





Test report No: 2090798R-RF-CE-P17V02

CE TEST REPORT

Product Name	EZ-BT Module		
Trademark	Infineon		
Model and /or type reference	CYBT-343026-01/CYBT-343151-02 /CYBT-343029-01/CYBT- 143038-01		
Applicant's name / address	Infineon Technologies AG Am Campeon 1-15, 85579 Neubiberg, Germany		
Test method requested, standard	ETSI EN 300328 V2.2.2 (2019-07) AS/NZS 4268: 2017		
Verdict Summary	IN COMPLIANCE		
Documented by (name / position & signature)	Kitty Li/ Project Assistant		
Reviewed by (name / position & signature) Frank He/ Technical Supervisor Frank he			
Approved by (name / position & signature)	Jack Zhang/ Supervisor Jack Zhong		
Date of issue	2020-10-16		
Report template No	Template_EN 300328-RF-V1.0		

Note: The report is based on DEKRA report No.: 18B2048R-RF-CE-P17V02, only receiver blocking was tested for compliance of ETSI EN 300328 V2.2.2.



INDEX

			Page
Com	petenc	ces and Guarantees	3
Gene	eral co	nditions	3
Envii	ronmer	ntal conditions	3
Poss	ible te	st case verdicts	4
Abbr	eviatio	ns	4
Docu	iment l	History	5
Rem	arks aı	nd Comments	5
Used	l Equip	oment	6
Unce	ertainty	/	7
1	Gene	ral Information	8
	1.1	General Description of the Item(s)	8
	1.2	Antenna Information	9
	1.3	Channel List	10
2	Desci	ription of Test Setup	11
	2.1	Operating mode(s) used for tests	11
	2.2	Accessories Information	11
	2.3	Support / Auxiliary equipment / unit / software for the EUT	11
	2.4	Test Configuration / Block diagram used for tests	12
	2.5	Testing process	12
3	Verdi	ct summary section	13
	3.1	Standards	13
	3.2	Deviation(s) from the Standard(s) / Test Specification(s)	13
	3.3	Overview of results	14
4	Test I	Results	15
	4.1	Receiver Blocking	15
	4.1.1	Limit	15
	4.1.2	Test Setup	16
	4.1.3	Procedure	17
	4.1.4	Test Data	19
5	Setup	photo and EUT photo	20



COMPETENCES AND GUARANTEES

DEKRA is a testing laboratory competent to carry out the tests described in this report. In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and

maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

GENERAL CONDITIONS

Test Location	No. 99, Hongye Road, Suzhou Industrial Park Suzhou, 215006, P.R. China
Date(receive sample)	Sep. 22, 2020
Date (start test)	Sep. 23, 2020
Date (finish test)	Oct. 15, 2020

- 1. This report is only referred to the item that has undergone the test.
- 2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
- 3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
- 4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.

ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	15 °C – 35 °C
Relative Humidity air	30% - 60%

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.



POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT : Equipment Under Test QP : Quasi-Peak CAV **CISPR** Average : AV : Average CDN **Coupling Decoupling Network** : SAC Semi-Anechoic Chamber : OATS **Open Area Test Site** : BW : Bandwidth AM **Amplitude Modulation** : Pulse Modulation ΡM : HCP Horizontal Coupling Plane : VCP : Vertical Coupling Plane Nominal voltage $U_{\rm N}$: Тx Transmitter : Rx : Receiver N/A Not Applicable : N/M Not Measured :



DOCUMENT HISTORY

Report No.	Version	Description	Issued Date
2090798R-RF-CE-P17V02	V1.0	Initial issue of report.	2020-10-16

REMARKS AND COMMENTS

- 1. The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).
- 2. These test results on a sample of the device are for the purpose of demonstrating Compliance with ETSI EN 300328 V2.2.2, AS/NZS 4268: 2017.
- 3. The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to account the uncertainty associated with the measurement result.
- 4. The test results presented in this report relate only to the object tested.
- 5. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification (Suzhou) Co., Ltd.
- 6. This report will not be used for social proof function in China market.
- 7. DEKRA declines any responsibility with the following test data provided by customer that may affect the validity of result:
 - Chapter 1.1 General Description of the Item(s);
 - Chapter 1.2 Antenna Informaion;
 - Chapter 1.3 Channel List.



USED EQUIPMENT

Receiver Blocking / TR8					
Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Splitter/Combiner (Qty: 2)	Mini-Circuits	ZAPD-50W 4.2-6.0 GHz	NN256400424	N/A	N/A
10dB Directional Coupler	Agilent	87300C	MY44300299	N/A	N/A
Adaptivity Test Unit	Agilent	N/A	11607310008	N/A	N/A
Rx PER Monitoring Unit	Agilent	N/A	11706190075	N/A	N/A
Wideband Radio Communication Tester	R&S	CMW 500	1201.0002K50- 158243-jb	2020.08.15	2021.08.14
PSG Analog Signal Generator	Agilent	E8257D	MY44321116	2020.08.15	2021.08.14
ESG Vector Signal Generator	Agilent	E4438C	MY49070163	2020.08.25	2021.08.24
Temperature/Humidity Meter	Zhichen	ZC1-2	TR8-TH	2020.09.02	2021.09.01



UNCERTAINTY

Uncertainties have been calculated according to the DEKRA internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The Uncertainties is complice with standard required as below.

Test item	Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1,5 dB
Power Spectral Density, conducted	±3 dB
Unwanted Emissions, conducted	±3 dB
All emissions, radiated	±6 dB
Temperature	±3 °C
Supply voltages	±3 %
Time	±5 %



1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Product Name:	EZ-BT Module
Model No	CYBT-343026-01/CYBT-343151-02 /CYBT-343029-01/CYBT-143038-01
Trademark	Infineon
Manufacturer	Infineon Technologies AG
Manufacturer Address	Am Campeon 1-15, 85579 Neubiberg, Germany
Model Difference	Model CYBT-343029-01 is identical to Model CYBT-343026-01 and CYBT-143038-01 except for whether there is a certified Homekit chip or flash memory inside. Model CYBT-343151-02 shares the same PCB with Model CYBT-
	343029-01, CYBT-343026-01 and CYBT-143038-01, except that working temperature is changed from -40~85 $^{\circ}$ C to -40~105 $^{\circ}$ C. Part of device P/N has changed to meet the working temperature requirement. The RF character of this new module and original modules is the same.

Wireless specifiction	Bluetooth	
Bluetooth Specification	V4.0	
Operating frequency range(s)	2402 ~ 2480 MHz	
Type of Modulation	GFSK	
Channel Separation	2 MHz	
Data Rate	1 Mbps	
Number of channel	40	

Rated power supply:	Voltage and Frequency				
	AC: 220 – 240 V, 50/60 Hz				
	AC: 100 – 240 V, 50/60 Hz				
	2.3 ~ 3.6 Vdc				
	Battery:				
Mounting position:		Table top equipment			
		Wall/Ceiling mounted equipment			
		Floor standing equipment			
		Hand-held equipment			
	Other: Module				



1.2 Antenna Information

Antenna model / type number:	N/A			
Antenna serial number	N/A			
Antenna Delivery	⊠ 1TX + 1RX			
		2TX + 2RX		
Antenna technology	SISO			
		MIMO		CDD
				Beam-forming
Antenna Type		External		Dipole
				Sectorized
	\boxtimes	Internal		PIFA
			\square	PCB
				Metal Monopole Antenna
				Others
Antenna Gain	-0.5 d	Bi		



1.3 Channel List

Bluetooth	Bluetooth Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency	
00	2402 MHz	01	2404 MHz	02	2406 MHz	03	2408 MHz	
04	2410 MHz	05	2412 MHz	06	2414 MHz	07	2416 MHz	
08	2418 MHz	09	2420 MHz	10	2422 MHz	11	2424 MHz	
12	2426 MHz	13	2428 MHz	14	2430 MHz	15	2432 MHz	
16	2434 MHz	17	2436 MHz	18	2438 MHz	19	2440 MHz	
20	2442 MHz	21	2444 MHz	22	2446 MHz	23	2448 MHz	
24	2450 MHz	25	2452 MHz	26	2454 MHz	27	2456 MHz	
28	2458 MHz	29	2460 MHz	30	2462 MHz	31	2464 MHz	
32	2466 MHz	33	2468 MHz	34	2470 MHz	35	2472 MHz	
36	2474 MHz	37	2476 MHz	38	2478 MHz	39	2480 MHz	

Note: The general description of the Item(s), antenna information and channel list in clause 1 are provided and confirmed by the client.



2 DESCRIPTION OF TEST SETUP

2.1 Operating mode(s) used for tests

During the tests the following operating mode(s) has(have) been used.

Test Mode	Mode 1: Normal operation

2.2 Accessories Information

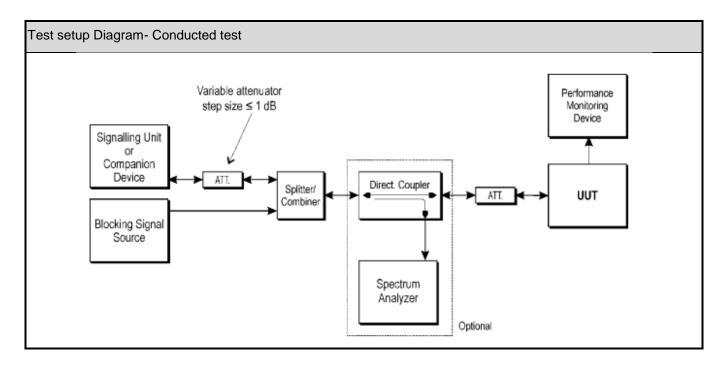
Accessories Information	Brand/model name	Length used Attached		Shielded	
		during test [m]	during test	Shielded	
USB – serial port	N/A	0.5	\boxtimes	\boxtimes	

2.3 Support / Auxiliary equipment / unit / software for the EUT

Auxiliary equipment	Type / Version	Manufacturer	Supplied by
N/A	N/A	N/A	N/A
Software	Type / Version	Manufacturer	Supplied by
N/A	N/A	N/A	N/A



2.4 Test Configuration / Block diagram used for tests



2.5 Testing process

1	Setup the EUT as shown in Section 2.4.
2	Connect the EUT with CMW 500.
3	Verify that the EUT works properly.



3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

3.1 Standards

Standard	Year	Description
ETSI EN 300328 V2.2.2	2019	Wideband transmission systems;Data transmission equipment operating in the 2,4 GHz band;Harmonised Standard for access to radio spectrum

3.2 Deviation(s) from the Standard(s) / Test Specification(s)

No deviation



3.3 Overview of results

Test Item – ETSI EN 300328 V2.2.2							
Performed Test Item	Test Procedure	Adaj	otive	Non-Ad	daptive	Bomork	
Performed Test item	Test Procedure	(≥10dBm)	(<10dBm)	(≥10dBm)		Verdict Ren	Remark
Receiver Blocking	Claus 5.4.11	N/A	Yes	N/A	N/A	PASS	



4.1 Receiver Blocking

4.1.1 Limit					
Standard	ETSI EN 300328 \	/2.2.2			
Receiver Category 1					
Wanted signal meanpower f	rom companion	Blocking signal	Blocking signal	Type of	
device (dBm)		frequency	power (dBm)	blocking	
(see notes 1 and	14)	(MHz)	(see note 4)	signal	
(-133 dBm+10×log₁₀(OCBW)) or -68 dBm whichever is less (see notes 2)		2 380 2 504			
(-139 dBm+10×log₁₀(OCBW)) or -74 dBm whichever is less (see notes 3)		2 300 2 330 2 360 2 524 2 584 2 674	-34	CW	

NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to Pmin + 26 dB where Pmin is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 3: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to Pmin + 20 dB where Pmin is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 4: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

Receiver Category 2			
Wanted signal meanpower from companion	Blocking signal	Blocking signal	Type of
device (dBm)	frequency	power (dBm)	blocking
(see notes 1 and 3)	(MHz)	(see note 3)	signal
(-139 dBm+10×log₁₀(OCBW)+10dB) or (-74 dBm	2 380		
	2 504	-34	CW
+10dB)whichever is less	2 300	-34	Cvv
(see notes 2)	2 584		



VERDICT: PASS



NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to Pmin + 26 dB where Pmin is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2

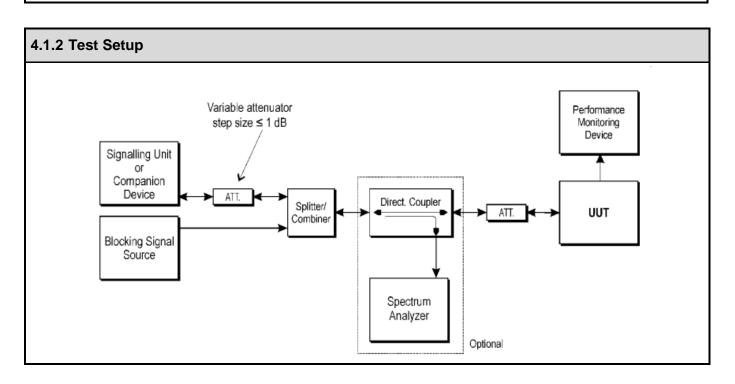
Receiver Category 3			
Wanted signal meanpower from companion	Blocking signal	Blocking signal	Type of
device (dBm)	frequency	power (dBm)	blocking
(see notes 1 and 3)	(MHz)	(see note 3)	signal
(-139 dBm+10×log₁₀(OCBW)+20dB) or (-74 dBm	2 380		
	2 504	24	0.14
+20dB)whichever is less	2 300	-34	CW
(see notes 2)	2 584		

NOTE 1: OCBW is in Hz.

5

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to Pmin + 26 dB where Pmin is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2





4.1.3 Procedure		
References Rule	Chapter	Description
ETSI EN 300328 V2.2.2	5.4.11.2.1	Receiver Blocking
The different steps below define the	procedure to v	verify the efficiency of the LBT based adaptive mechanism of
equipment using wide band modulati	ions other thar	n FHSS. This method can be applied on Load Based Equipment
and Frame Based Equipment.		
Step 1		
For non-FHSS equipment, the UUT s	shall be set to	the lowest operating channel on which the blocking test has to
be performed (see clause 5.4.11.1).		
Step 2		
The blocking signal generator is set t	to the first freq	uency as defined in the appropriate table corresponding to
the receiver category and type of equ	uipment.	
Step 3		
1, With the blocking signal generator	switched off,	a communication link is established between the UUT and the
associated companion device using	the test setup	shown in figure 6.
2, Unless the option provided in note	e 2 of the appl	icable table referred to in clause 5.4.11.2.1 is used, the level of
the wanted signal shall be set to the	value provideo	d in the table corresponding to the receiver category and type of
equipment. The test procedure define	ed in clause 5.	.4.2, and more in particular clause 5.4.2.2.1.2, can be used to
measure the (conducted) level of the	wanted signa	I however no correction shall be made for antenna gain of the
companion device (step 6 in clause 5	5.4.2.2.1.2 sha	all be ignored). This level may be measured directly at the output
of the companion device and a corre	ction is made	for the coupling loss into the UUT. The actual level for the
wanted signal shall be recorded in th	e test report.	
2, When the option provided in note :	2 of the applic	able table referred to in clause 5.4.11.2.1 is used, the
		eased in 1 dB steps to a value at which the minimum
		2.3 or clause 4.3.2.11.3 is still met. The resulting level for the
•		s signal level (Pmin) is increased by the value provided in note 2
of the applicable table corresponding	to the receive	er category and type of equipment.
Step 4		
	set to the leve	I provided in the table corresponding to the receiver category
and type of equipment.		
2, If the performance criteria as spec	cified in clause	e 4.3.1.12.3 or clause 4.3.2.11.3 are met then proceed to step 6.
Step 5		
		e 4.3.1.12.3 or clause 4.3.2.11.3 is not met, step 3 and step 4
shall be repeated after that the frequ	ency of the blo	ocking signal set in step 2 has been increased with a value equal
to the Occupied Channel Bandwidth	•	
• • •		s frequency offset shall be less than or equal to 10 MHz. If this
		ne wanted signal shall be increased by 3 dB.
• • •		his frequency offset shall be less than or equal to 10 MHz. If this
		ne wanted signal shall be decreased by 3 dB.
		4.3.1.12.3 or clause 4.3.2.11.3 is still not met, step 3 and step 4
	•	ocking signal set in step 2 has been decreased with a value
equal to the Occupied Channel Banc		
		s frequency offset shall be less than or equal to 10 MHz. If this
trequency offset is more than 7 MHz	, the level of th	ne wanted signal shall be decreased by 3 dB.

For the blocking frequency 2 503,5 MHz, where this frequency offset shall be less than or equal to 10 MHz. If this



frequency offset is more than 7 MHz, the level of the wanted signal shall be increased by 3 dB. 3,If the performance criteria as specified in clause 4.3.1.12.3 or clause 4.3.2.11.3 is still not met, the UUT fails to comply with the Receiver Blocking requirement and step 6 and step 7 are no longer required. 4, It shall be recorded in the test report whether the shift of blocking frequencies as described in the present step was used.

Step 6

Repeat step 4 and step 5 for each remaining combination of frequency and level for the blocking signal as provided in the table corresponding to the receiver category and type of equipment.

Step 7

For non-FHSS equipment, repeat step 2 to step 6 with the UUT operating at the highest operating channel on which the blocking test has to be performed (see clause 5.4.11.1).

Step 8

It shall be assessed and recorded in the test report whether the UUT complies with the Receiver Blocking requirement.



4.1.4 Test Data							
Test Mode	Frequency (MHz)	Wanted signal power (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 1)	PER Measure Value (%)	PER Limit (%)	
0.100			2 380	-34	0.3	≪10	
	2402	00.7	2 504	-34	0.3	≤10	
	2402	-68.7	2 300	-34	0.2	≤10	
Mode 1			2 584	-34	0.5	(%) ≤10 ≤10 ≤10 ≤10 ≤10 ≤10 ≤10	
wode i			2 380	-34	0.1	≤10	
	2490	69.7	2 504	-34	0	≤10	
	2480	2480 -68.7 2 300	-34	0	≤10		
			2 584	-34	0.1	≤10	
Note 1:	The levels sp	ecified are leve	els in front of the l	JUT antenna. In case o	of conducted measurem	ents, the	

levels have to be corrected by the actual antenna assembly gain.



5 SETUP PHOTO AND EUT PHOTO

Remark: The test setup photo and EUT Photo please see appendix.

The End