, Taiwan, R.O.C.
EUT DESCRIPTION:	5.8 GHz Radar Sensor Module
MODEL:	BM22S4421-1
SAMPLE STAGE:	Engineering Verification Test sample
DATE of TESTED:	2023/6/15

APPLICABLE STANDARDS	
STANDARD	**Test Results**
FCC 47 CFR PART 15 Subpart C (Section 15.245)	PASS

Underwriters Laboratories Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Underwriters Laboratories Taiwan Co., Ltd. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Underwriters Laboratories Taiwan Co., Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Underwriters Laboratories Taiwan Co., Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Prepared By:

Sally Lu Date : 2023/9/13
Project Handler

Approved and Authorized By:

Eric Lee Date : 2023/9/13
Senior Laboratory Engineer

PRE-TEST REPORT

2. Summary of Test Results

FCC Clause	Test Item	Result
15.215 (c)	20dB Bandwidth	PASS
15.209 15.245 15.245 (b)	Radiated Emission Test Band Edge Measurement Limit: 50dB less than the peak value of fundamental frequency or meet radiated emission limit in section 15.209	PASS

PRE-TEST REPORT

3. Test Methodology and Reference Procedures

The tests documented in this report were performed in accordance with 47 CFR FCC Part 2, KDB414788 D01 Radiated Test Site v01r01 and ANSI C63.10-2013.

4. Facilities and Accreditation

Test Location	Underwriters Laboratories Taiwan Co., Ltd.
Address	Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan
Accreditation Certificate	Underwriters Laboratories Taiwan Co., Ltd. is accredited by TAF, Laboratory Code 3398.

PRE-TEST REPORT

5. Measurement Uncertainty

For statement of conformity, Simple acceptance (Section 4.3.4 of ISO Guide 115) was applied as decision rule for measurement in this test report.

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor k=2.

Determining compliance based on the results of the compliance measurement, not considering measurement instrumentation uncertainty.

Measurement	Frequency	Uncertainty
Conducted disturbance at mains terminals ports	150kHz ~ 30MHz	±3.1 dB
RF Conducted	9 kHz - 40GHz	±2.3 dB
Radiated disturbance below 30MHz	9 kHz - 30 MHz	±3.2 dB
Radiated disturbance below 1 GHz	30MHz ~ 1GHz	±6.1 dB
Radiated disturbance above 1 GHz	1GHz ~ 40GHz	±5.1 dB

PRE-TEST REPORT

6. Equipment under Test

6.1. Description of EUT

Product	5.8 GHz Radar Sensor Module
Model Name	BM22S4421-1
Operating Frequency	5800 MHz
SModulation	GFSK

6.2. Channel List

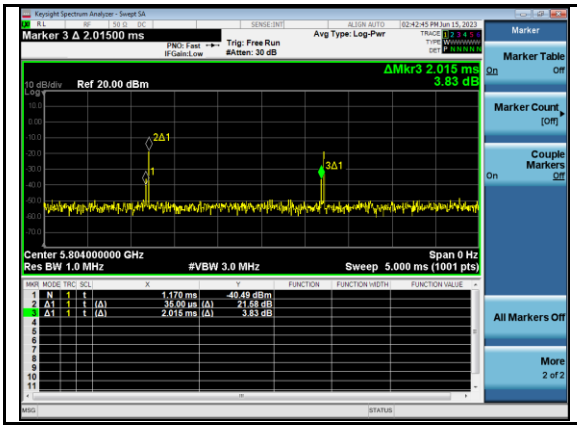
1 channel is provided to this EUT:

Channel	Frequency (MHz)
0	5800

PRE-TEST REPORT

6.3. Duty Cycle

Mode	On time (ms)	Period (ms)	Duty Cycle (%)	Duty Factor (dB)	1/B Min VBW (KHz)
SRD	0.035	2.015	1.74	17.60	30



PRE-TEST REPORT

7. Test Result

7.1. Radiated Spurious Emission

Requirements

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following

Fundamental Frequency (MHz)	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (millivolts/meter)
902 ~ 928 MHz	500	1.6
2435 ~ 2465 MHz	500	1.6
5785 ~ 5815 MHz	500	1.6
10500 ~ 10550 MHz	2500	25.0
24075 ~ 24175 MHz	2500	25.0

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits as below table, whichever is the lesser attenuation

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：

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

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Test Procedures

[For 9 kHz ~ 30 MHz]

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. For measurement below 30MHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

NOTE:
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

[For above 30 MHz]

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
f. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

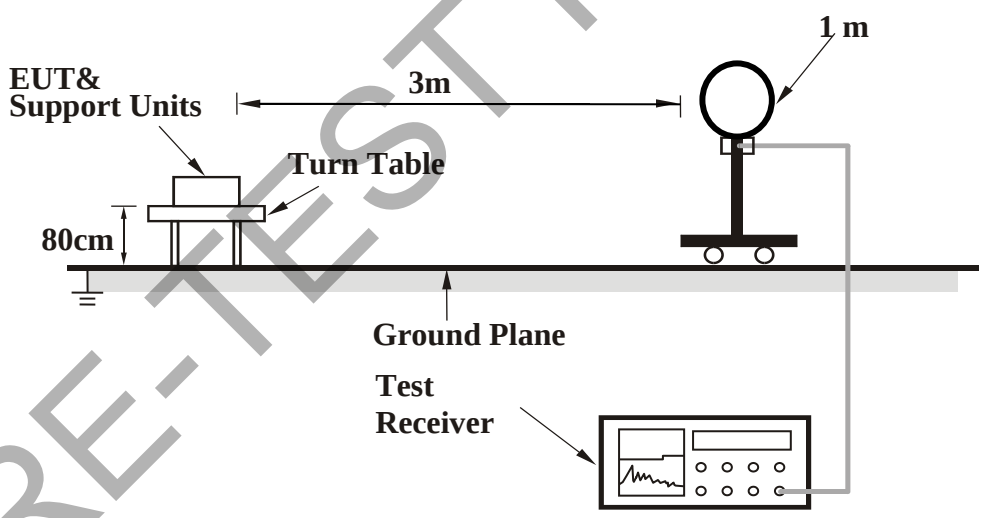
PRE-TEST REPORT

Note:

a. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
b. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
c. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
d. All modes of operation were investigated (includes all external accessories) and the worst-case emissions are reported.
e. Test data of Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
f. Test data of Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
g. Test data of Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
h. Test data of Notation "@" = Fundamental Frequency
i. Test data of Notation " * " = The peak result under 20 dB above and complies with AVG limit, AVG result is deemed to comply with AVG limit.

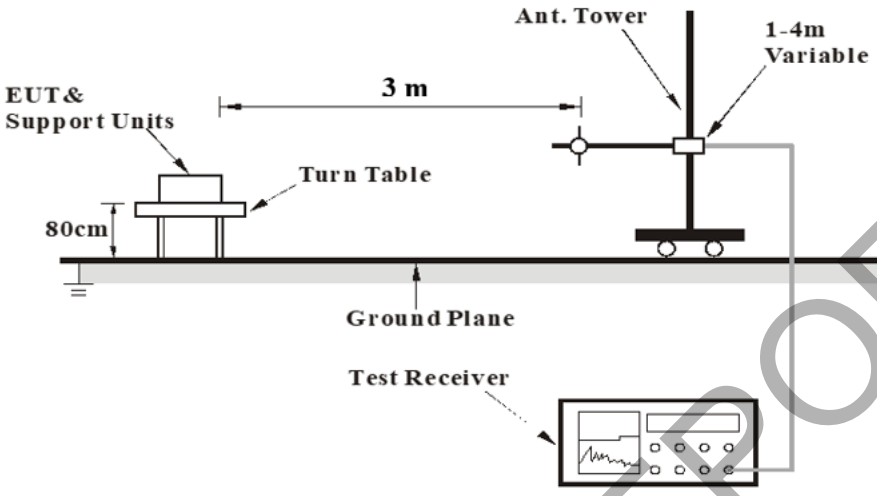
Test Setup

<Frequency Range 9 kHz ~ 30 MHz>

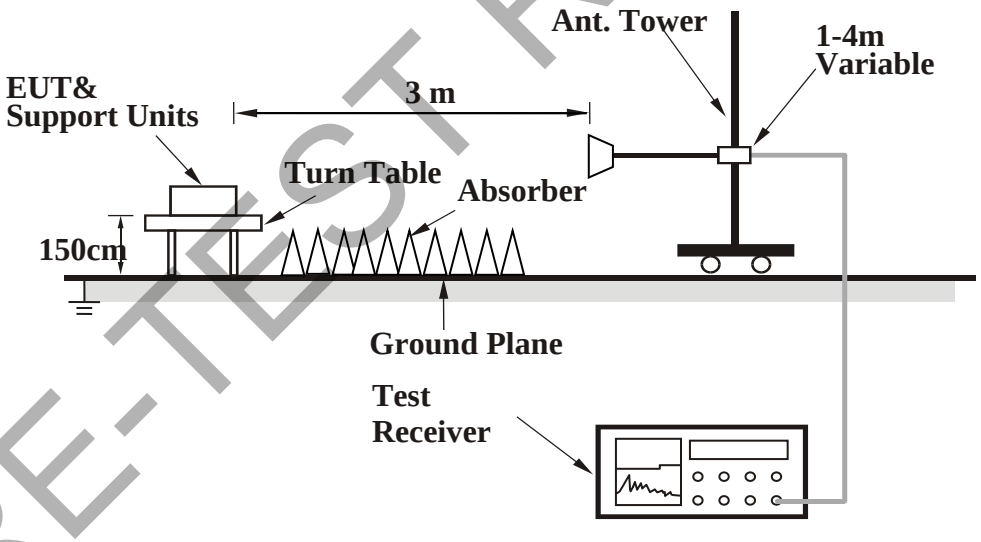


PRE-TEST REPORT

<Frequency Range 30 MHz ~ 1 GHz >



<Frequency Range above 1 GHz>



For the actual test configuration, please refer to the Setup Configurations.

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Test Data

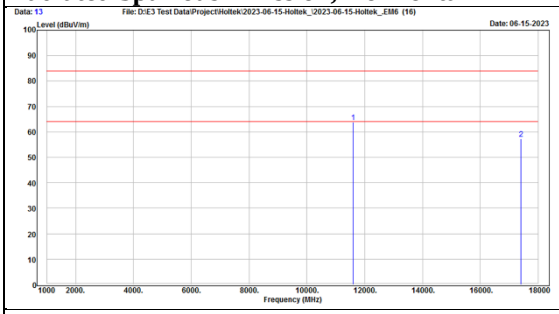
Above 1 GHz

Mode	SRD	Channel	0

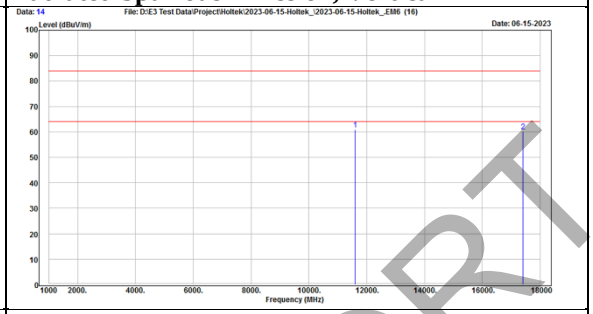
Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5780.7	35.84	20.33	56.17	64	-7.83	AVG
		5782.5	45.55	20.34	65.89	84	-18.11	PK
		5801	83.71	20.51	104.22	134	-29.78	AVG
		5801.3	85.02	20.51	105.53	114	-8.47	PK
		5815.5	53.15	20.55	73.7	84	-10.3	PK
		5817.5	38.24	20.55	58.79	64	-5.21	AVG
		11602	45.28	18.54	63.82	74	-10.18	PK
		17403	30.16	27.15	57.31	84	-26.69	PK
Vertical		5777.5	35.82	20.3	56.12	64	-7.88	AVG
		5780.9	46.51	20.33	66.84	84	-17.16	PK
		5801.5	83.04	20.51	103.55	134	-30.45	PK
		5801.5	82.82	20.51	103.33	114	-10.67	AVG
		5815.9	51.98	20.55	72.53	84	-11.47	PK
		5817.6	38.16	20.56	58.72	64	-5.28	AVG
		11602	42.38	18.54	60.92	74	-13.08	PK
		17403	32.99	27.15	60.14	84	-23.86	PK

PRE-TEST REPORT

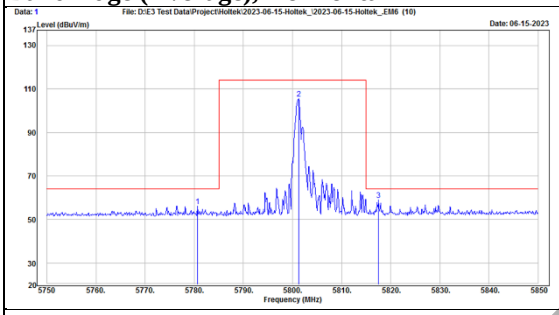
TX, SRD (Ch 0)
Radiated Spurious Emission, Horizontal



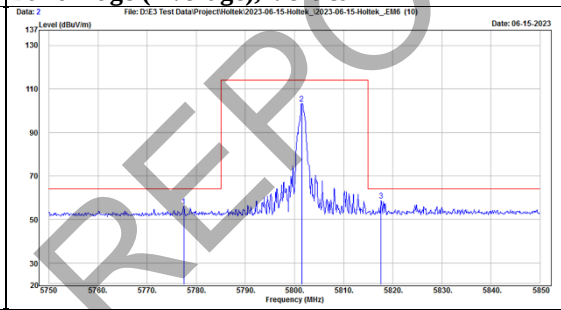
TX, SRD (Ch 0)
Radiated Spurious Emission, Vertical



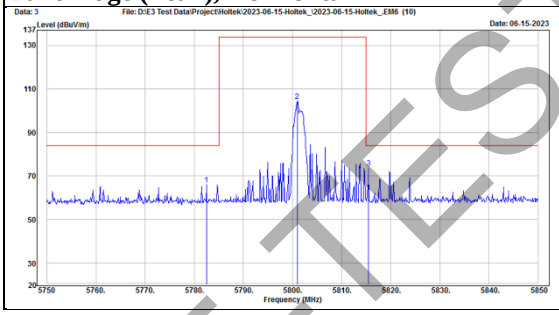
TX, SRD (Ch 0)
Band Edge (Average), Horizontal



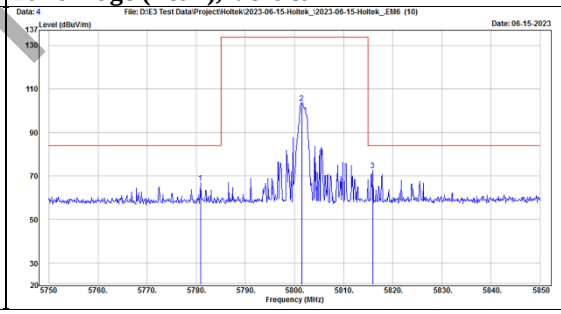
TX, SRD (Ch 0)
Band Edge (Average), Vertical



TX, SRD (Ch 0)
Band Edge (Peak), Horizontal



TX, SRD (Ch 0)
Band Edge (Peak), Vertical



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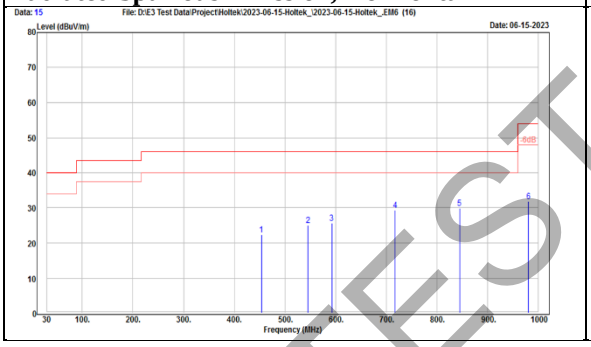
Below 1 GHz

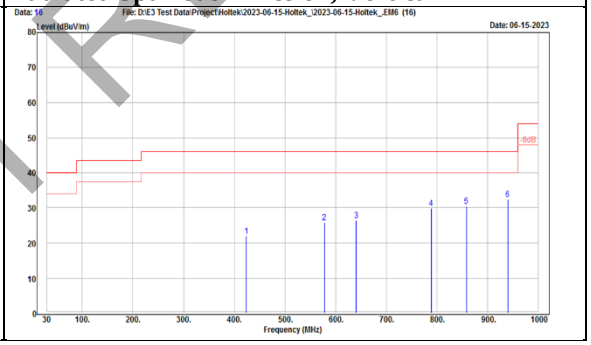
Mode	SRD_5.8G	Channel	0

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		453.89	36.95	-14.62	22.33	46	-23.67	PK
		546.04	37.69	-12.74	24.95	46	-21.05	PK
		592.6	37.14	-11.42	25.72	46	-20.28	PK
		717.73	38.3	-9.05	29.25	46	-16.75	PK
		844.8	36.69	-6.87	29.82	46	-16.18	PK
		980.6	36.97	-5.19	31.78	54	-22.22	PK
Vertical		423.82	37.67	-15.72	21.95	46	-24.05	PK
		578.05	37.65	-11.79	25.86	46	-20.14	PK
		641.1	36.88	-10.41	26.47	46	-19.53	PK
		788.54	37.53	-7.66	29.87	46	-16.13	PK
		858.38	37.13	-6.71	30.42	46	-15.58	PK
		939.86	37.93	-5.46	32.47	46	-13.53	PK

TX, SRD (Ch 0)
Radiated Spurious Emission, Horizontal



TX, SRD (Ch 0)
Radiated Spurious Emission, Vertical



PRE-TEST REPORT

9 kHz ~ 30 MHz Data:

For 9 kHz to 30 MHz radiated emission have performed all modes of operation were investigated. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

No non-compliance noted:

KDB 414788 D01 OATS and Chamber Correlation Justification

- Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

- OATs and chamber correlation testing had been performed and chamber measured test results is the worst case test result.

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30m open area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

PRE-TEST REPORT

7.2. 20dB Bandwidth

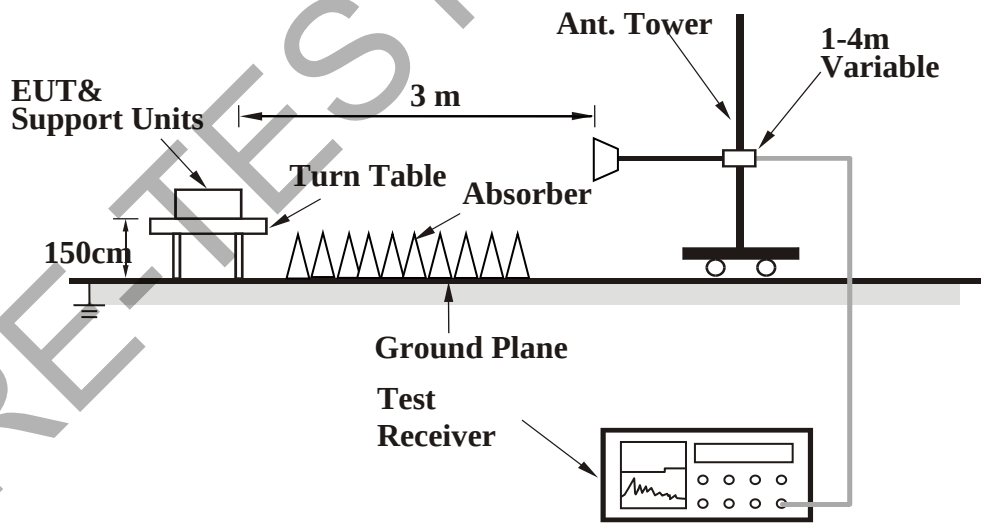
Requirements

The 20dB bandwidth shall be specified in operating frequency band.

Test Procedures

a. The testing follows the guidelines in ANSI C63.10-2013.
b. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
c. The EUT was placed on a turntable with 1.5m above ground.
d. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
e. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 300 kHz RBW and 1 MHz VBW. The 20 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

Test Setup



For the actual test configuration, please refer to the Setup Configurations.

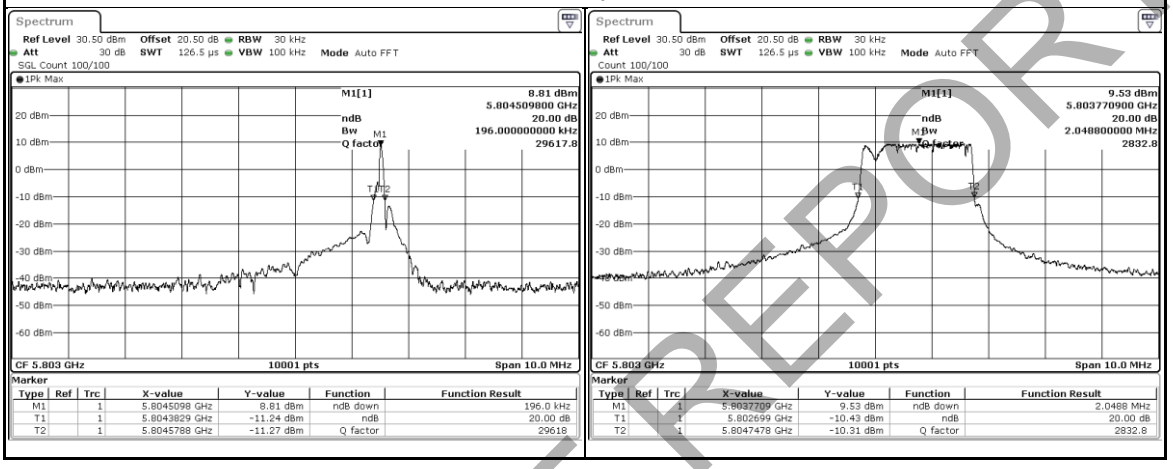
PRE-TEST REPORT

Test Data

Channel	Frequency (MHz)	20dB Bandwidth (kHz)
		GFSK
0	5800	0.20

Spectrum Plot of Worst Value

CH0



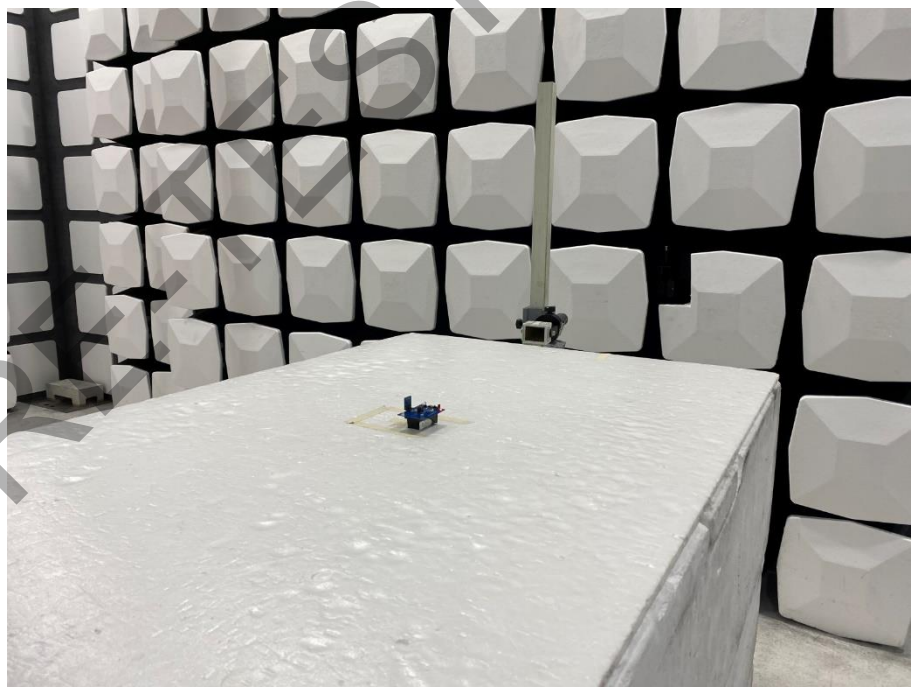
PRE-TEST REPORT

Appendix I Radiated Spurious Emission Setup Configurations

1 ~ 18GHz

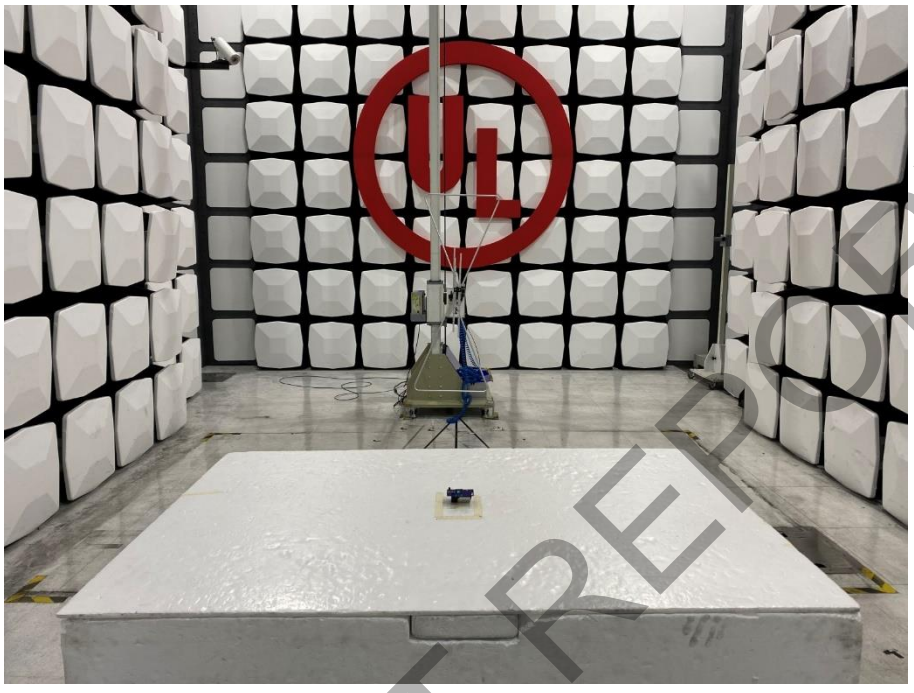
PRE-TEST REPORT

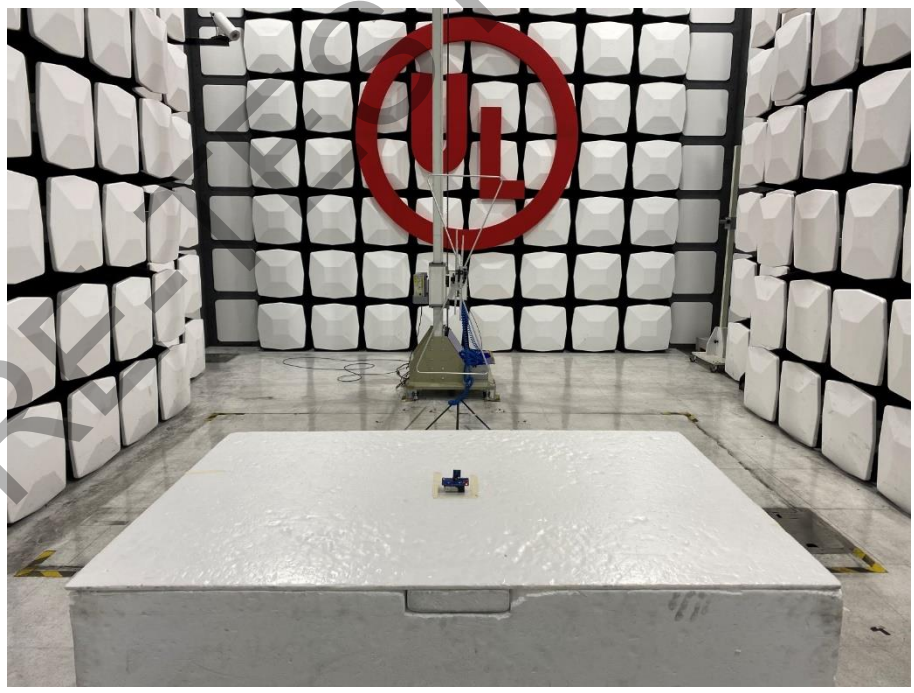
18 ~ 40GHz



PRE-TEST REPORT

Below 1 GHz



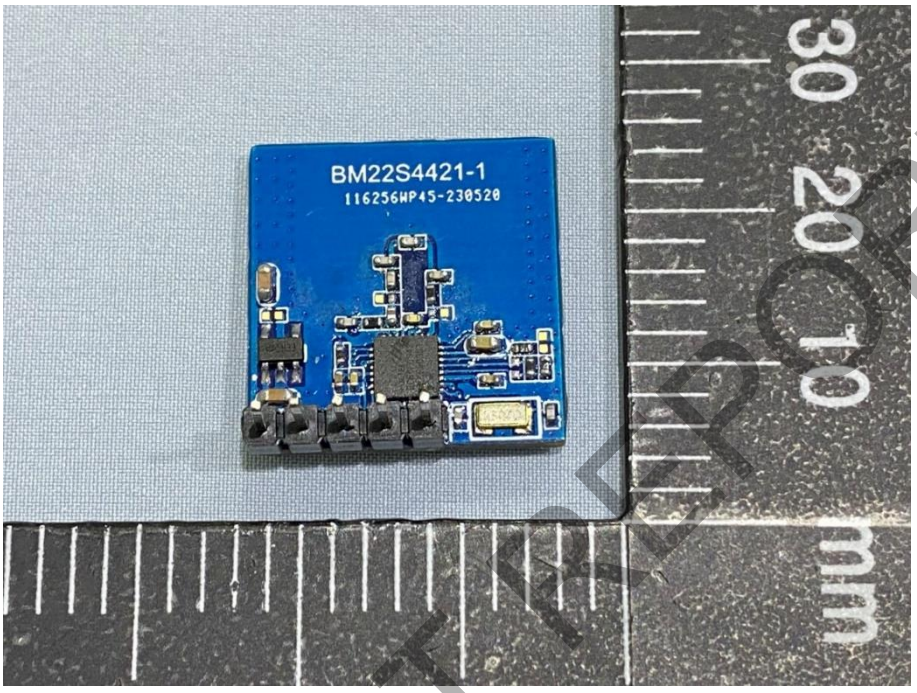


PRE-TEST REPORT

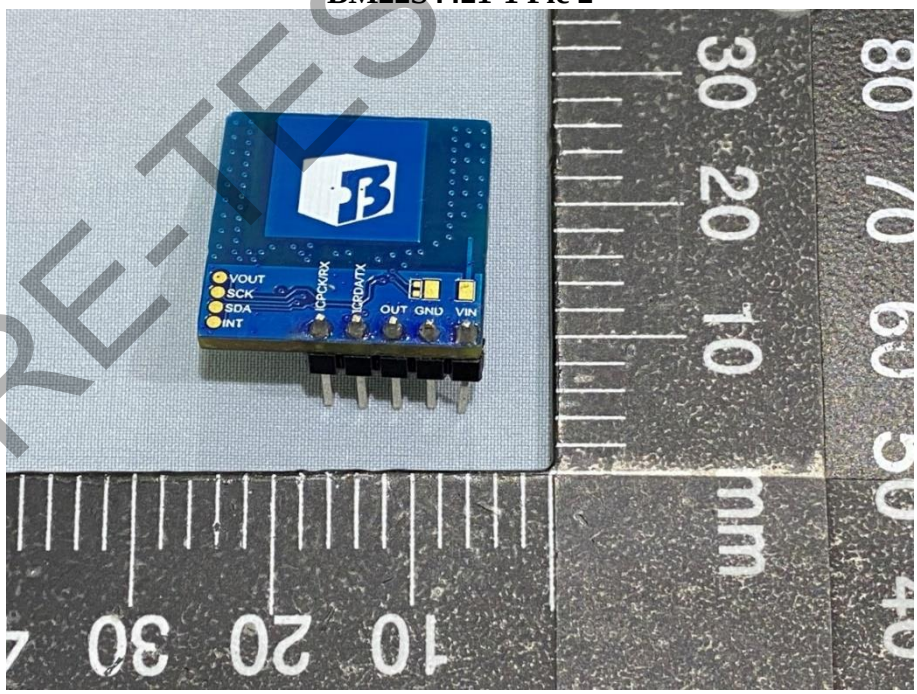
Appendix II Product Photos

External Photos

BM22S4421-1 Pic 1

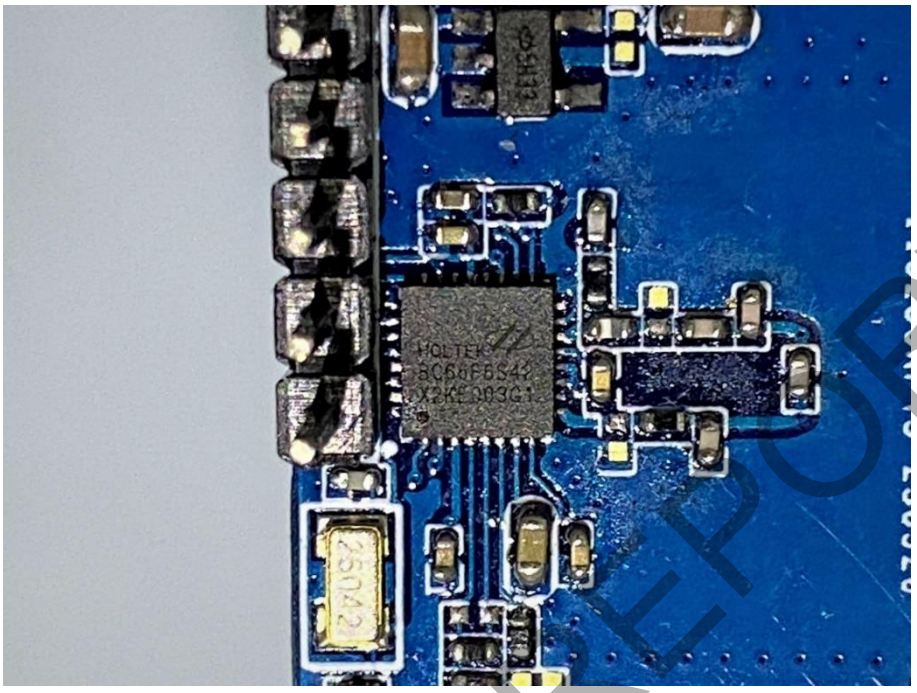


BM22S4421-1 Pic 2



PRE-TEST REPORT

BM22S4421-1 Pic 3



PRE-TEST REPORT

END OF REPORT

RADIO TEST REPORT

Product	:	5.8 GHz Radar Sensor Module
Model Name	:	BM22S4421-1
Test Regulation	:	ETSI EN 300 440 V2.2.1 (2018-07)
Received Date	:	2023/6/15
Test Date	:	2023/6/15
Issued Date	:	2023/9/13
Issued By	:	Underwriters Laboratories Taiwan Co., Ltd. Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

PRE-TEST REPORT

Summary of Test Results		
Clause	**Test Item**	**Results**
Clause 4.2.2	Equivalent Isotropic Radiated Power (e.i.r.p)	PASS
Clause 4.2.3	Permitted Range of Operating Frequencies	PASS
Clause 4.2.4	Unwanted Emissions in the Spurious Domain	PASS
Clause 4.2.5	Duty Cycle	See client's declaration on page 13

Notes:
1. The EUT has been tested according to the following specifications.

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PRE-TEST REPORT

1. Attestation of Test Results

APPLICANT:	Holtek Semiconductor Inc No.3, Creation Rd. II, Science park, Hsinchu 300, Taiwan, R.O.C.
EUT DESCRIPTION:	5.8 GHz Radar Sensor Module
MODEL:	BM22S4421-1
SAMPLE STAGE:	Engineering Verification Test sample
DATE of TESTED:	2023/6/15

APPLICABLE STANDARDS	
STANDARD	**Test Results**
ETSI EN 300 440 V2.2.1 (2018-07)	PASS

Underwriters Laboratories Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Underwriters Laboratories Taiwan Co., Ltd. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Underwriters Laboratories Taiwan Co., Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Underwriters Laboratories Taiwan Co., Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Prepared By:

Sally Lu Date : 2023/9/13
Project Handler

Approved and Authorized By:

Eric Lee Date : 2023/9/13
Senior Laboratory Engineer

PRE-TEST REPORT

2. Test Methodology and Reference Procedures

The tests documented in this report were performed in accordance with ETSI EN 300 440 V2.2.1 (2018-07).

3. Facilities and Accreditation

Test Location	Underwriters Laboratories Taiwan Co., Ltd.
Address	Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan
Accreditation Certificate	Underwriters Laboratories Taiwan Co., Ltd. is accredited by TAF, Laboratory Code 3398.

PRE-TEST REPORT

4. Calibration and Uncertainty

4.1. Measuring Instrument Calibration

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. Measurement Uncertainty

For statement of conformity, Simple acceptance (Section 4.3.4 of ISO Guide 115) was applied as decision rule for measurement in this test report.

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor k=2.

Determining compliance based on the results of the compliance measurement, not considering measurement instrumentation uncertainty.

Parameter	Uncertainty
Radio frequency	±0.061 ppm
RF power (conducted)	±1.1 dB
Radiated emission of transmitter, valid up to 26.5GHz	±5.1 dB
Radiated emission of receivers, valid up to 26.5GHz	±5.1 dB
Temperature	±0.86 °C
Humidity	±2.9 %
Voltages (DC)	±0.13 %
Voltages (AC, <10kHz)	±1.2 %

PRE-TEST REPORT

5. Equipment under Test

5.1. Description of EUT

Product	5.8 GHz Radar Sensor Module
Model Name	BM22S4421-1
Operating Frequency	5800 MHz
Number of Channels	1
Modulation Type	GFSK

5.2. Carrier Frequency and Channel

1 channel is provided to this EUT:

Channel	Frequency
0	5800

PRE-TEST REPORT

6. Test Result

6.1. Equivalent Isotropic Radiated Power

6.1.1. Requirements

Limit of Equivalent Isotropic Radiated Power

Frequency Band	Limit (e.i.r.p.)
5725 to 5875 MHz	25 mW

6.1.2. Test Setup

The test setup has been constructed as the normal use condition. Controlling software (provided by manufacturer) has been activated to set the EUT on specific status.

6.1.3. Test Procedure

Refer to chapter 4.2.2.3 of EN 300 440 V2.2.1.

Measurement Method	
☒Conducted measurement	☐Radiated measurement

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6.1.4. Test Data

Test Condition		EIRP Power (dBm)
Channel	Frequency (MHz)	Tnom(℃)
		25
		Vnom (V)
0	5800	11.40

Note: EIRP Power (dBm) = Conducted power (dBm) + Antenna gain (dBi)

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6.2. Permitted Range of Operating Frequencies

6.2.1. Requirements

The width of the power envelope is $f_H - f_L$ for a give operating frequency. In equipment that allows adjustment or selection of different frequencies, the power envelope take up different positions in the allowed band. The frequency range is determined by the lowest value of f_L and the highest value of f_H resulting from the adjustment of the equipment to the lowest and highest operating frequency. For operating band refer to section 7.1.1 frequency band.

6.2.2. Test Setup

The test setup has been constructed as the normal use condition. Controlling software (provided by manufacturer) has been activated to set the EUT on specific status.

6.2.3. Test Procedure

Refer to chapter 4.2.3.3 of EN 300 440 V2.2.1.

Measurement Method	
☒Conducted measurement	☐Radiated measurement

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6.2.4. Test Data

Test Condition		Frequency (MHz)	Measured frequencies (lowest and highest)
Channel	Frequency (MHz)	Tnom(°C)	
		25	
		Vnom (V)	
0	5800	5803.135	FL = 5803.1285
0	5800	5805.194	FH = 5805.205

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6.3. Duty Cycle

6.3.1. Requirements

The Duty Cycle at the operating frequency shall not be greater than values in chapter 4.2.5.4 of EN 300 440 V2.2.1 for the chosen operational frequency band(s).

6.3.2. Test Setup

The EUT was operated in normal operation condition.

6.3.3. Test Procedure

Refer to chapter 4.2.5.3 of EN 300 400 V2.2.1.

6.3.4. Test Data

No duty cycle restriction applies to device operating in 5725 MHz ~5875 MHz, so the device do not apply.

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6.4. Unwanted emissions in the spurious domain

6.4.1. Requirements

Limits of Transmitter Spurious Emissions

State	Frequency Range		
	47MHz to 74MHz 87.5MHz to 108MHz 174MHz to 230MHz 470MHz to 862MHz	**Other Frequencies Below 1GHz**	**Frequencies Above 1GHz**
Operating	4nW (–54dBm)	250nW (–36dBm)	1μW (–30dBm)
Standby	2nW (–57dBm)	2nW (–57dBm)	20nW (–47dBm)

6.4.2. Test Setup

1. For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration).
2. The equipment was configured to operate under its worst case situation with respect to output power.
3. The test setup has been constructed as the normal use condition. Controlling (provided by manufacturer) software has been activated to set the EUT on specific status.

6.4.3. Test Procedures

Refer to chapter 4.2.4.3 of EN 300 440 V2.2.1.

Measurement Method	
☐ Conducted measurement	☒ Radiated measurement

Note:

1. Result value (dBm) = Reading value (dBm) + Correction Factor (dB).
2. Margin(dB) = Result value (dBm) - Limit value (dBm).
3. The other emission levels were very low against the limit.

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6.4.4. Test Data

Above 1 GHz

Mode	5.8G	Channel	0

Polarization	Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
Horizontal	11597.233	-56.87	22.50	-34.37	-30.00	-4.37	PK
	17395.933	-64.45	24.52	-39.93	-30.00	-9.93	PK
	19186.533	-75.28	23.02	-52.26	-30.00	-22.26	PK
	23934.133	-74.48	25.43	-49.05	-30.00	-19.05	PK
	26923.933	-73.70	26.15	-47.55	-30.00	-17.55	PK
	30129.333	-72.93	26.20	-46.73	-30.00	-16.73	PK
	32623.400	-73.38	28.50	-44.88	-30.00	-14.88	PK
	34934.867	-72.02	32.58	-39.44	-30.00	-9.44	PK
Vertical	11596.100	-68.41	22.50	-45.91	-30.00	-15.91	PK
	17395.367	-60.90	24.52	-36.38	-30.00	-6.38	PK
	20752.200	-75.50	22.75	-52.75	-30.00	-22.75	PK
	23995.000	-74.16	25.43	-48.73	-30.00	-18.73	PK
	26773.600	-73.32	26.12	-47.20	-30.00	-17.20	PK
	30022.267	-72.18	26.37	-45.81	-30.00	-15.81	PK
	35074.933	-71.72	32.02	-39.70	-30.00	-9.70	PK
	39322.400	-70.50	30.90	-39.60	-30.00	-9.60	PK

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Below 1 GHz

Mode	5.8G	Channel	0

Polarization	Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
Horizontal	50.8375	-64.71	-5.46	-70.17	-54.00	-16.17	PK
	689.0400	-69.85	-1.93	-71.78	-54.00	-17.78	PK
	721.8975	-70.25	-1.12	-71.37	-54.00	-17.37	PK
	775.7175	-70.70	-0.34	-71.04	-54.00	-17.04	PK
	798.0125	-69.52	-0.70	-70.22	-54.00	-16.22	PK
	853.3925	-70.41	0.10	-70.31	-54.00	-16.31	PK
Vertical	28.1200	-43.52	-9.53	-53.05	-36.00	-17.05	PK
	54.0875	-60.10	-6.16	-66.26	-54.00	-12.26	PK
	89.0899	-59.18	-12.08	-71.26	-54.00	-17.26	PK
	753.0650	-70.56	-0.09	-70.65	-54.00	-16.65	PK
	779.4550	-70.51	-0.36	-70.87	-54.00	-16.87	PK
	861.0950	-70.37	-0.10	-70.47	-54.00	-16.47	PK

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Appendix I Radiated Emission Measurement Setup Configurations

1 ~ 18GHz

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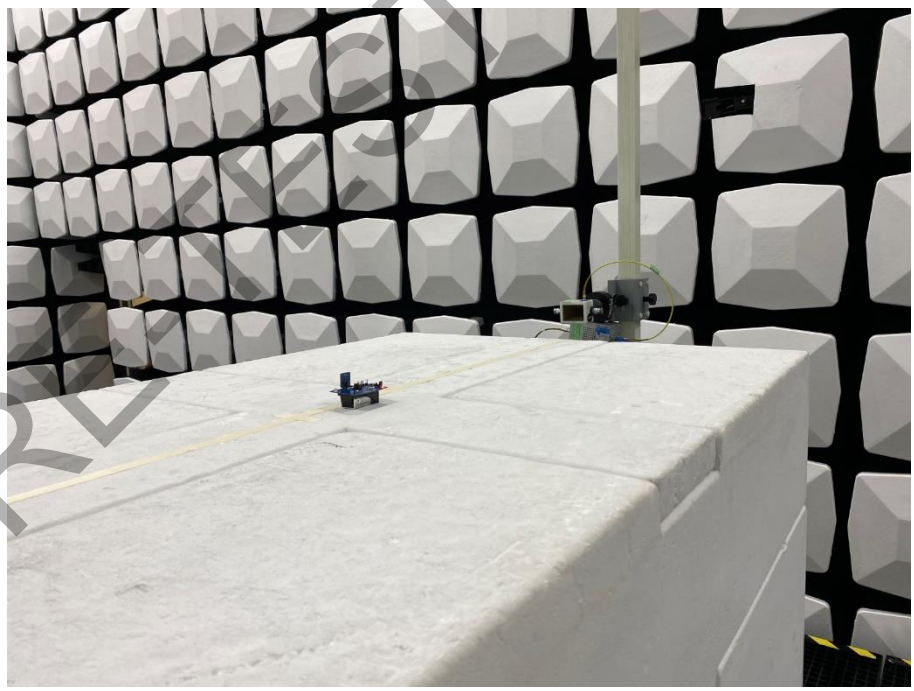
18 ~ 40GHz



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Below 1GHz

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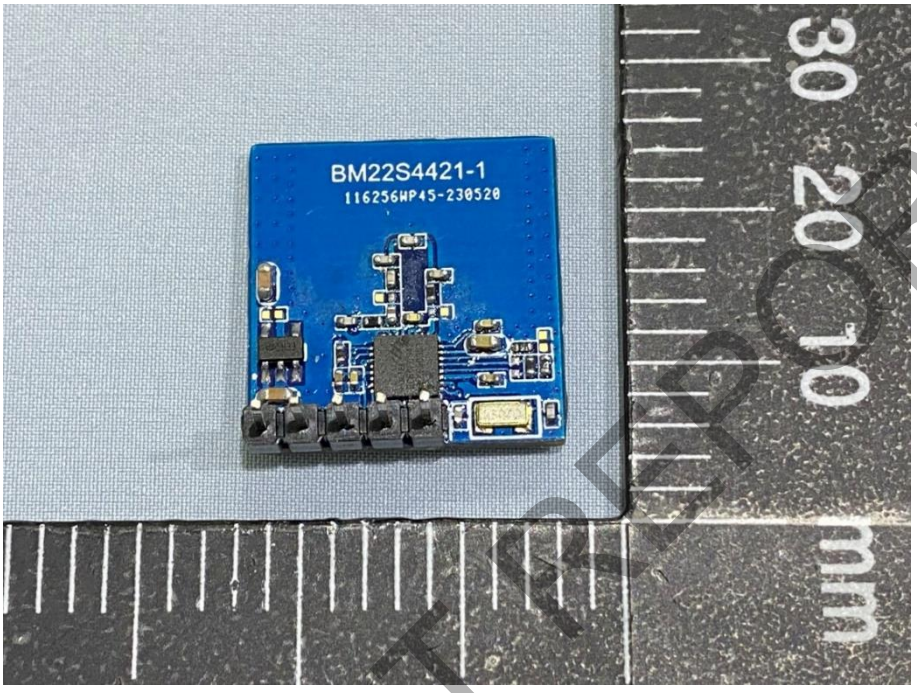
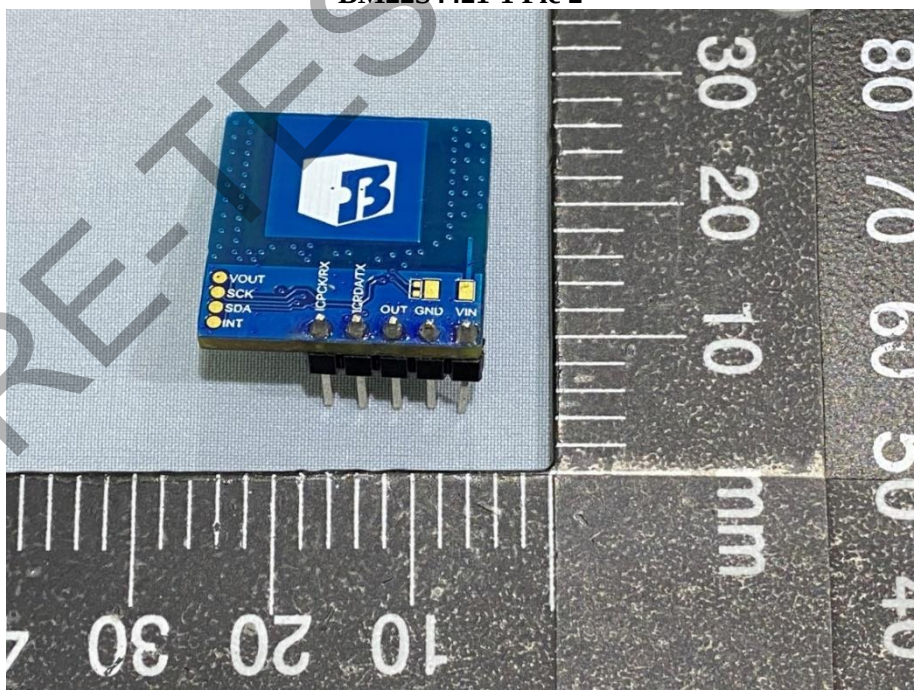
Appendix II Product Photos

External Photos

BM22S4421-1 Pic 1



BM22S4421-1 Pic 2



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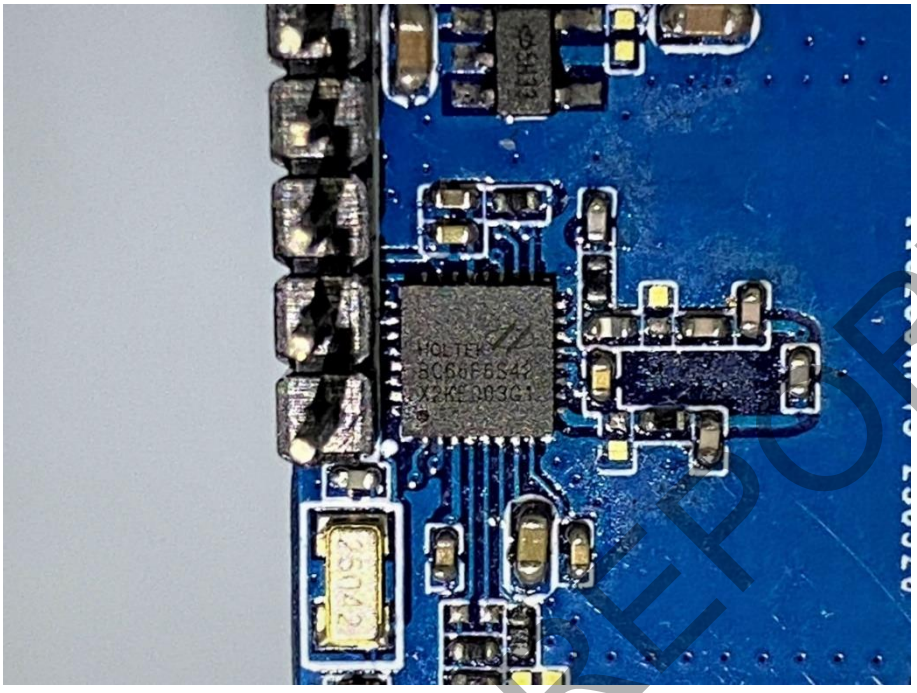
BM22S4421-1 Pic 3



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END OF REPORT